Translation of the original operating instructions

Process gas analyser INCA1051



UNION Instruments GmbH

Zeppelinstrasse 42

76185 Karlsruhe

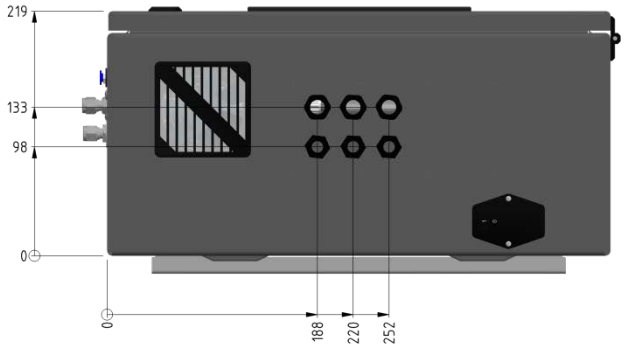
Germany

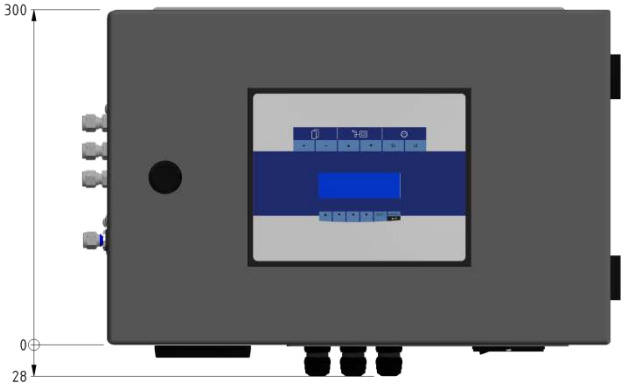
☎ +49 (0)721-680381-0
🖷 +49 (0)721-680381-33
✉ support@union-instruments.com
💻 http://www.union-instruments.com

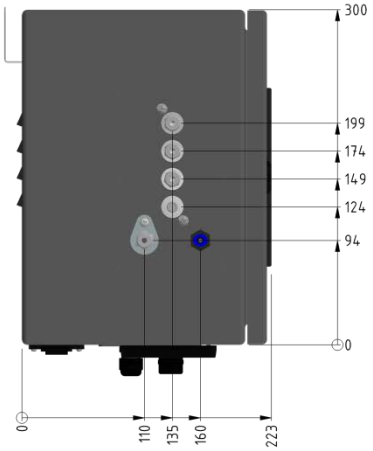
Item No.: 08608199966
© 2015
This documentation is copyrighted. The engendered rights are retained, in particular the rights to translation, reprinting, taking pictures, radio transmission, reproduction by photomechanical or similar methods and storage in data processing systems, including excerpts.

The right to technical changes is retained.

Dimensions


219
133
98
0
0
188
220
252


300
0
28


300
199
174
149
124
94
0
0
110
135
160
223

Measuring ranges and measuring accuracy

Refer to type plate on device also attached data and information.

Example of Measuring ranges on type plate:

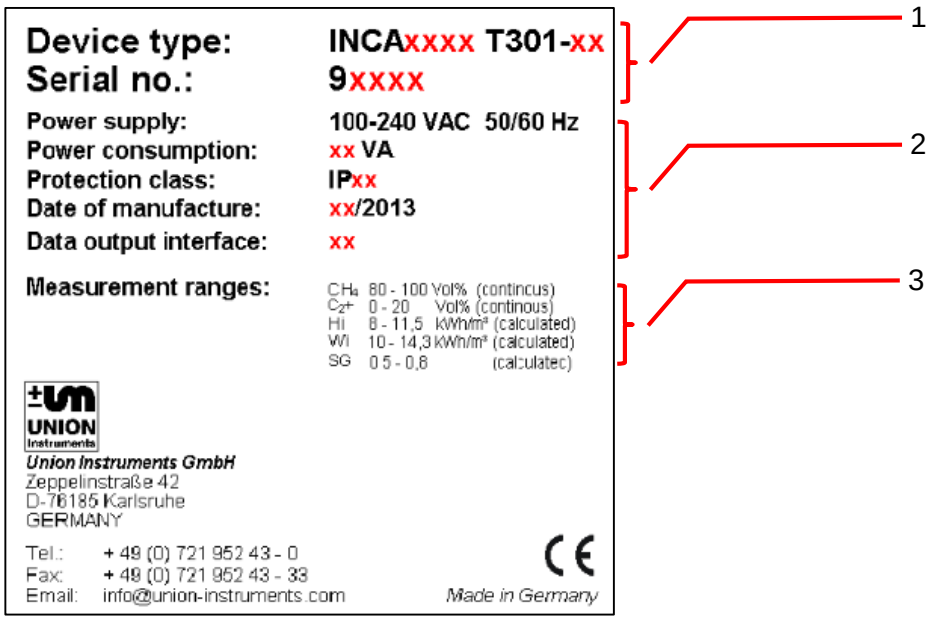


Fig. 1.1: Type plate (exemplary)

1. Device description
2. Technical Information
3. Measurement ranges

Technical data

Gas inlets

Number of measuring points:	1
Calibration inlets:	2
Purge gas inlets:	1
Gas connections:	Clamp ring connection 6 mm
Max. gas inlet pressure:	50 mbar relative
Min. gas inlet pressure:	20 mbar relative
Integrated fine filter:	yes

Calibration gas

Calibration interval:	manual or automatic (configurable between one hour and up to several weeks)
Duration of calibration:	10 minutes (recommended by the manufacturer)
Gas consumption:	5 l/calibration
Calibration gas	Methane quality 3.5 (purity 99.95%)

Power supply

Voltage:	100 - 240 V 50/60 Hz
Power consumption:	100 VA max.
Protection class:	I
Degree of protection:	IP40

Interfaces

Relay:	3
Dig. interface:	RS232
Field bus:	optional
Optional relay:	optional
Remote Control Unit:	optional

Ambient conditions

Operating temperature:	5 - 45 °C
Humidity:	0 - 95 % relative humidity
Ambient pressure:	900 - 1250 hPa (0.9 - 1.2 bar)
Storage temperature:	-20 - 60°C

Weight

Weight:	approx. 10 kg



⚠ ATTENTION

When using the process gas analyser in other ambient conditions, consult UNION Instruments GmbH for additional measures.

Table of contents

1 EC Declaration of Conformity 9
2 Safety notes 11
2.1 Warnings and symbols 11
2.2 Fundamentals of proper use 12
2.3 Personnel and qualifications 12
2.4 Safety notes 13
2.4.1 General notes on safety 13
2.4.2 Indications of special hazards 13
2.5 Regular operator training 13
2.6 Workplace hazard analysis 14
3 Safety equipment 15
3.1 Safety equipment 15
3.1.1 Door - not electronically queried 15
3.1.2 Ventilator monitoring 15
3.2 Markings and warnings 16
4 Connections 17
4.1 Accessories 18
5 Transport, setup and acceptance 19
5.1 Transport 19
5.2 Ambient conditions 20
5.2.1 Storage conditions 20
5.3 Installing and connecting 20
5.4 Setup site 20
5.4.1 Wall attachment 21
5.4.2 Process gas 22
5.4.3 Electrical connection 23
5.4.4 Electrical interfaces 23
5.4.5 Operator safety precautions 28
5.5 Startup after setup 28
5.6 Documentation 28
6 Startup /switching on 29
7 Description of the workplaces/operating elements 31
7.1 Workplaces 31
8 Operation 33
8.1 Description of display 34
8.1.1 Using the membrane keypad 34
8.1.2 Display area 35
8.2 Available displays 35
8.2.1 Menu structure 36
8.2.2 Navigate with the arrow keys left ◄ and right ► 37
8.2.3 Navigation with arrow keys up ▲ and down ▼ 38
8.2.4 Navigation with ESC and MENU 39
8.2.5 Measurement display 40
8.2.6 Measuring channel display 40
8.2.7 Saved measured values 41
8.2.8 Display in the warmup phase 41
8.2.9 Select language 42
8.2.10 Password 43

