

EuroFID3010 Inline UEG

Total Hydrocarbon Analysis

Installation, Operation, Service

SICK
Sensor Intelligence.



Document information

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Glossary

AC	Alternating current
ATEX	Atmosphères Explosifs: Abbreviation for European standards regarding safety in potentially explosive atmospheres.
CSA	Canadian Standards Association (www.csa.ca)
DC	Direct current
Span gas	Concentration of the test gas at the upper measuring range value
FID	Flame ionization detector
Firmware	Internal device software, typically in erasable memory chips (EEPROMs)
IP XY	Ingress protection; protection type of a device in accordance with IEC/DIN EN 60529. The digit X designates the level of protection against contact and foreign bodies, Y against moisture.
Adjustment	Refer to "calibration."
Calibration	The measured value is adjusted to the (known) value of a test gas.
LED	Light emitting diode (small indicator lamp)
PC	Personal computer
PTFE	Polytetrafluorethylene (Teflon)
Reference gas	Refer to "span gas."
LEL	Lower explosive limit (minimum concentration of a combustible gas in a mixture or vapor above which the gas mixture can be ignited)
SELV	Safety extra low voltage is a small electrical voltage that provides particular protection against electrical shock compared to circuits of higher voltage thanks to its small magnitude and insulation. Devices operating on SELV that do not generate higher voltages themselves are categorized as Class III appliances in accordance with DIN EN 61140 (VDE 0140-1).

Warning Symbols



Hazard (general)



Hazard from electrical voltage



Hazard in potentially explosive atmospheres



Hazard from explosive substances/mixtures



Hazard from poisonous substances



Hazards through high temperature or hot surfaces

Information Symbols



Information about usage in potentially explosive atmospheres



Important technical information about this device



Important information on electrical or electronic functions



Supplementary information



Link to information found elsewhere



Nice to know

Warning Levels / Signal Words

WARNING

Risk or hazardous situation which could result in severe injury or death.

CAUTION

Hazard or unsafe practice which *could* result in personal injury or property damage.

NOTICE

Hazard which could result in property damage.

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EuroFID3010 Inline UEG

1 Important information

Main hazards
Main operating information
Intended use
Personal responsibility

1.1 Main hazards

Important safety instructions in abbreviated form

- ▶ Always observe the full safety instructions (see cross references).

Health risks



CAUTION: Risk of hydrogen explosion

The EuroFID3010 Inline UEG requires H₂ to operate.

- ▶ Always observe instructions to prevent explosions → p. 30, §3.4.4.



CAUTION: Health risk from exhaust gas

- ▶ Vent exhaust gases in a safe manner. → p. 31, §3.5

1.1.1 Safety instructions



NOTICE: Observe the reaction time of the FID during a hydrogen supply failure

During a hydrogen supply failure, the flame of the FID keeps burning for some time until it goes out completely.

It is possible that the measured value of the FID does not correspond to the true value during this time.

The reaction time can be up to 50 seconds depending on the version of the equipment.

- ▶ In order to monitor for a hydrogen supply failure, monitor the inlet pressure of the fuel gas using a pressure controller, which emits an electric signal at a certain minimum pressure (e.g. < 3 bar).



NOTICE: Responsibility for the safety of a system

The person setting the system up is responsible for the safety of the system in which the device is integrated.

The EUROFID3010 Inline UEG fulfills the minimum requirements of DIN EN 50271:2011 for detecting and measuring combustible gases and vapors.

Additional requirements for compliance with a safety integrity level (SIL1) in the EN 61508 series are not fulfilled.

- ▶ The temperature of the heated sensor block must be 25 °C below the classification temperature (TC) and may not be set above 195 °C.
- ▶ The cutout temperature of the overtemperature shutoff must be checked annually in accordance with the operating instructions.
- ▶ Malfunctions and alarms are to be reported (as a group message as necessary) visually and acoustically to a continuously staffed location.
- ▶ To ensure reliable alerting, the “Measured value valid” and “Service/Maintenance switch” contacts should also always be monitored along with the “ALARM” relay contact.
- ▶ The signal “Service/maintenance switch” must be forwarded to a higher-ranking level (e.g. control center).
- ▶ Execute the contact of the service/maintenance switch as an N/C contact (closed current principle).
- ▶ Following a restart, a gas calibration must be carried out at the zero or end point.
- ▶ After replacing the test gas cylinder, enter the new test gas concentration in the “Calibration Gas Value” menu.
- ▶ For safety-relevant measurement, only the approved response factors may be used.
- ▶ When monitoring the lower explosive limit (LEL), the operating unit with the V2 terminal module must be used.

- ▶ The exhaust gas from the exhaust outlet may not be returned to the process.
- ▶ The analog measured value output may not be used for safety-relevant monitoring.
- ▶ A failure of operating voltage is to be treated as an alarm.
- ▶ Before using the device in a gas detection system, make sure the response times are short enough to ensure that the warning triggered by the device occurs quickly enough to avoid unsafe situations. It may be necessary to set the alarm thresholds considerably lower than the safety-relevant threshold.
- ▶ When the device is used as intended to warn against a potentially explosive atmosphere, use the currently recognized local value for the LEL.
- ▶ The trigger delay for the alarm thresholds must be set to 0.
- ▶ Transmission errors between the analysis component and the control unit can cause delays up to 2 seconds before a malfunction message is triggered.

1.2 Product identification

Product name:	EuroFID3010 Inline UEG
Housing configurations:	Inline
Manufacturer:	SICK AG Erwin-Sick-Str. 1 · 79183 Waldkirch · Germany

Type plates are located on:

- Analyzer
- Terminal box
- Operating unit

1.2.1 Firmware

This handbook is valid as of the following firmware versions:


- Operating unit: 6.005 and later
- Analyzer unit: V2.05 and later

1.3 Intended use

1.3.1 Purpose of the device

- The EuroFID3010 Inline UEG gas analyzer is a gas detector for continuous measurement and monitoring of LEL concentrations of combustible gases and vapors in processes in accordance with DIN EN 60079-29-1.

1.3.2 Installation location

	<p>WARNING: Risk of explosion in potentially explosive atmospheres</p> <p>▶ Do not use the EuroFID3010 Inline UEG in areas subject to explosion hazards.</p>
---	---

- EuroFID3010 Inline UEG is intended for indoor operation.
- The analyzer unit can be used outdoors if a weatherproof cover (option) has been installed.
- This product was designed for specific applications in large-scale fixed installations according to Article 2 (4) e, RoHS 2011/65/EU and accordingly may be used only in such installations. The product is neither suited nor authorized for use outside these installations; SICK can therefore not accept any warranty or liability whatsoever for such use.

1.4

Responsibility of the user

These operating instructions have been submitted to and certified by DEKRA EXAM and must be carefully observed.

When used as a gas detector, make sure that the operating conditions stated in the operating instructions are complied with, especially when it comes to ambient conditions, vibration and safety instructions.

Authorized personnel

The EuroFID3010 Inline UEG may only be installed, connected, started up, and maintained by authorized personnel.