9 Decommissioning/switching off 45
10 Maintenance 47
10.1 Preparations 47
10.2 Maintenance work/Inspection 48
11 Troubleshooting 51
11.1 Preparations 51
11.2 Changing/replacing fuses 52
11.3 Messages/malfunctions on the display 52
11.3.1 Display of messages/malfunctions 52
11.3.2 Visualizing the error list 52
11.3.3 Troubleshooting list 52
12 Service 53
13 Associated documents 55
14 Disposal 57
15 Spare parts 59
16 Annex 61
Index 61
List of figures 62

1 EC Declaration of Conformity

CE

Der Hersteller / The manufacturer

UNION Instruments GmbH
Zeppelinstrasse 42
76185 Karlsruhe

erklärt hiermit, dass folgend bezeichnete Produkte / hereby declares, that following named products:

Produktbezeichnung: Product name	Gasanalysator Gas Analyzer	Gerätegruppe: device group:	INCA1050 INCA1050

konform sind mit den Anforderungen, die in der EG – Richtlinie festgelegt sind / are compliant with the requirements as defined in the EC directive:

2006/42/EG 2009/42/EC	Maschinenrichtlinie Machinery directive
2004/108/EG 2004/108/EC	Elektromagnetische Verträglichkeit Electromagnetic compatibility

Angewandte harmonisierte Normen / Used harmonized standards:

DIN EN 61010-1:2011	Sicherheitsbestimmungen für elektrische Mess-, Steuer-, Regel- und Laborgeräte - Teil 1: Allgemeine Anforderungen; Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements
DIN EN ISO 12100:2011	Sicherheit von Maschinen- Allgemeine Gestaltungsleitsätze - Risikobeurteilung und Risikominderung Safety of machinery - General principles for design - Risk assessment and risk reduction
DIN EN 61326-1:2006	Elektrische Mess-, Steuer-, Regel- und Laborgeräte - EMV-Anforderungen - Teil 1: Allgemeine Anforderungen Electrical equipment for measurement, control and laboratory use - EMC requirements -- Part 1: General requirements

Name des Dokumentationsbevollmächtigten: Name delegate of documentation	Schlichter
Adresse des Dokumentationsbevollmächtigten: address delegate of documentation	siehe Adresse des Herstellers see address of manufacturer

Bei einer nicht autorisierten Änderung des Gerätes verliert diese Erklärung ihre Gültigkeit. / Any unauthorized modification of the device results in invalidity of this declaration.

2 Safety notes

2.1 Warnings and symbols

In the operating instructions, the following names and symbols are used to denote particularly important information:

	DANGER
	Immediate danger that can lead to serious physical injury or death.

	WARNING
	Potentially hazardous situations that can lead to serious injury or death.

	ATTENTION
	Potentially hazardous situations that can lead to minor physical injury. This can also be used for property damage.

	**NOTE**
	Denotes information that can make it easier to handle the process gas analyser or help prevent property damage.

2.2 Fundamentals of proper use

The process gas analyser serves to detect natural gas with a heating value of 8 – 11.5 kWh/m^3 [1)].

Area of application are for example the control and optimisation of processes in gas motor control or processes in glass-making industry.

In the case of toxic and explosive gases, observe the safety instructions at the setup site.

The process gas analyser is permanently installed and is intended for use inside closed rooms in a sufficient quantity of clean ambient air. Do not expose to direct sunlight.

Any other use is considered improper. The manufacturer is not liable for the resulting damage; the associated risk is borne by the installer, fitter, operator or user. Only certified professionals may alter the process gas analyser (mechanical, electrical or pneumatic modifications).



WARNING

Proper use includes following these operating instructions! In addition to the following safety notes, always follow the safety instructions of the linked system components.

Additional equipment or accessories that are not installed, delivered or manufactured by UNION Instruments GmbH require the approval of UNION Instruments GmbH as the manufacturer! Otherwise the guarantee expires.

2.3 Personnel and qualifications

Gas connections and work on the electrical equipment of the process gas analyser may only be performed by a professional while observing safety regulations.

[1)] Basis is the standardised state of gas, standard temperature 0°C/273.15 K, standard pressure 1,013.25 mbar according to DVGW Worksheet G685, DIN1343:1990

2.4 Safety notes

2.4.1 General notes on safety



WARNING

The process gas analyser may only be operated when all of the protective equipment is available and operable.

Additional safety notes:

☞ ***before the corresponding chapters!***

2.4.2 Indications of special hazards





WARNING

- **After installation, all gas conducting parts must be checked for leaks according to national regulations.**
- **All repairs that require the protective covering to be opened may only be performed by trained personnel.**
- **Sensors can contain sulphuric acid. This may leak in case of improper use. Protect from contact with skin and eyes.**

2.5 Regular operator training



NOTE

Country-specific regulations about regular user training by the operator must be observed, in particular training on handling gases and electrical equipment.

2.6 Workplace hazard analysis



NOTE

Depending on the national regulations, the operator must perform a workplace hazard analysis, if applicable independent of the CE mark for this process gas analyser.

Technical developments can give rise to deviations from these operating instructions. If you require additional information or if particular problems arise that are not fully addressed in this manual, please contact the following address:

UNION Instruments GmbH

Zeppelinstrasse 42

76185 Karlsruhe

Germany

☎ +49 (0)721-680381-0
🖷 +49 (0)721-680381-33
✉ support@union-instruments.com
💻 http://www.union-instruments.com

3 Safety equipment

3.1 Safety equipment

3.1.1 Door - not electronically queried

- Door of the process gas analyser.

3.1.2 Ventilator monitoring

In cases of failure of the housing ventilator, the process gas analyser is switched currentless. The power supply unit and fan monitor control still have power.