Authorized personnel refers to those with sufficient skills, training and experience in the following areas, enabling them to assess whether the device is in a safe state or not and recognize and avoid hazards:

- Relevant occupational health and safety regulations, accident prevention regulations, guidelines and generally accepted engineering standards (e.g. norms, directives).
- Regulations at the operator's facility.
- Professional installation and maintenance of the hydrogen supply.

Proper use

- ▶ Use the device only as described in these Operating Instructions. The manufacturer bears no responsibility for any other use.
- ▶ Observe the information on the type plates and comply with the corresponding specifications.
- ▶ Perform the stipulated maintenance work.
- ▶ Do not remove, add or change any components in or on the device unless such changes are officially allowed and specified by the manufacturer. Otherwise:
 - The device could pose a hazard
 - Any warranty by the manufacturer becomes void.
 - The approvals according to the suitability test for the device are rendered invalid.
- ▶ The safety of the system in which the EUROFID3010 Inline UEG is integrated is the responsibility of the user.
The system user must undertake sufficient measures to prevent hydrogen from collecting in closed or unventilated areas (e.g. by installing a ventilation system, a hydrogen detector, or similar).

Special local conditions

- ▶ In addition to these Operating Instructions, follow all local laws, technical rules and company-internal operating directives applicable wherever the device is installed.

Safeguarding of documents

- ▶ Keep these Operating Instructions at hand for reference at all times.
- ▶ Carefully read the Operating Instructions
- ▶ Safeguard them for later use.
- ▶ Be sure to pass them on to new owners.

1.5

Additional documents

- The EuroFID3010 Inline UEG is supplied with a test log.

EuroFID3010 Inline UEG

2 Product description

Functional principle

Characteristics

2.1

Characteristics

The EuroFID3010 Inline UEG gas analyzer is a gas detector for continuous measurement and monitoring of LEL concentrations of combustible gases and vapors in processes in accordance with DIN EN 60079-29-1.

- Measuring range: 0-100% LEL.

A relay for threshold monitoring may be activated depending on the measured gas concentration and the alarm threshold settings. (→ p. 57, § 7.3).



There is also an extractive version of the EuroFID3010 gas analyzer, observe the special additional EuroFID3010 Extractive UEG Operating Instructions.

2.1.1

Response time

The response time for activating the alarm contact is approx. 2-3 seconds, depending on the sample gas flow.

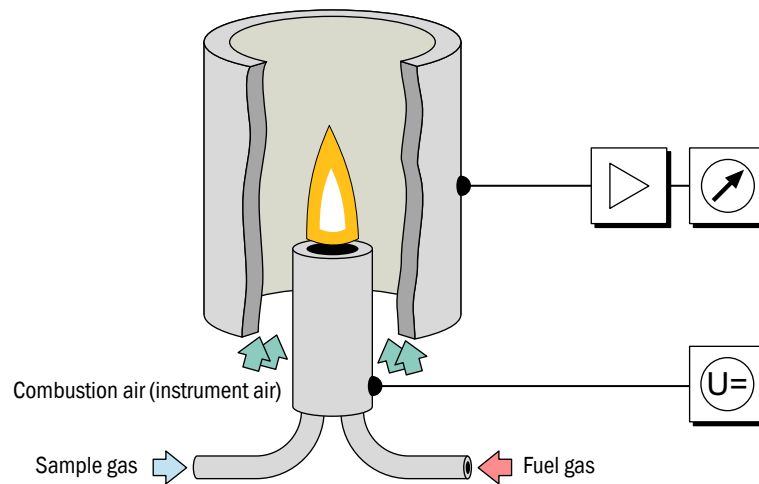
**WARNING: Delayed reaction when soiled**

The response time is longer if the sample gas filter is soiled.

- ▶ Check the sample gas filter regularly (→ p. 132, § 14.3.1.)

2.2 Measuring principle

Fig. 1 Measuring principle



The EuroFID3010 Inline UEG uses a flame ionization detector (FID) to measure hydrocarbons. A hydrogen flame burns in an electric field in the FID, fed by fuel gas and combustion air. The sample gas is routed into this flame. The hydrocarbons contained in the sample gas are split, and the resulting CH fragments are ionized. A stream of ions forms in the electric field and this electrical current is measured.

2.3 Device overview

Device modules

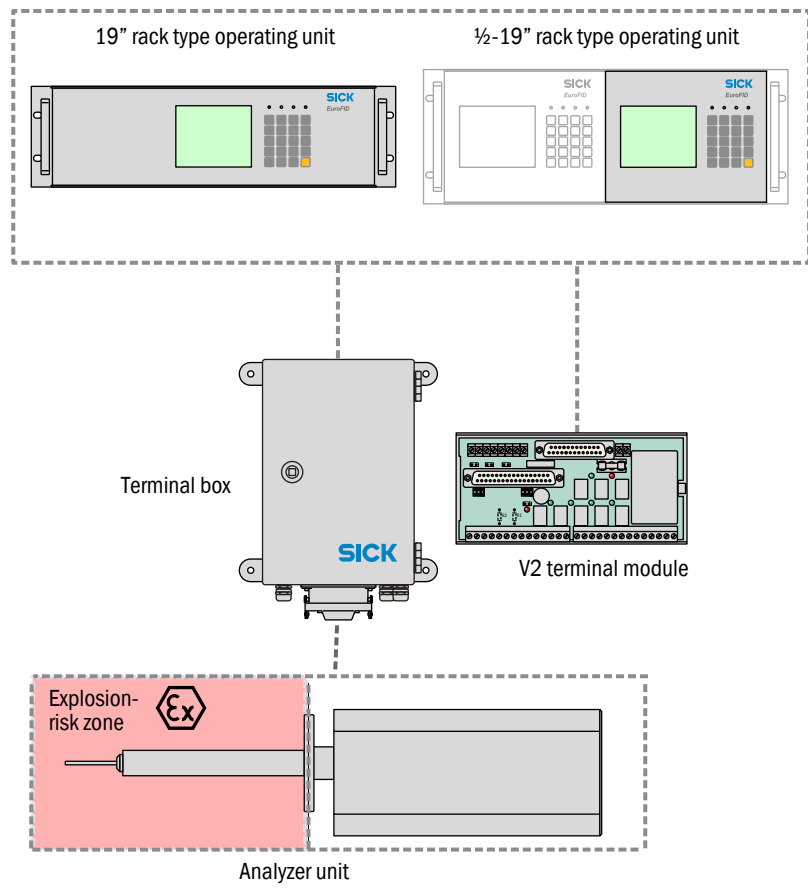
The EuroFID3010 Inline UEG consists of 4 device modules:

- *Analyzer unit:*
 - Analyzer (electronics, pneumatics, FID)
 - Sampling probe
- *Operating unit:* Contains the electronic control unit, display and controls
- *Terminal box:* Interface between the operating unit and the analyzer
Provides the supply voltage for detector heating and the analyzer electronics
- *V2 terminal module:* Module with analog and digital inputs and outputs



Description of the device modules → p. 21, §2.4

Fig. 2 EuroFID3010 Inline UEG device modules (overview)



2.4 **Device modules**

2.4.1 **Analyzer unit**

The flange, sampling probe and analyzer are a single unit.

The analyzer unit is mounted with the flange directly in the process.