3.2 Markings and warnings

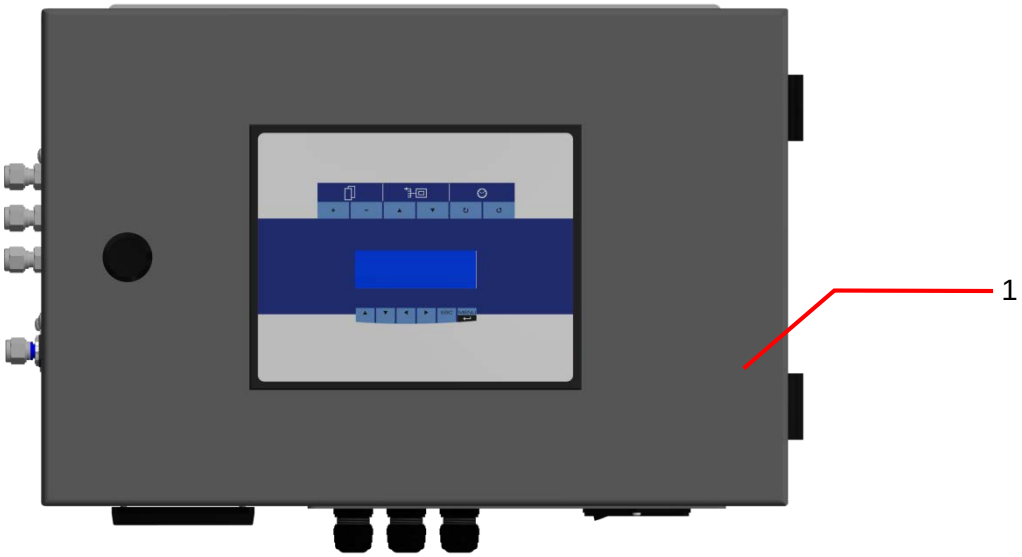


Fig. 3.1: Markings and warnings

1. Type plate

4 Connections

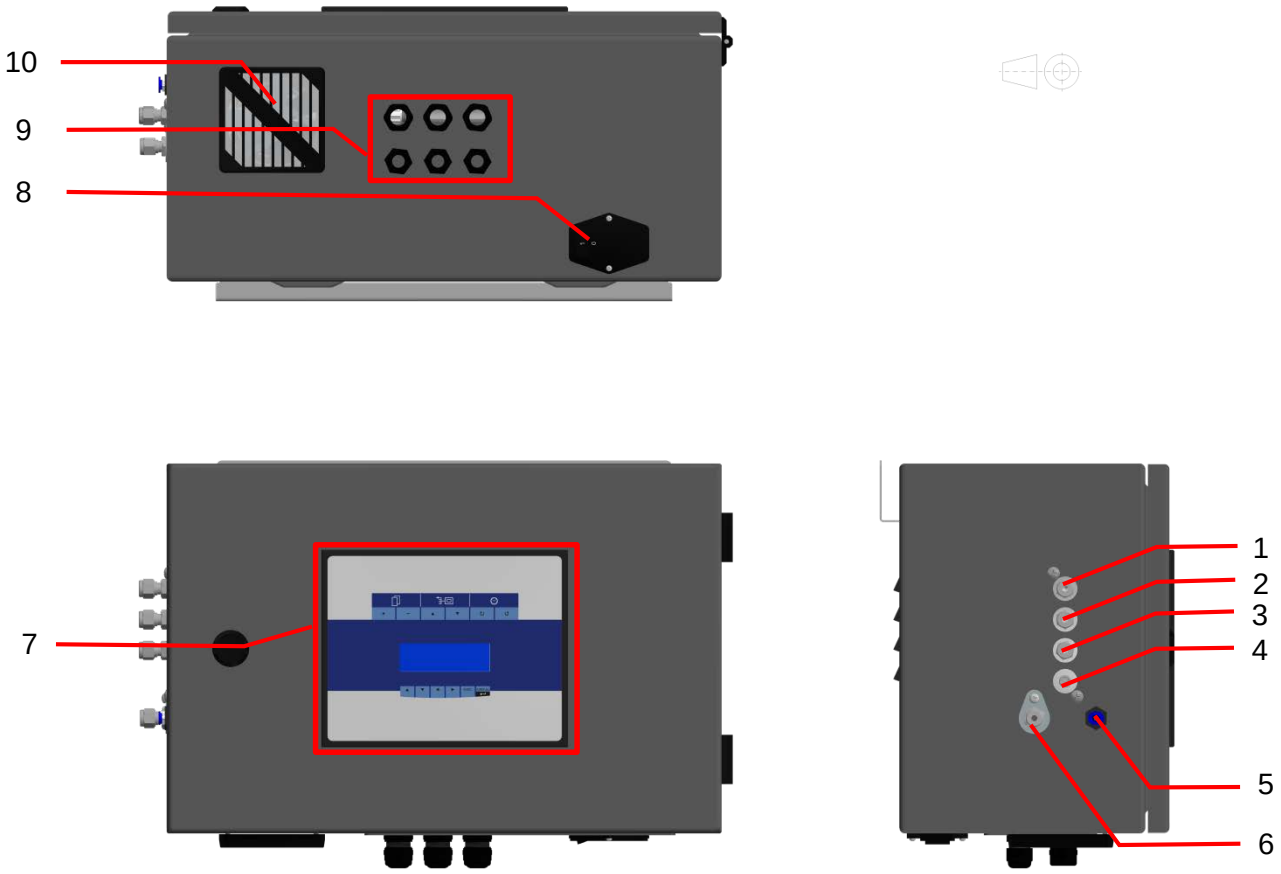


Fig. 4.1: Product description

1. Input process gas
2. Input calibration gas 2
3. Input calibration gas 1
4. not assigned, locked
5. Input purge gas
6. Output process gas
7. Operating element
8. Power supply, on/off switch, fuse holder
9. Power supply cable bushing
10. Fan

NOTE

The gas connection, position 4, is used for device-internal purposes.

Do not open or use this connection.

4.1 Accessories



WARNING

Risk of injury/defective!

Use of non-approved accessories can cause defects and be hazardous. This will render the warranty null and void. The operator is then liable for any damage that may occur.

Only use original accessories or accessories that have been approved by Union Instruments GmbH.

5 Transport, setup and acceptance

NOTE

Generally, the process gas analyser is started up by UNION Instruments GmbH or service technicians.

If it is not transported, set up and started up by Union Instruments GmbH (for example in-house transportation and resale), coordinate the appropriate procedure with UNION Instruments GmbH *(☞ Chapter 12 Service)*.

5.1 Transport

⚠ WARNING





Possible injury from the process gas analyser tipping over or falling from pallets and load carrying equipment.

- **At least two persons are required to unpack and transport the analyser (for weight see technical data)!**
- **Check the load bearing capacity and condition of the slinging equipment and carefully attach it.**
- **Never stand under suspended loads.**

NOTE

In case of damage during transport from improper handling, the carrier should perform a damage report within seven days (railway, post office, freight forwarder).

5.2 Ambient conditions



⚠ ATTENTION

Ambient conditions during storage and set up.

Observe the stipulated ambient conditions. Contact Union Instruments GmbH if the process gas analyser has been stored for more than three months or needs to be operated or stored under ambient conditions other than those specified.

5.2.1 Storage conditions

Freezing condensation water in the process gas analyser can cause defects. Protect the process gas analyser from frost during storage.

Ambient temperature:	-20 - 60°C
Humidity:	0 - 95% relative humidity
Ambient pressure:	700 - 1400 hPa (0.7 - 1.4 bar)

5.3 Installing and connecting

5.4 Setup site

The place of installation of the process gas analyser must meet the following requirements:

- Clean, dry room (except INCA5000/INCA6000 (OUTDOOR))
- No direct exposure to sun
- Protect from climate influences with a heater or air conditioning if necessary
- Insure a clean, sufficient amount of ambient air for undistorted measurements
- Ensure that the loadbearing capacity of the wall is sufficient



⚠ WARNING

Leaking process gas can pose a hazard and needs to be discharged by the operator into a safe environment.

5.4.1 Wall attachment

The process gas analyser is designed for wall-mounting. The wall brackets are permanently attached to the housing.

The wall on which the process gas analyser is to be installed needs to be sufficiently stable to bear its weight.
Mount the process gas analyser by the brackets.

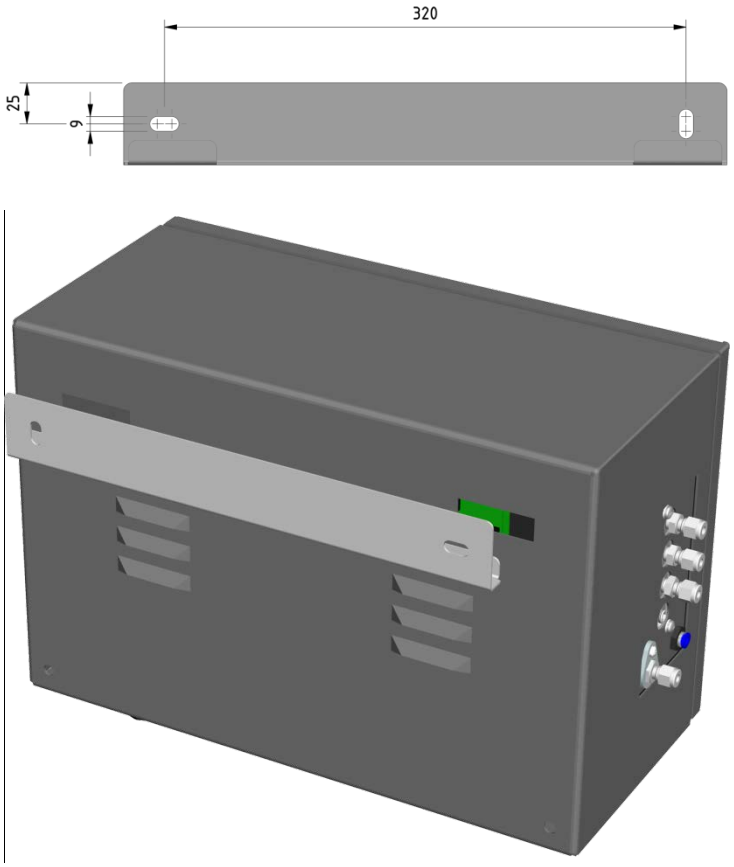


Fig. 5.1: Wall attachment

5.4.2 Process gas



NOTE

- **The connecting parts need to be clean and free of residue. Impurities can enter the process gas analyser and cause incorrect measurements and/or damage.**
- **The inlet pressure for the gas connections must not exceed the pressure specified on the instruction sticker on the process gas analyser.**
- **Each connection needs to be carefully checked for leaks. If there are any leaks, the system will draw air, and the measurements will be incorrect.**
- **Do not use sealing compound to seal the gas connections. Sealing compound can distort measurements. Use PTFE sealing tape.**
- **Only use suitable pipes.**
- **Use a separate line to drain off the condensate.**



⚠ ATTENTION

The process gas must be free of condensate and dust if the process gas analyser has no gas preparation system (or gas cooler).

5.4.3 Electrical connection



DANGER

Danger from electrical shock!

Only a trained electrician may modify the electrical equipment of the process gas analyser in accordance with the relevant guidelines.

When the process gas analyser has been opened, the parts identified by the adjacent symbol may still be live even when the master switch has been turned off. If necessary, disconnect the process gas analyser from the power mains.

5.4.4 Electrical interfaces



WARNING

Untrained personnel starting the process gas analyser may endanger people and equipment.

Only trained service technicians may start up the analyser.



NOTE

Only operate relay with functional extra low voltage.

Do not connect to the power supply.

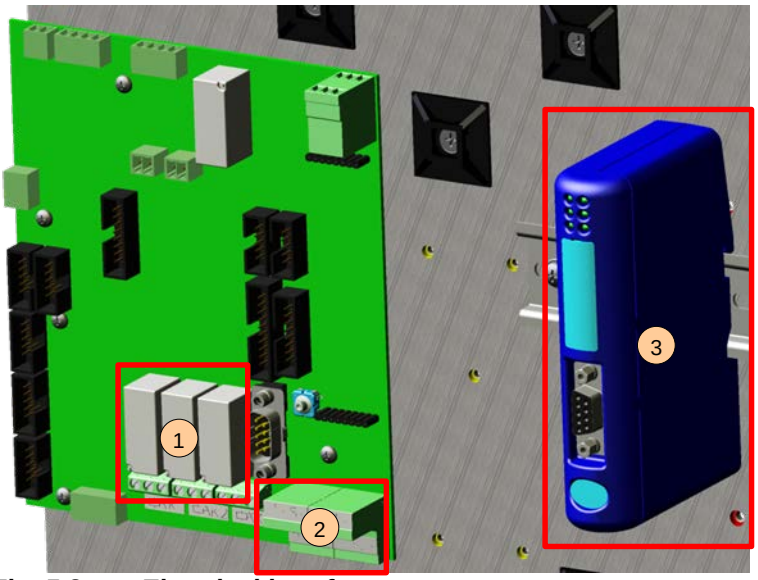


Fig. 5.2: Electrical interfaces

Item No.	Designation
1	Relay X10A☞ *Fig. 5.3* and *5.4*!
2	Analogue outputs X11A (optional) ☞ *5.5*
3	Profibus module X12 (optional)

Relay

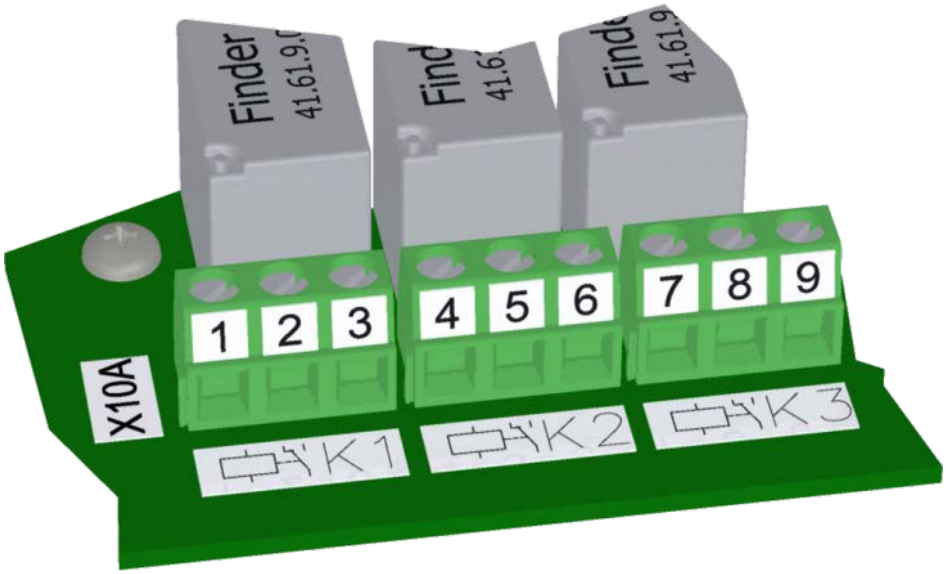


Fig. 5.3: Relay X10A, outputs: K1 – K3

Designation	Function
Relay K1	INCA operation
Relay K2	INCA failure (inverted)
Relay K3	OFF

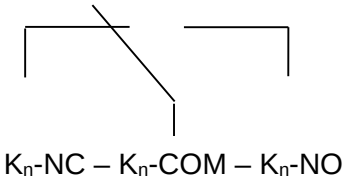


Fig. 5.4: Relay X10A terminal assignment

left - middle: normally closed
right - middle: normally open



NOTE

Only operate relay with functional extra low voltage.

Do not connect to the power supply.

Analogue outputs

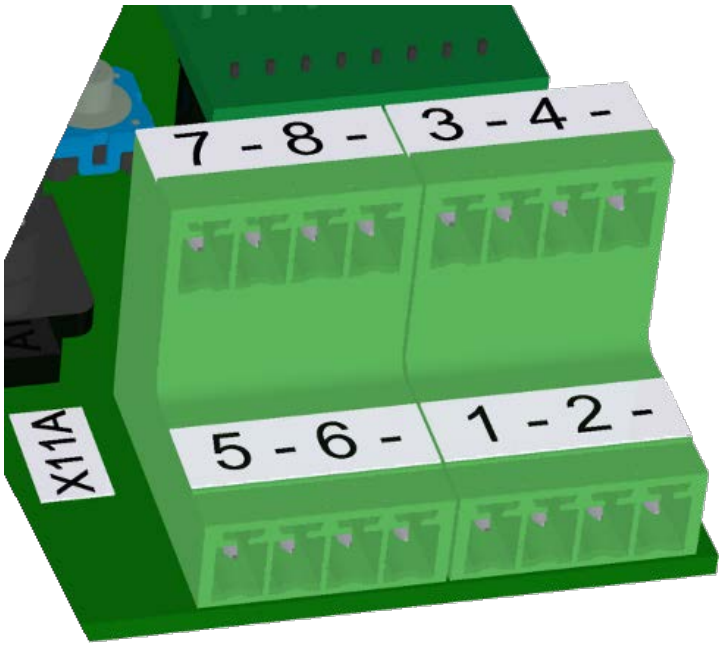


Fig. 5.5: Analogue output X11A, connections

Item No.	Function	Item No.	Function
1	Output 1 – signal/signal 4-20 mA	**5**	Output 5 – signal/signal 4-20 mA
–	1 GND	**–**	5 GND
2	Output 2 – signal/signal 4-20 mA	**6**	Output 6 – signal/signal 4-20 mA
–	2 GND	**–**	6 GND
3	Output 3 – signal/signal 4-20 mA	**7**	Output 7 – signal/signal 4-20 mA
–	3 GND	**–**	7 GND
4	Output 4 – signal/signal 4-20 mA	**8**	Output 8 – signal/signal 4-20 mA
–	4 GND	**–**	8 GND

With optional equipment with analogue outputs, assignment is by factory as follows:

Assignment of analog interface configurable with Software INCACtrl.