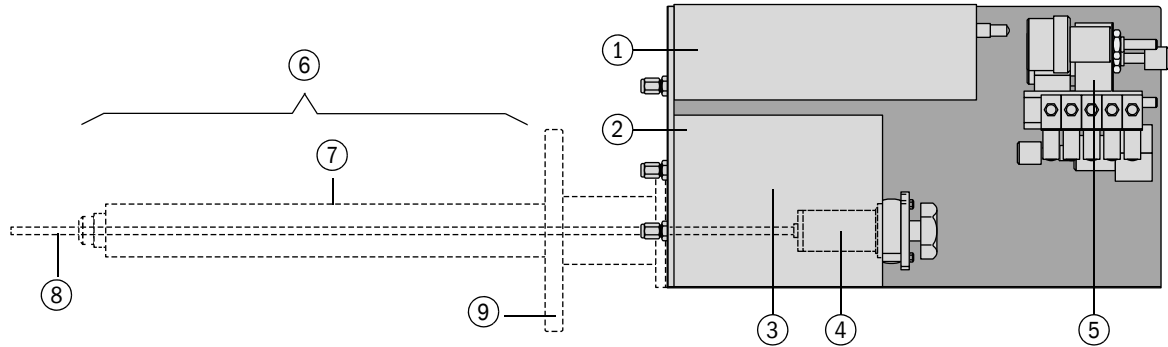
The outer housing protects the measuring system.

Optional: fan.

Optional: weatherproof cover.

Fig. 3

Analyzer unit



1	Electronics
2	Sensor block (heated)
3	Ejector pump
4	Sample gas filter
5	Pneumatics (pressure regulator, flow controller, solenoid valve)
6	Sampling probe
7	Thermal probe
8	Probe tube
9	Flange

2.4.1.1 **Sample gas filter**

- The sample gas filter filters particles from the sample gas.
- Soiling of the filter is monitored.
If the filter is soiled, the error message “Service requirement” is displayed.
Filter change: → p. 134, § 14.5

2.4.2 Operating unit

Types

- 19" type – for installation in 19" racks (3 RU) (→ p. 50, §6.2)
- ½-19" type – for installation in 19" racks (4 RU) (→ p. 50, §6.3)

Elements

- Operating elements
 - Display for measurements
 - Keypad
 - LEDs (indicator lights)
- V2 terminal module connection (→ p. 53, §7)
- AC power supply (→ p. 51, §6.4)
- *Optional*: Electronic card for the "flow barrier" option.

2.4.3 Terminal box

- Voltage supply for the analyzer
- Connection for the housing fan
- Connection for the solenoid valve, flow barrier

2.4.4 V2 terminal module

- Analog outputs
 - Measured value
 - Reference value
- Digital outputs
 - Alarm
 - Status
- Digital inputs
 - Calibration control
 - Maintenance block
 - Malfunction, gas supply

EuroFID3010 Inline UEG

3 Project planning

Included in delivery
Overview of installation
Operating materials
Gas supply
Exhaust gas venting

3.1 **Included in delivery**

- 1 analyzer unit – with 3-m connection cable to the terminal box
- 1 operating unit
- 1 terminal box with 6-m connection cable to the operating unit
- 1 AC power supply cord, 3 m long – with plug to connect to the terminal box
- 4 flange screws + 1 flange gasket
- V2 terminal module
- 5-m cable to connect the operating unit to the V2 terminal module
- Declaration of clearance
- 1 test log
- 1 set of Operating Instructions

Available accessories (optional)

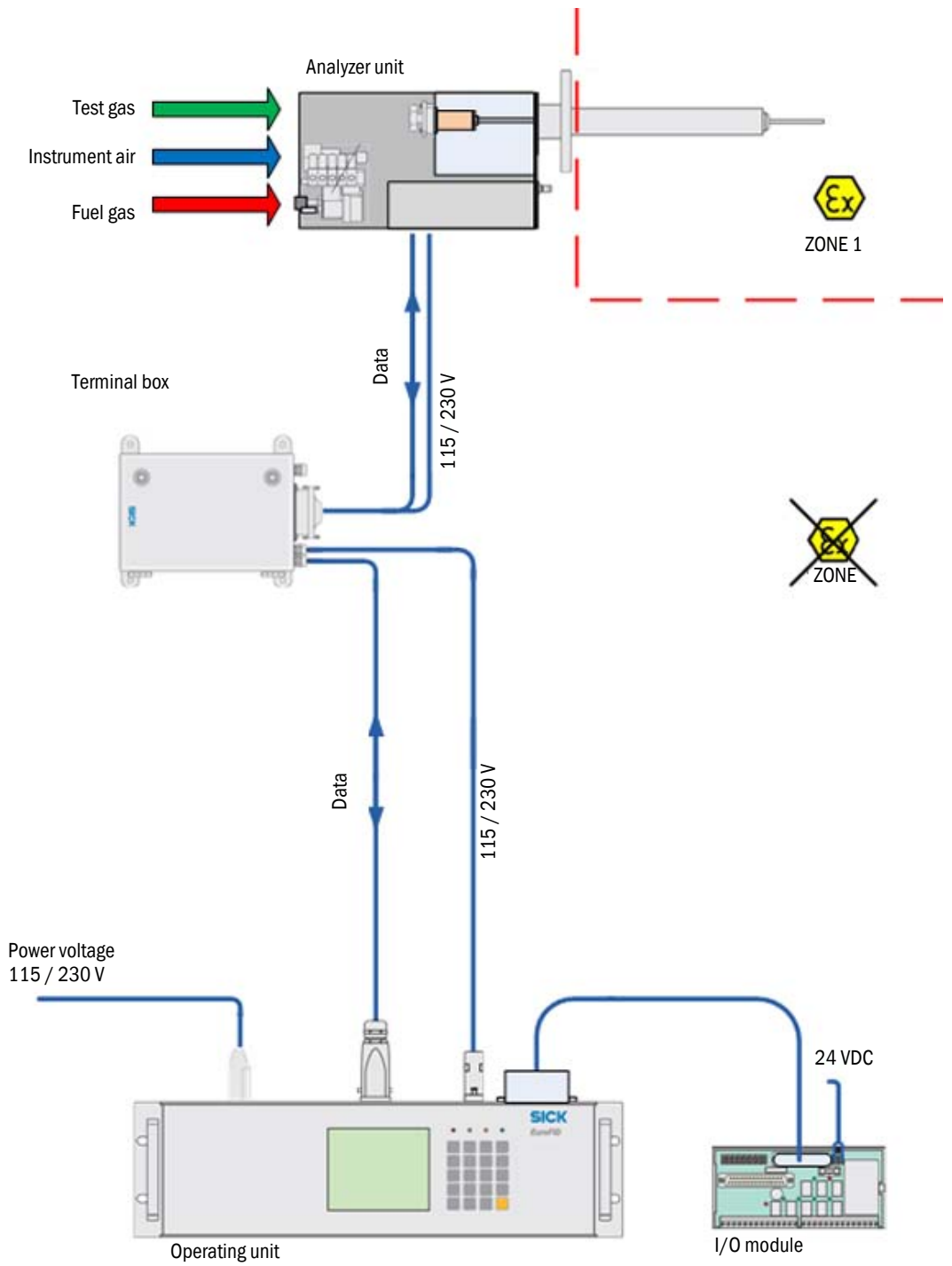
- Mounting flange
- Weatherproof cover
- Shut-off fitting (for gas supply)
- Solenoid valve (for the “flow barrier” option)

3.2 **Information about project planning and installation**

- EN 60079-29-2: Explosive Atmospheres - Part 29-2: Gas detectors - Selection, installation, use and maintenance of detectors for flammable gases and oxygen
- Pamphlet T 023 (BGI 518) “Gaswarneinrichtungen für den Explosionsschutz - Einsatz und Betrieb” (Gas warning systems to protect against explosion) from the Employers' Liability Insurance Association of the German Chemical Industry must be observed.