The load resistor is 500 ohm.

Remote Control Unit RCM

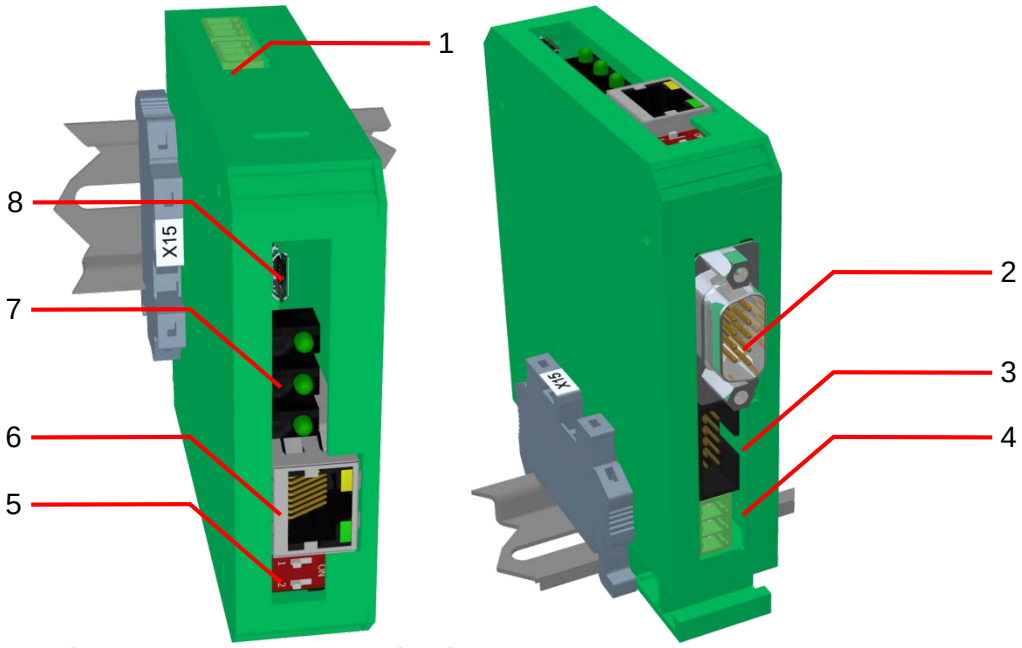


Fig. 5.6: Remote Control Unit RCM X15

Pos.-No.	Description
1	bus, connecting internal power supply
2	internal, RS232 connection for PCB-AddOn (Display) via null modem cable
3	connection Fieldbus coupler
4	bus, connecting internal power supply
5	DIP switches
6	Ethernet
7	status LED, LED 1- USB active, LED 2- Fieldbus active, LED 3 - Ethernet active (from top to bottom)
8	Micro-USB, local connection to PC, if used no connection via Ethernet/Fieldbus

Communication module for integration into Ethernet networks to communicate and operate the process gas analyser.

DHCP is enabled as factory setting, RCM received IP - address automatically from a DHCP server. Manual assignment of IP address with separate software (example: "DeviceInstaller", Lantronix).

Default Settings:

IP over DHCP	On
Port	10001
Protocol	TCP/IP
RS232	115200 bit/s, 8 data bit, 1 stop bit, no parity bit

MAC address of RCM, refer to label on RCM.

5.4.5 Operator safety precautions



WARNING

- **The operator needs to provide suitable safety equipment for the process gas analyser to reliably prevent individuals from being injured from gas leaks.**
- **Any leaking process gas needs to be diverted into a safe environment.**
- **Identify the exit point of the diverted gas with a warning.**
- **Danger of stumbling over improperly laid supply lines.**

Install the supply lines in a suitable manner.

5.5 Startup after setup



WARNING

Untrained personnel starting the process gas analyser may endanger people and equipment.

Only trained service technicians may start up the analyser.

5.6 Documentation



NOTE

UNION Instruments GmbH recommends keeping maintenance manual and documenting all jobs and tests.

6 Startup /switching on



⚠ ATTENTION

To establish operational readiness, including of the linked system components, according to the corresponding operating instructions.



NOTE

The following table includes abridged instructions for commissioning the system after a longer standstill.

To turn on the process gas analyser after a short downtime, a few steps can be omitted:
☞ *right column!*

Steps	Startup	Turning on
Check whether the ambient conditions (☞ *Technical Data chapter on page 5*!) meet the requirements.	X	X
Check that the process gas analyser has been fastened securely.	X	
Check that the device is suitable for the process gas.	X	
Check that the process gas is correct.	X	
Check that the gas connections are correct and tight.	X	X
Check the integrated filters (water/fine filter) for condensate, if necessary.	X	X
Check, if necessary, that the calibration gas is correct.	X	X
Establish/switch on the operator energy and media supply.	X	X
Check the voltage.	X	
Open shut-off valves.	X	X
Turn on the master switch.	X	X
Make sure the linked system components are ready to start.	X	X
If the process gas analyser was only switched off temporarily, production can be resumed.		



NOTE

For first stating or starting up after a long downtime, ensure the device configuration.

Checks by service technicians or according to the separate service instructions.

7 Description of the workplaces/operating elements

NOTE

This chapter only discusses the elements used by normal operators to operate the process gas analyser.

7.1 Workplaces

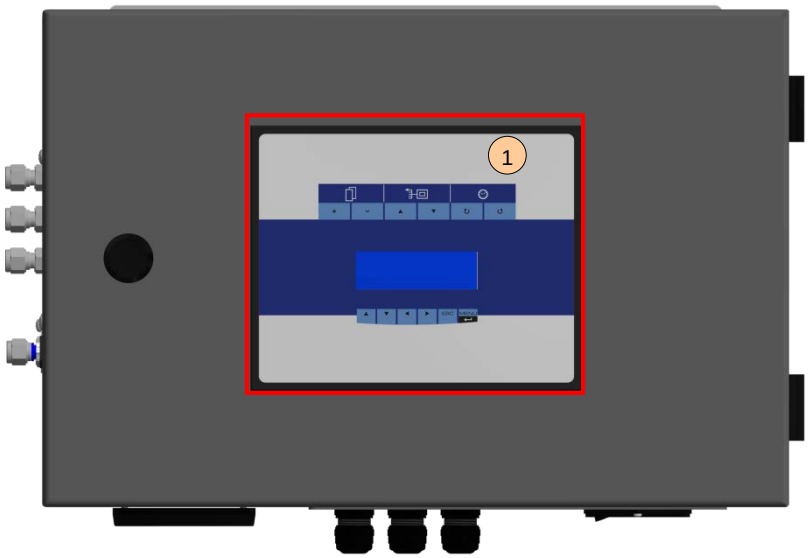


Fig. 7.1: Workplaces

Item No.	Designation	Function/Activity
1	Display with status LED	Display status.