3.3 Overview of installation work

Fig. 4 Overview of installation



Subject to change without notice

3.3.1 Required resources (overview)

Required resource	Notes, requirements	Information
Instrument air	- Continuous supply of technical compressed air to the analyzer unit	→ p. 29, §3.4.3
	- Free of hydrocarbons	→ p. 166, §16.8.1
Fuel gas	- Continuous supply to the analyzer unit	→ p. 30, §3.4.4
Leakage detection system [1]	- To warn about explosion risk in the event of H ₂ leakage	→ p. 30, §3.4.4
Pressure reducer	- For instrument air	→ p. 29, §3.4.3
Pressure monitor [1]	- For fuel gas	→ p. 30, §3.4.4
Shut-off valves [1]	- Test gas	
Test gas	- Only during calibration	→ p. 112, §12.4.2
Exhaust gas line	- Outlet	→ p. 31, §3.5
Voltage supply	- AC power connection at the operating unit	→ p. 51, §6.4
	- Terminal module	→ p. 63, §7.6

[1] Recommended

3.3.2 Mechanical installations (overview)

The following system components must be installed:

Component	Installation site, requirements	Detailed information
Supply line for instrument air	- Suitable pressure reducer - Gas line to the analyzer unit ^[1] - Oil-free installation	→ p. 29, §3.4.3
Compressed gas cylinder(s) for fuel gas	- At a suitable location that meets the safety requirements - Suitable pressure reducer - Gas line to the analyzer unit ^[1] - Leakage detection system ^[2]	→ p. 30, §3.4.4
Compressed gas cylinder(s) for test gas	- At a suitable location that meets the safety requirements - Suitable pressure reducer - Gas line to the analyzer unit ^[1]	→ p. 30, §3.4.4
Analyzer unit	- In a mounting flange	→ p. 34, §4.2
Shut-off fitting	- Near the analyzer unit ^[3]	→ p. 39, §4.2.4
Solenoid valve ^[4]	- On the analyzer unit	
Terminal box	- Near the ^[5] analyzer unit	→ p. 43, §5
Operating unit	- Near the ^[6] terminal box or the analyzer unit	→ p. 49, §6
V2 terminal module	- Near the operating unit ^[7]	-
Electrical connections	- Analyzer unit (→ terminal box) → analyzer unit	→ p. 33, §4
	- Signal connections as required	→ p. 52, §6.5

[1] High-purity copper or stainless steel wiring

[2] (Recommended.)

[3] Pre-assembled shut-off fitting available as an accessory.

[4] Only for devices with the "flow barrier" option.

[5] Standard length of the connection cable: 3 m

[6] Standard length of the connection cable: 6 m (max. 500 m).

[7] Standard length of the connection cable: 5 m

3.3.3

AC power connection (overview)

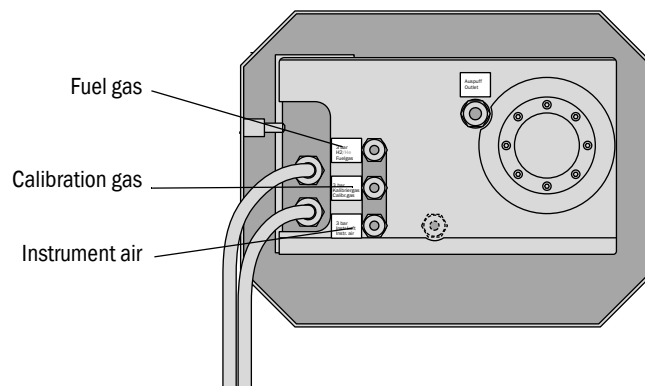
- AC power for the analyzer is supplied via the operating unit (→ p. 51, §6.4).
- Recommended: Install a separate, external all-pole-disconnecting AC power switch and fuses near the operating unit (max. power input of the EuroFID3010 Inline UEG → Technical Data) (→ p. 51, §6.4.1).



The terminal box receives AC voltage from the operating unit and in turn supplies the analyzer unit with operating voltage.

3.4 Supply of operational gases

Fig. 5 Gas connections



The analysis component requires 3 gases to operate:

- Fuel gas
- Calibration gas
- Instrument air

The gas lines must be able to be shut off for deinstallation.

- ▶ Include shut-off valves in the operating gas lines (→ p. 170, §16.11.3)

3.4.1 Screw fittings for the gas connections

- *Standard:* Clamping ring screw connections for tubes with a 6-mm outside diameter, brand name "Swagelok."
- When the screw connections are removed, inside threads are available:
 - All gas connections: inside threads G1/8"
- Connections for the supply and test gases: G1/8 inside thread
- Male screw joints: metal with G1/8 thread (DIN/ISO228/1) and O-rings/seals rings.

3.4.2

General information on the gas supply**NOTICE:**

The user is responsible for ensuring that the gas supply is leak-tight.

- ▶ Check the leak tightness of the gas lines after installation.
- ▶ Leak detection spray, sensor for combustible gases.

**NOTICE:**

Contaminated operating gases can falsify the measured values and damage the analyzer unit.

- ▶ Make sure that the gas lines are clean:
 - Free of particles (dust, shavings)
 - Free of hydrocarbons (grease, oil, solvents).

**NOTICE: Observe the reaction time of the FID during a hydrogen supply failure**

During a hydrogen supply failure, the flame of the FID keeps burning for some time until it goes out completely.

It is possible that the measured value of the FID does not correspond to the true value during this time.

The reaction time can be up to 50 seconds depending on the version of the equipment.

- ▶ In order to monitor for a hydrogen supply failure, monitor the inlet pressure of the fuel gas using a pressure controller, which emits an electric signal at a certain minimum pressure (e.g. < 3 bar).

3.4.3

Connecting instrument air

The EuroFID3010 Inline UEG requires hydrocarbon-free instrument air to operate (Specifications → p. 166, §16.8.1).

Instrument air is used for the following purposes:

- As propellant air for the ejector pump
- Sample gas dilution
- As combustion air
- As control air
- As zero gas for calibration
- ▶ Install a continuous supply of instrument air at the gas connection labeled “Instr.air.”

3.4.4 Connecting fuel gas

- ▶ Install a continuous supply of fuel gas at the gas connection labeled “Fuel gas.”



WARNING: Risk of explosion if fuel gas line leaks.

The fuel gas is H₂.

A leak in the fuel gas line may lead to an explosion.

- ▶ Implement safety precautions to prevent explosion.
 - Install a volume flow limiter in the fuel gas supply line.
 - Install a leak detector on the fuel gas supply line to emit a signal when H₂ is discharged.

- ▶ Monitor the cylinder pressure of the fuel gas with a pressure monitor which emits an electrical signal below a certain minimum pressure (e.g. < 3 bar).

Connect the signal from the pressure monitor to the digital input labeled “Fault Gas Supply” (→ p. 60, § 7.4).

3.4.5 Connecting the calibration gas (“span gas”)

- ▶ Install a continuous supply of calibration gas to the gas connection labeled “Calibr.gas.”
- ▶ Recommendation: Monitor the cylinder pressure of the calibration gas with a pressure monitor which emits an electric signal at a certain minimum pressure (e.g. < 10 bar).

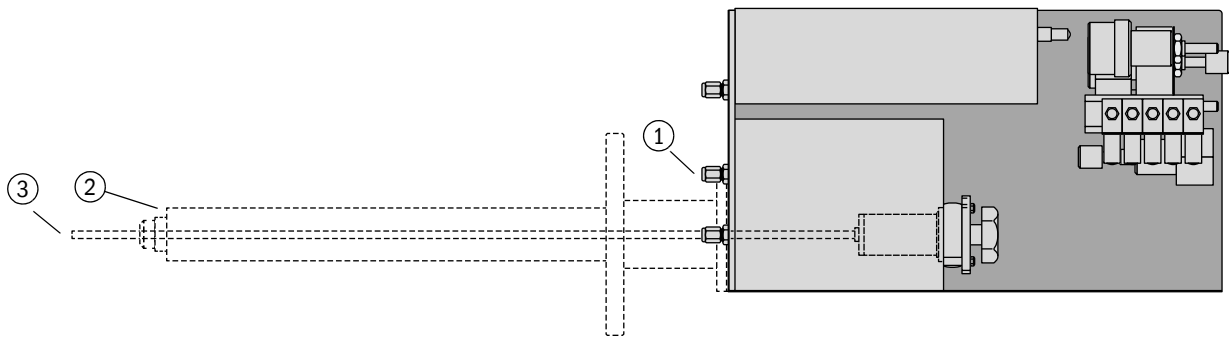
Connect the signal from the pressure monitor to the digital input labeled “Fault Gas Supply” (→ p. 60, § 7.4).

3.4.6 Information on connecting a cylinder pressure monitor

A pressure monitor must be connected to terminals X20.13+X20.14 of the V2 terminal module. When two pressure monitors are used, their contacts must be connected in series and can only be processed as a composite signal.

3.5 Exhaust gas lines

Fig. 6 Exhaust gas connections



1	Gas outlet "Outlet"
2	Gas outlet "Bypass"
3	Gas inlet (probe tube)

3.5.1 Connecting the "Outlet" gas outlet

The exhaust gas from the combustion chamber exits at "Outlet".

Important: The exhaust gas contains water vapor (condensation).

- ▶ Use corrosion-resistant tube material for the exhaust gas line (e.g. stainless steel or Teflon tubes).
- ▶ Inside diameter: 4 mm.
- ▶ Max. length: 3 m.
- ▶ Install the exhaust gas lines at a continuous downward angle so that condensed liquid can reliably drain away.
- ▶ Route the exhaust gas line to a collection point:
 - Atmospheric pressure
 - No pronounced pressure fluctuations.



WARNING: Risk of explosion

The exhaust gas from the "outlet"

- ▶ may not be returned to the process;
- ▶ must be drained off to a non-potentially explosive atmosphere in a safe manner.



NOTICE:

Condensate is generated in the exhaust gas line.

- ▶ Arrange the exhaust lines so that they cannot become obstructed by condensing liquid.
- ▶ Protect exhaust gas lines against freezing.



CAUTION: Contaminants in the condensate

Condensate from the exhaust gas contains substances from the sample gas. These substances may be chemically corrosive and/or must be disposed of separately.



- ▶ *If necessary:* Collect the condensate from the exhaust line and dispose of properly.

**NOTICE:**

Backpressure and pressure fluctuations at the exhaust gas connection

- Can affect the measured values
- Can prevent ignition of the FID flame.

► *If the EuroFID3010 Inline UEG is installed in a ventilated or air-conditioned enclosed area and the ventilation/air conditioning system in this area can generate overpressure or pressure fluctuations: Do not allow the exhaust gas line to discharge into this area.*

3.5.2

Gas outlet “Bypass”

Excess gas from the ejector pump (a mixture of instrument air and sample gas) exits at the “Bypass”

and is returned to the process via the thermal probe.

3.6

Sample gas supply

For sample gas requirements, refer to Technical data (→ p. 167, § 16.9)

Sample gas supply → p. 38, § 4.2.3

EuroFID3010 Inline UEG

4 Installing the analyzer unit

Mechanical installation

Gas connections

Electrical connections

4.1

Preparing for Installation**WARNING: Risk of fire when measuring combustible gases**

Feeding ignitable gases or gas mixtures is *not* allowed.

No special requirements exist when measuring combustible gases when the sample gas concentration does not exceed 25% of the lower explosion limit (LEL).

Meet the following requirements when exceeding the 25% LEL limit:

- ▶ Check the leak tightness of the hydrogen feed line to the equipment at regular intervals.
- ▶ Observe the correct pressure for the hydrogen feed.

- Compare the information on the type plate with the operating conditions.
- Check ambient temperature (refer to “Technical data”).
- Make sure that the classification temperature is below the ignition temperature of the combustible gases.
- Perform work on the EuroFID3010 Inline UEG in a non-explosive area only.

4.2

Installation**CAUTION: Risk of injury through incorrect lifting and carrying the equipment**

Injuries can occur due to the weight and projecting enclosure parts when the equipment tips over or drops. Observe the following information to avoid such accidents:

- ▶ Do not use protruding parts on the enclosure to carry the equipment (apart from the wall fixture or carrying grips).
- ▶ *Never* lift the equipment using the open equipment door.
- ▶ Consider the equipment weight before lifting.
- ▶ Observe the regulations for protective clothing (e.g., safety shoes, non-slip gloves)
- ▶ Grip underneath the equipment when possible to carry it safely.
- ▶ Use a hoist or transport equipment as an option.
- ▶ Use the help of a second person when necessary.
- ▶ Secure the equipment during transport.
- ▶ Before transporting, ensure obstacles that could cause falls or collisions are cleared away.

**CAUTION: Accident risk through inadequate fastening of the device**

- ▶ Consider the device weight specifications when planning the mounting supports.
- ▶ Check the load capacity/condition of the wall/rack on/in which the device is to be installed.

- The installation location must be free of oscillations and vibrations.

**NOTICE: Absence of vibration**

In the frequency range from 10-150 Hz, vibratory stress may not exceed 0.2 g (= 1.96 m/s²).

- The ambient air must be free of dust and other impurities that could corrode materials in the device.

- A high-temperature mounting flange is available for applications with process temperatures above 300 °C.