Display status LED

The following states are displayed through those LEDs:

LED Operation	
Output state	**Description**
flashing	Device functionality OK (even Service might be pending)
flashing	Device functionality is affected by errors, Service message pending
flashing	Device stopped by fatal error, Error pending

Fig. 7.2: Status LED

8 Operation



WARNING

Danger of injury!

Only use the process gas analyser when all lines have been installed and checked for leaks according to national regulations.

8.1 Description of display

8.1.1 Using the membrane keypad

The software controls are operated using a membrane keypad. The displayed buttons can be selected by pressing the key. The menu structures are intentionally flat to enable quick access to functions.

⚠ ATTENTION

Damage to the membrane keypad!

The membrane keypad may be damaged if you use other objects to operate it apart from your fingers.

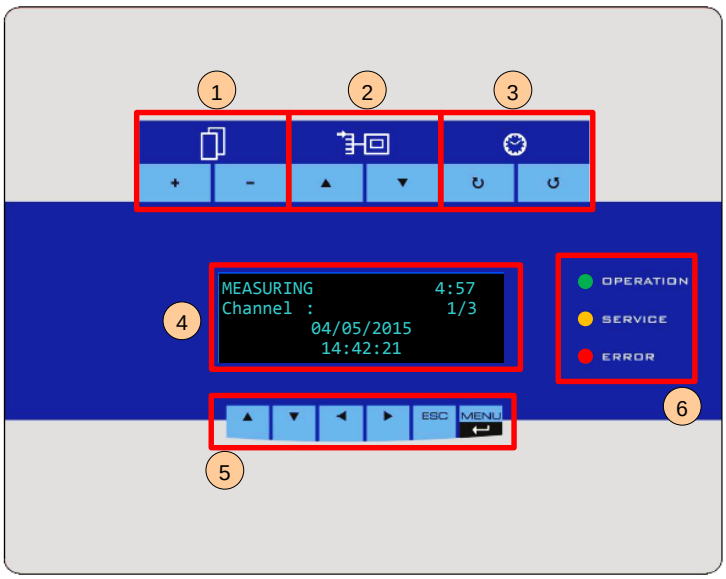


Fig. 8.1: Operating elements

Item No.	Designation	Function
1	Measurement display	Display the current sensor measurements.
2	Measuring channel display	Display the current channel measurements.
3	Saved measured values	Switch between the last 10 saved measured values.
4	Display	Display values, times and measurement results
5	Menu keys	Navigating the menu structure
6	Status LED	Display state of device

8.1.2 Display area

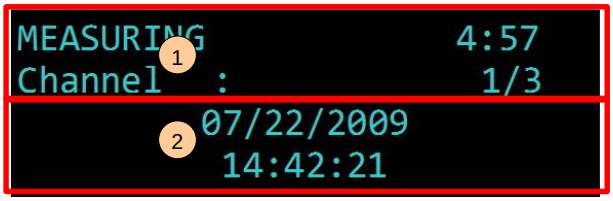


Fig. 8.2: Display area

Item No.	Designation	Function
1	Top display area	Display the status and channel information
2	Bottom display area	Switch between various measured values with the arrow keys (▼▲►◄).

8.2 Available displays



NOTE

The available displays and corresponding functions are described below. The navigation path to the displays is indicated by the menu and function keys in the chapter headings.

The control system is based on the structure shown below.

8.2.1 Menu structure



NOTE

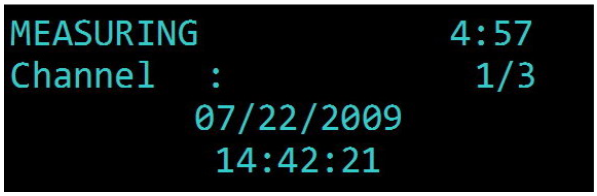
If some of the menu items (framed in red) are changed, this can subsequently influence the measurement results.

Main menu
- **Settings**
  - Language
  - Password
  - Output data
  - Screen change
- **Parameter**
  - ABC built-in
  - EC meas. Cycle[1)]
  - Purge time[1)]
- **Commands**
  - Start measurement
  - Stop measurement
  - Restart System
  - Clear messages
  - Calib. purge gas
  - Calib. gas 1
  - Calib. gas 2[1)]
  - Reset cal.-data
  - Test (gas 1)
  - Abort calib.
  - Check OK
- **System info**
  - Version firmware
- **System messages**

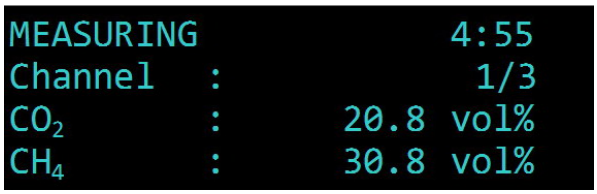
The menu structure refers to firmware version V1.08.

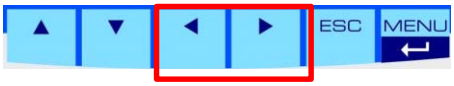
[1)] only available for certain device configurations

8.2.2 Navigate with the arrow keys left ◄ and right ►



- The display indicates that the measuring status is active.





- Switch between the measurements by pressing the left ◄ and right ► keys.



The asterisk (*) indicates that a saved value is being displayed. The values are updated in the display depending on the measuring status.

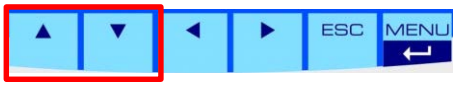
With continuous measurement, an asterisk is not displayed since the value is measured and updated continuously.

8.2.3 Navigation with arrow keys up ▲ and down ▼

NOTE

To navigate with the arrow keys up ▲ or down ▼, use the left ◄ and right ► arrow keys to select the display in which the date and time are shown.

```
MEASURING            4:57
Channel   :           1/3
        07/22/2009
         14:42:21
```



- Press the up ▲ and down ▼ keys to display other data.

```
MEASURING            4:53
Channel   :           1/3
Err       :       0 Errors
MSGS      :     7 Messages
```

- "Err" displays the number of saved errors.
- "MSGS" shows the number of saved messages.

```
MEASURING            4:50
Channel   :           1/3
pAir      :     1.8 mbars
pGas      :     0.3 mbars
```

- "pLuft" and "pGas" are the differential pressures measured for the individual gas pathways (air and process gas) in the process gas analyser.

```
MEASURING            4:45
Channel   :           1/3
T_IR      :      49.2  °C
TCool     :       5.3  °C
```

- "T_IR" is the current temperature of the infrared measuring unit.
- "TCool" is the current temperature of the gas cooler.

```
MEASURING            4:45
Channel   :           1/3
TCase     :      49.2  °C
Tout      :       5.3  °C
```

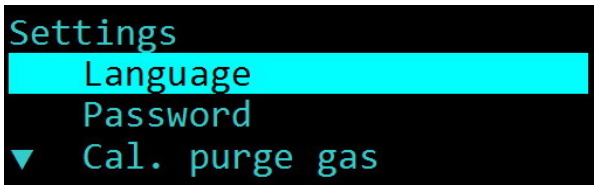
- "TCase" is the current temperature in the housing.
- "Tout" is the current ambient temperature.

8.2.4 Navigation with ESC and MENU



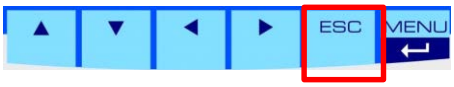


- With the MENU key to the main menu.