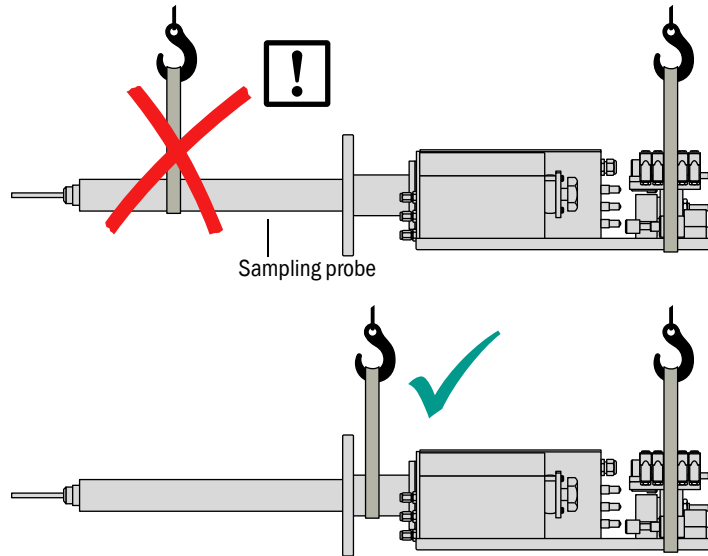
NOTICE:

The sampling probe is equipped with a glass vacuum tube, which is fragile.

- ▶ Make sure no force is applied to the sampling probe when handling the analyzer unit.
- ▶ Lift the analyzer unit by the housing only (→ Fig. 7).

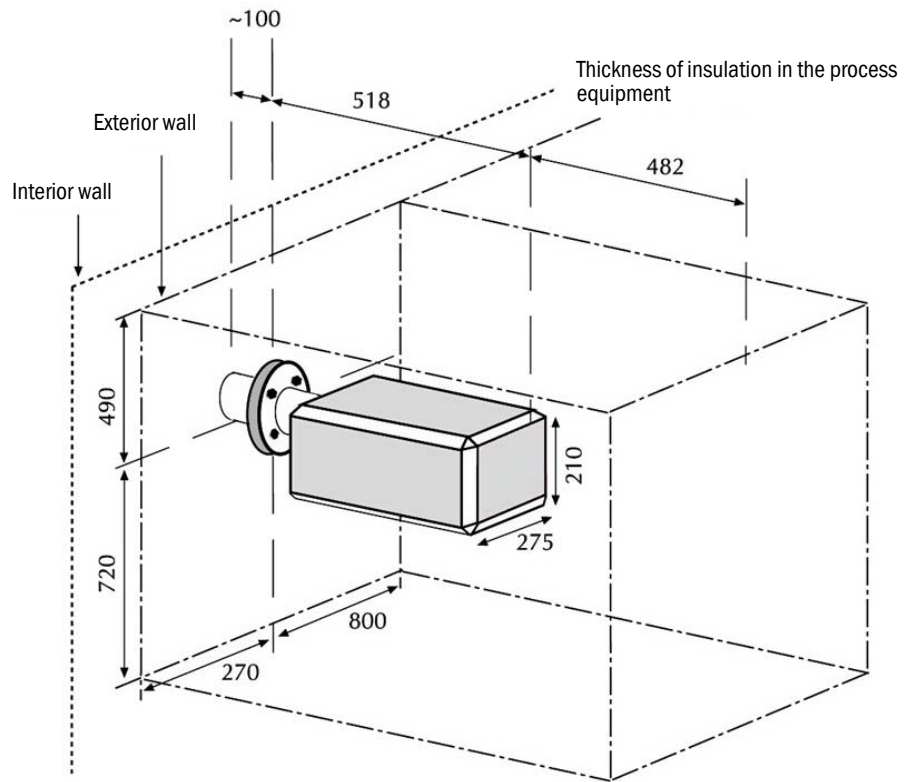
Fig. 7

Lifting points



4.2.1 Clearance for the analyzer unit

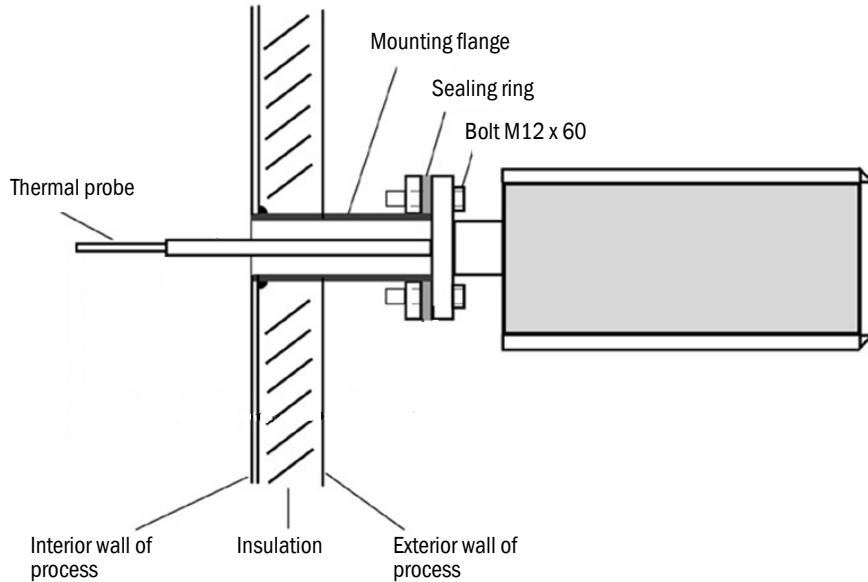
Fig. 8 Clearance for the analyzer unit



4.2.2 Preparing to install the analyzer unit

The analyzer unit is mounted at the process wall according to the following diagram.

Fig. 9 Installation overview

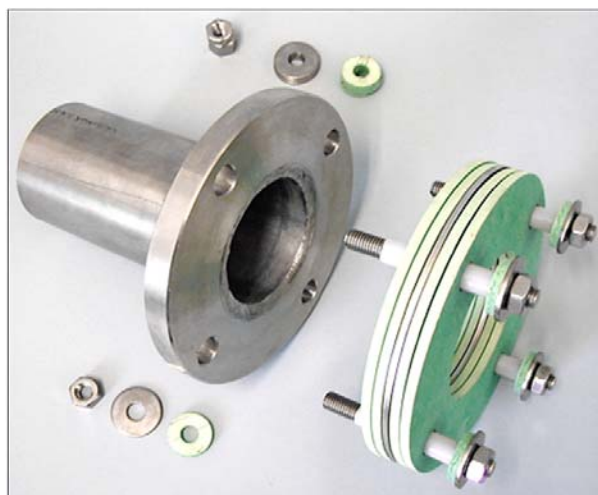


- A mounting flange is required to attach the analyzer unit.
- Permissible angle of the analyzer unit: $\pm 35^\circ$ to the horizontal.
The user is responsible for installing the flange.
- Weight of the analyzer unit: 25 kg.
Supporting struts may need to be added to ensure the mechanical stability of the analyzer unit.



Dimensions of the sampling probe → p. 158, Fig. 33

Fig. 10 Mounting flange heat decoupling unit



4.2.3 Installing the analyzer unit on the flange

**WARNING: Hazard from process gases**

For processes with overpressure, hot or toxic gases may escape when the sampling point is opened.

- ▶ Undertake suitable safety measures.

**NOTICE:**

- ▶ 2 persons should install the analyzer unit on the flange.

- The probe tube must freely protrude into the process gas stream.

**WARNING: Incorrect measured values due to improper installation**

If the gas inlet is too short, the EuroFID3010 Inline UEG draws in the exhaust gas, which dilutes the sample gas as a result.

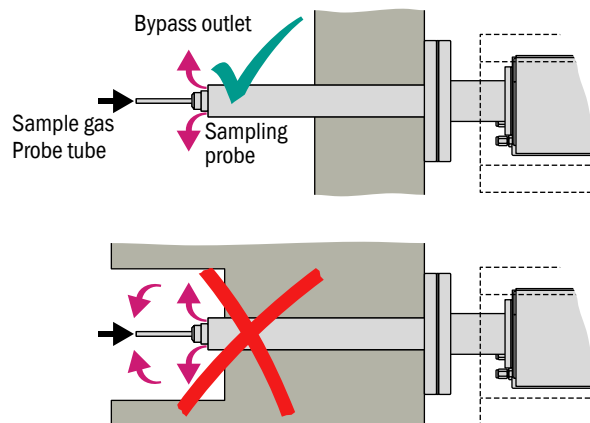
- ▶ Do not shorten the probe tube.

The bypass exhaust gas stream emerges from the thermal probe of the sampling probe.

- ▶ Do not install any components so close to the sampling probe that the bypass exhaust gas stream could be drawn in again by the probe tube.

Fig. 11

Exhaust gas exit

**Attachment**

- 1 Position a flange seal between the mounting flange and the flange of the analyzer unit.
 - ▶ *If the analyzer unit is used for hot processes (> 300 °C):* Use the heat insulation flange instead of the flange seal (→ p. 169, Fig. 39).
- 2 Carefully insert the sampling probe into the flange tube.
- 3 Connect the flange with the supplied screw fittings.

4.2.4

Gas connections



WARNING: Risk of explosion if gas connections are mixed up

- Observe the labels on the gas inlets.



Recommendation: To be able to stop the gas supply to the device manually,

- ▶ install a shut-off valve in the gas feed.

The shut-off valve is available as an option (→ p. 170, § 16.11.3).

Gas connection	Gas	Installation work
Instr. air Instr. air	Instrument air	<ul style="list-style-type: none"> ▶ Observe the information on instrument air (→ p. 29, § 3.4.3). ▶ Connect the instrument air supply to the “Instr.air” gas connection. <p><i>On devices with the “flow barrier” option:</i></p> <ul style="list-style-type: none"> ▶ Also connect the instrument air supply to a gas connection of the solenoid valve. ▶ Connect the other gas connection of the solenoid valve to the “flow barrier” gas connection.
Fuel gas Fuel gas	Fuel gas	<ul style="list-style-type: none"> ▶ Observe the information on fuel gas (→ p. 30, § 3.4.4). ▶ Connect the fuel gas supply to the “Fuel gas” gas connection.
Calibration gas Calibr. gas	Span gas	<ul style="list-style-type: none"> ▶ Supply suitable span gas. ▶ Observe the information on span gas supply (→ p. 30, § 3.4.5). ▶ Connect the span gas supply to the “Calibr. gas” gas connection.
Outlet	Exhaust gas	<ul style="list-style-type: none"> ▶ Connect an exhaust gas line to the “Outlet” connection. Suitable material: Corrosion-resistant hose with an inside diameter of 6 mm. ▶ Observe the information on installing the exhaust gas connections (→ p. 31, § 3.5).

4.3 Electrical connections

4.3.1 Electrical compliance

4.3.1.1 Electrical safety through disconnecter switches properly installed



WARNING: Endangerment of electrical safety during installation and maintenance work when the power supply is not switched off

An electrical accident can occur during installation and maintenance work when the power supply to the device and/or lines is not switched off using a disconnecter switch/circuit breaker.

- ▶ Ensure that the power supply of the device can be switched off in accordance with DIN EN 61010 using a disconnecter switch/circuit breaker.
- ▶ Make sure the disconnecter switch is easily accessible.
- ▶ An additional disconnecting device is mandatory when the disconnecter switch is difficult to access or cannot be accessed when connecting the equipment after installation.
- ▶ After completion of the work or for test purposes, the power supply may only be activated again by authorized personnel complying with the safety regulations.

4.3.1.2 Electrical safety through lines with correct rating



WARNING: Endangerment of electrical safety through power cable with incorrect rating

When a removable power cable is used, electrical accidents can occur when the specifications are not fully observed.

- ▶ Always observe the exact specifications in the Operating Instructions (Technical Data Section) when replacing a removable power cable.

4.3.1.3 Grounding the equipment



CAUTION: Device damage through incorrect or missing grounding.

During installation and maintenance work, it must be ensured that the protective grounding to the devices and/or lines involved is effective in accordance with EN 61010-1.