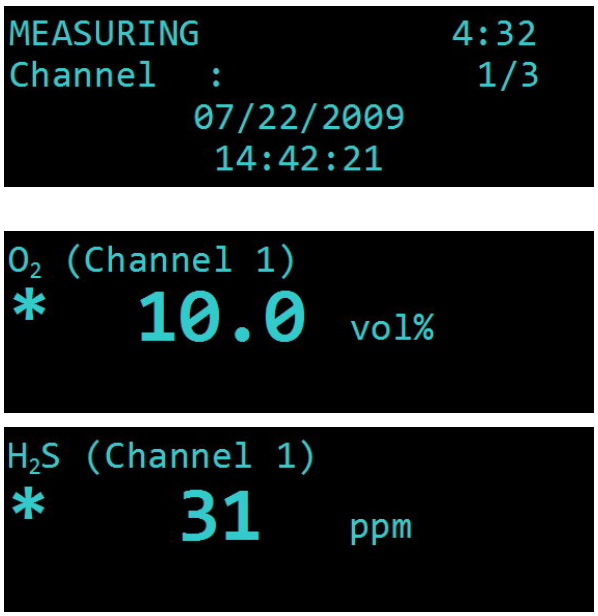


- Select the submenu with the up ▲ and down ▼ keys.
- Confirm the selection by pressing the MENU key.



- Press the ESC key in the menu to go one level higher.

8.2.5 Measurement display



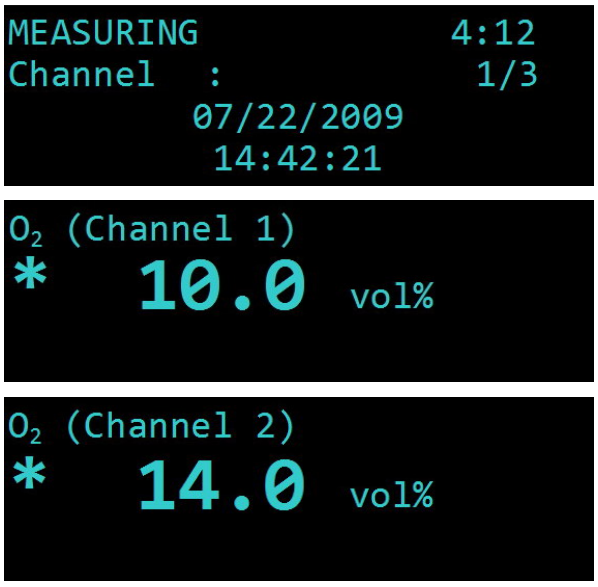


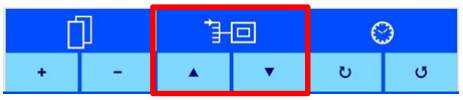
- Select the individual measurements with the plus **+** or minus **-** keys.

The asterisk (*) indicates that a saved value is being displayed. The values are updated in the display depending on the measuring status.

With continuous measurement, an asterisk is not displayed since the value is measured and updated continuously.

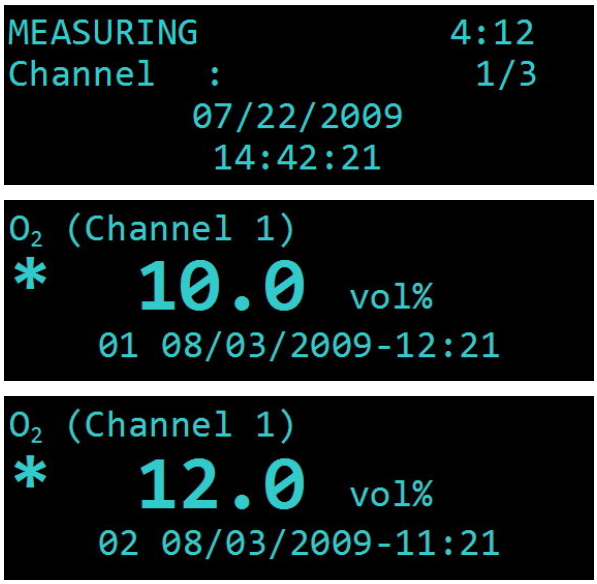
8.2.6 Measuring channel display





- Use the up ▲ or down ▼ keys to select the individual channels.

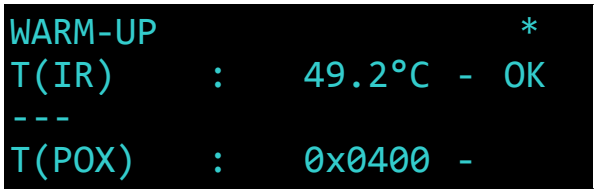
8.2.7 Saved measured values





- Press the forward ↻ or back ↺ key to step through the last saved measured values.
- The measured values are identified by the count/date/time.

8.2.8 Display in the warmup phase

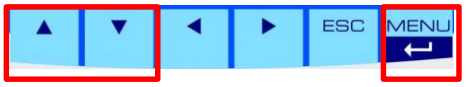


The figure shows the display during the warm-up phase. In the figure, the infrared electronics, T(IR), have reached operating temperature. Depending on the type of sensor, this is 49°C or 64°C. The Parox sensor, T(POX), is not ready. Once it reaches its operating temperature, the display shows T(POX)=0x0000 and OK.

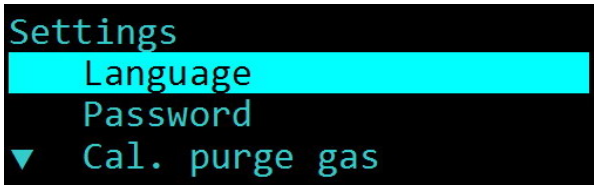
Devices with sensors that do not require a specific operating temperature start without a warm-up phase and start measuring immediately when switched on.

8.2.9 Select language





- Select the language with the ▼▲ keys.
- Confirm the selection by pressing the MENU key.





Available languages: German, English, Italian and Spanish



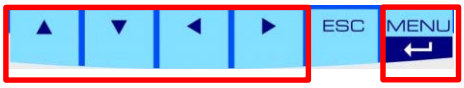
8.2.10 Password

⚠ ATTENTION

The password has a maximum of four characters.

If you forget the password, you cannot change the configuration.







- Enter the password using the▼▲►◄ keys.
- Confirm the entry by pressing the MENU key.



9 Decommissioning/switching off



⚠ ATTENTION

To decommission the process gas analyser and the linked system components according to their operating instructions.



NOTE

The following table contains the steps for decommissioning the analyser for a long period.

If you only wish to switch off the process gas analyser temporarily, a few steps can be omitted:
☞ ***Column Switch off!***

Steps	Turn off	Decommissioning
Disconnect the device from the process, close the line professionally.	X	X
Rinse the process gas analyser with ambient air. (Start calibration with purge gas)		X
Shut down the linked system components.	X	X
Turn of the master switch.	X	X
☞ If you only wish to switch off the process gas analyser temporarily, follow the procedure here to the end!		
If required, disconnect / switch off the operator's energy and media supply and the signal transmission professionally.		X
If advantageous, pack process gas analyser.		X

10 Maintenance

The measuring quality of the process gas analyser can only be ensured if the service intervals are maintained.

10.1 Preparations

The feed lines to linked system components can be closed for servicing purposes. Once operation has been resumed, they need to be reopened.



DANGER

Serious risk of injury from electricity.

- **Parts of the process gas analyser labelled with this symbol may still be live even when the main switch has been switched off. If necessary, disconnect the process gas analyser from the power mains.**
- **Turn off main switch, disconnect from power supply if necessary and secure against connecting/turning on again.**
- **Only a trained electrician may work on the electrical equipment of the process gas analyser.**









WARNING

Serious risk of injury from exiting gas.

- **Switch off the process gas analyser, and also linked system components if required, before carrying out maintenance work.**
- **The gas connections may only be established by trained personnel. Follow the applicable guidelines at the installation site.**

10.2 Maintenance work/Inspection

NOTE

The maintenance work must be carried out in accordance with the inspection and maintenance schedule! The type and extent of the wear depends on the individual application and operating conditions. All intervals specified are therefore for guidance only.

The display shows when the inspection intervals have been reached. Perform and document inspection, and confirm via the menu that the inspection has been carried out: MENU→COMMANDS→Check OK→ [Enter].

Inspection	Interval (recommended)	
Weekly inspection		
Purge gas inlet unobstructed (particularly in case of frost)	weekly	
Exhaust gas line unobstructed (particularly in case of frost)	weekly	
Quarterly inspection		
Calibrate device according to manufacturer's specifications, message in display “Service [Typ] ZERO”, “Service [Typ] SPAN”, “Service [Typ] MID”	every 3 months, latest annually or when required	
Half-yearly inspection		
Check integrated filter in the device	every 6 months	
Check compressed air supply[1)] (negative pressure during "drainage")	every 6 months	
Check lines for condensate (including all integrated filters)	every 6 months	
Check gas inlets and clean professionally if necessary	every 6 months	
Check fan	every 6 months	
Check ejector pump[1)]	every 6 months	
Check inlet filter (inlet ambient air, filter mat, ventilator)	every 6 months	
Check Peltier cooler[1)]	every 6 months	
Check fan of Peltier cooler[1)]	every 6 months	
Yearly inspection		
Check air and gas pump[1)] (by performing a purge gas calibration)	yearly	

[1)] if installed

Maintenance/Replacing components	Interval (recommended)	
Half-yearly service and after commissioning		
Check and, if necessary, update firmware version	every 6 months	
Save the current configuration with INCACtrl	every 6 months	
Annual service		
Replace integrated filters	every 12 months	
2-yearly service		
Replace pump hoses	every 24 months	
Replace flame arrester[1)]	every 24 months	
8-yearly service		
Replace integrated pressure reducer	every 8 years	
If necessary		
Replace gas-delivering pumps	if necessary	
Replace sensor, lifetime depends on sensor type, message in display “Service [Typ] age” or “Service [Typ] usage”	if necessary	

[1)] if installed

11 Troubleshooting



NOTE

A distinction is made between the following categories:

Possibility of the measured values:

Measured values that deviate from the anticipated range

☞ *last maintenance!*

☞ *maintenance manual!*

Malfunctions:

Faults during operating process

To eliminate: ☞ *Section 11.2, p.* 52*!*

11.1 Preparations

The feed lines to linked system components can be closed for servicing purposes. Once operation has been resumed, they need to be reopened.







⚠ WARNING

Serious risk of injury from electricity and exiting gas.

- **Switch off the process gas analyser, and also linked system components if required, before carrying out maintenance work.**
- **Turn off main switch, disconnect from power supply if necessary and secure against connecting/turning on again.**
- **Only a trained electrician may work on the electrical equipment of the process gas analyser.**
- **Parts of the process gas analyser labelled with this symbol may still be live even when the main switch has been switched off.**
- **If necessary, disconnect the process gas analyser from the power mains.**

11.2 Changing/replacing fuses

Fuses may only be exchanged by an electrician or service professional. Choose the type approved by Union.

11.3 Messages/malfunctions on the display

11.3.1 Display of messages/malfunctions

If errors occur during operation, the control system automatically switches to overview to display priority messages.

11.3.2 Visualizing the error list

NOTE

The following list contains errors and messages that are visually displayed.

Troubleshooting measures:

☞ ***Troubleshooting list!***

Measures required are assigned via column [☞ *no.*].

Error text	Error message	☞*No.*
0x30D	Minimum pump pressure not reached, Sensor EC, Pressure Air	1
0x30E	Minimum pump pressure not reached, Sensor EC, Pressure Gas	2
Additional	All additional	3

11.3.3 Troubleshooting list

Primary pressure too low
The following list contains causes of faults.

No.	Description
1	Inlet air filter for ambient air clogged (Fig. 4.1)
2	Process gas outlet blocked, for example frozen (Fig. 4.1) Process gas inlet closed (Fig. 4.1) - too much condensate in the line
3	Contact service ☞ *Chapter 12!*

12 Service



NOTE

If you have any questions UNION Instruments GmbH will be happy to assist.

In case of orders or technical questions, please have the customer number, telephone number for return calls, the type and number of the process gas analyser (see the type plate) and the required spare parts and parts list numbers to hand.

UNION Instruments GmbH - Service

Maria-Goeppert-Straße 22

23652 Lübeck

Germany

☎ +49 (0)721-680381-30
✉ support@union-instruments.com
💻 http://www.union-instruments.com

13 Associated documents

- Declaration of conformity for the flame arrester[1]
- Operating and service log
- Service documentation, optional

[1)] if installed

14 Disposal

Following decommissioning, the analyser can be returned to Union Instruments GmbH.

We suggest to have the process gas analyser disposed of by UNION Instruments GmbH.



WARNING

Risk of injury from electricity and gas in the process gas analyser.

☒ Before disassembly, disconnect process gas analyser from the energy supplies.

☒ If necessary, purge the gases.



NOTE

Observe the national regulations on disposing machines and operating materials!

Sort the parts according to group and recycle properly.

15 Spare parts



WARNING

The use of non-approved spare parts (such as parts from other manufacturers, parts with different specifications, replicas of used and wear parts) can cause defects and be hazardous. This will render the warranty null and void. The operator is liable for incurring damage!

When replacing standard components, only use identical components by the original manufacturer. If components are discontinued or components by different manufacturers are used, request the manufacturer approval by UNION Instruments GmbH.

Spare parts can be ordered from UNION Instruments GmbH:
☞ *Chapter 12 Service*.

☒ Write down type and number of the process gas analyser *(☞ Type plate)*.

☒ If necessary, find and make a note of the order number *(☞ Applicable documents).*

☒ Order part.

16 Annex

Index

A
Accessories 18
Ambient conditions 20
C
Connecting the process gas analyser 20
Connections....17
Contact
  Service....53
  Union Instruments GmbH....14
D
Decommissioning 45, 57
Display....35
Displays....35
Disposal....57
E
EC Declaration of Conformity....9
Electrical connection....23
Electrical interfaces....23
Erecting the process gas analyser 20
Error elimination....51
F
fuse
  fuse holder 17
I
Inspection 48
L
load resistor 26
M
Maintenance 47
Maintenance work....48
Measurement display....40
Measuring channel display 40
N
Navigation with arrow keys....38
Navigation with ESC and MENU 39
O
Operating elements 31
Operation 33
  Membrane keypad 34
  with arrow keys 37, 38
  with ESC and MENU....39
P
Password 43
Personnel and qualifications....12
Process gas 22
Proper use....12
S
Safety equipment 15
Safety notes 11, 13
Saved measured values 41
Select language....42
Service 53
Setup site 20
Spare parts....59
Startup 29
Symbols 11
T
Transport....19
Troubleshooting....51
W
Wall attachment....21
Warm-up phase....41
Warnings....11
Workplaces 31

List of figures

Fig. 1.1: Type plate (exemplary) 4
Fig. 3.1: Markings and warnings 16
Fig. 4.1: Product description 17
Fig. 5.1: Wall attachment 21
Fig. 5.2: Electrical interfaces 24
Fig. 5.3: Relay X10A, outputs: K1 – K3 25
Fig. 5.4: Relay X10A terminal assignment 25
Fig. 5.5: Analogue output X11A, connections 26
Fig. 5.6: Remote Control Unit RCM X15 27
Fig. 7.1: Workplaces 31
Fig. 7.2: Status LED 32
Fig. 8.1: Operating elements 34
Fig. 8.2: Display area 35