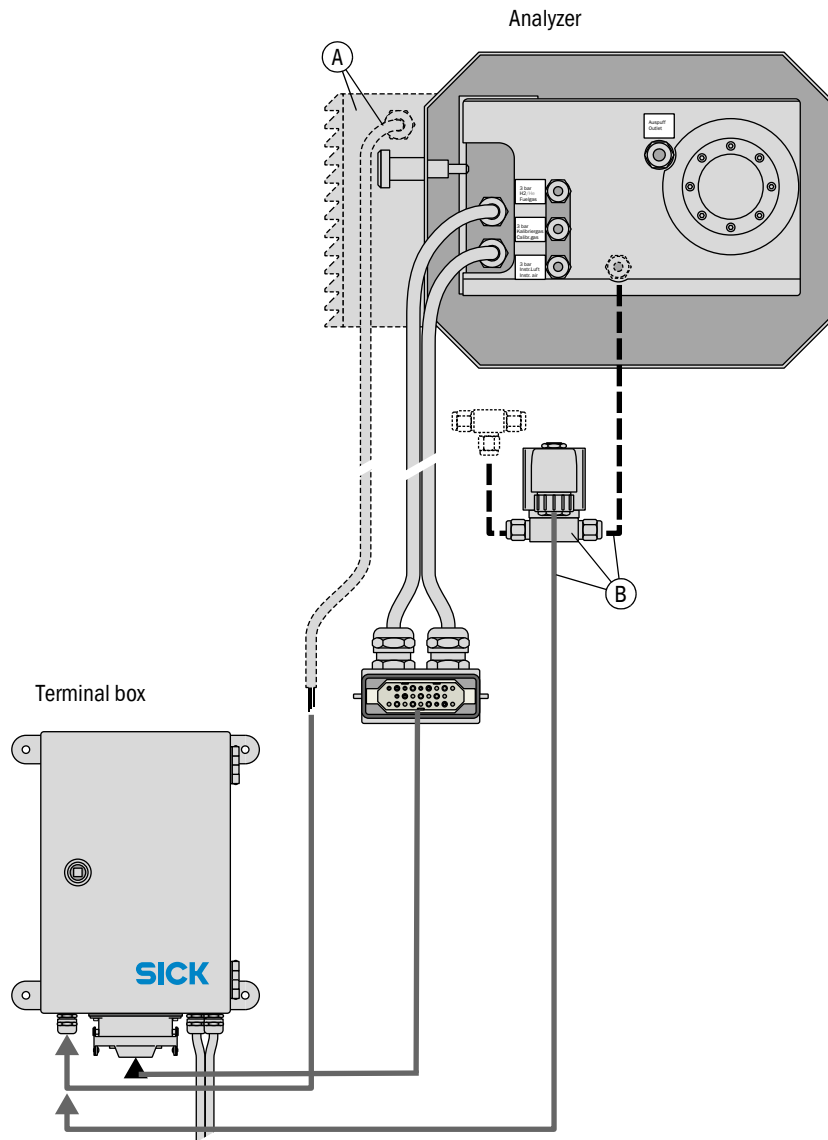
4.3.2

Procedure

- ▶ Connect the plug connector to the terminal box with the double cable.
- ▶ *On devices with the “flow barrier” option:* Connect the solenoid valve to the terminal box (→ p. 44, §5.2).
- ▶ *On devices with the “Fan” option:* Connect the fan’s cable to 24 VDC in the terminal box (→ p. 44, §5.2).

Fig. 12

Analyzer: connections



- A Only with “fan” option
- B Solenoid valve – only with “flow barrier” option

EuroFID3010 Inline UEG

5 Installing the terminal box

Assembly
Electrical connections

5.1 Installing the terminal box

- ▶ Install the terminal box near the analyzer unit (taking the cable length into account).
- ▶ Install it so that the cable inlets are on the underside of the terminal box if possible.

5.2 Electrical connections of the terminal box



CAUTION: Damage/malfunction due to improper AC power connection

The terminal box is supplied with AC voltage directly from the operating unit.

- ▶ AC voltage for the terminal box: refer to type plate on the terminal box.
- ▶ The protective conductors (PE) must always be connected.

Power voltage circuit breaker

- ▶ Install a power voltage circuit breaker near the terminal box to switch the main power supply of the terminal box on and off.

Connection cable of the analyzer unit

- ▶ Connect the two connection cables of the analyzer unit to the corresponding plug connectors of the terminal box (→ p. 45, Fig. 13).

Customized connection cables

- ▶ For customized connection cables, use the following cable material:

Connection	Wire cross-section	Type	Name	Part no.
Analyzer assembly terminal box ^[1]	3 x 1.5 mm ²	Shielded	Ölflex Control TMCY	6048807
	5 x 1.5 mm ²	Shielded	Ölflex Control TMCY	6048809
Data cable for data line	4 x 2 x 0.25 mm ²	LIYC2Y (TP)		
Data cable for data line	4-pole x 0.34 mm ²	AWG22		6030048

[1] Carries AC line voltage.

- ▶ Install wiring according to Fig. 14 (→ p. 46).

Connection for flow barrier

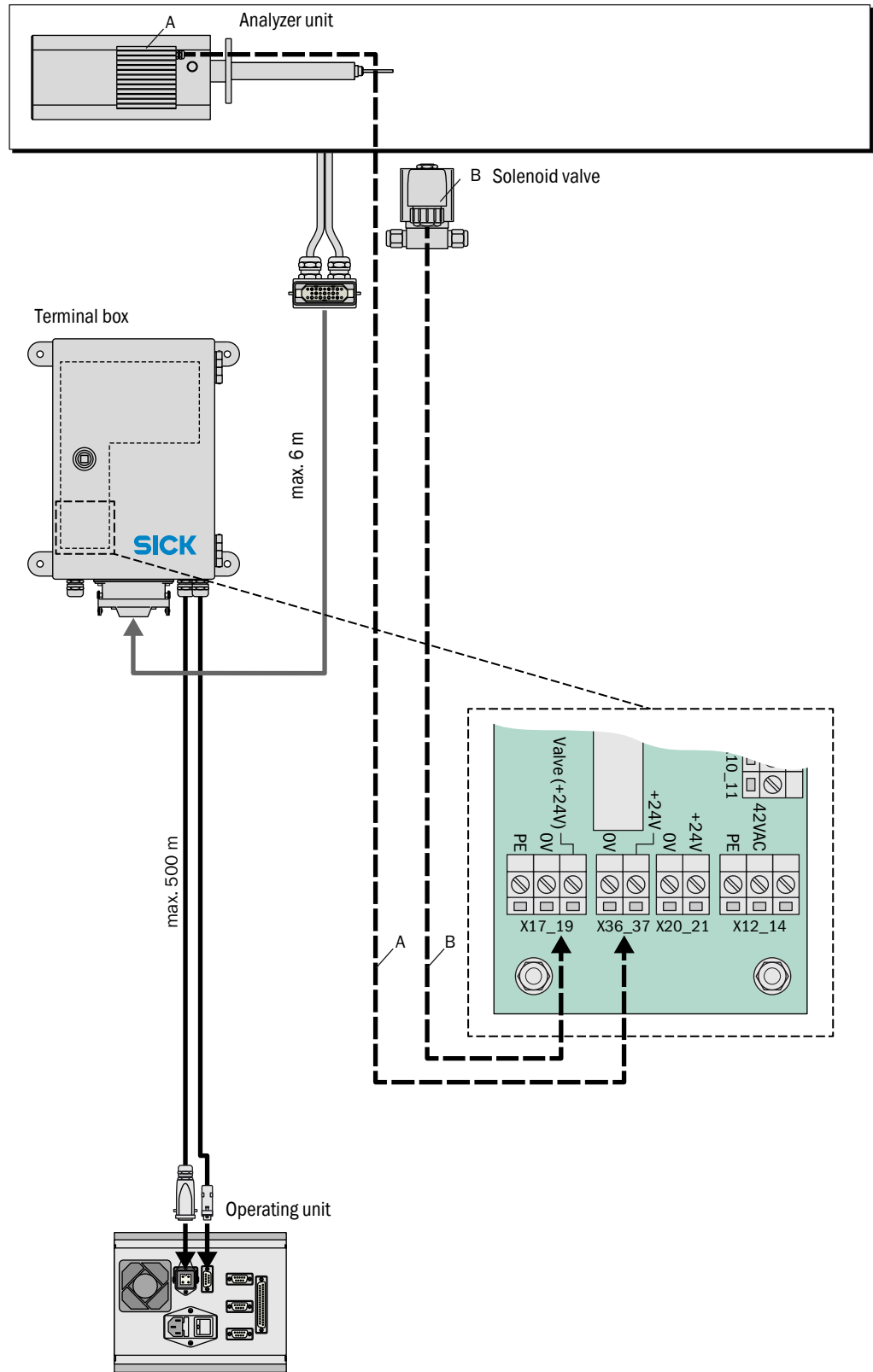
- ▶ Connect the solenoid valve of the flow barrier to the connections labeled VALVE (0 V/+24 V) (X18/X19).

Connection for housing fan

- ▶ Connect the cable of the housing fan to a 0 V/+24 V connection (X20/X21 or X36/X37).

Fig. 13

Terminal box: Connections



A only with housing fan option
 B only with flow barrier option

Subject to change without notice

Fig. 14 Terminal box: Wiring of the connection cables

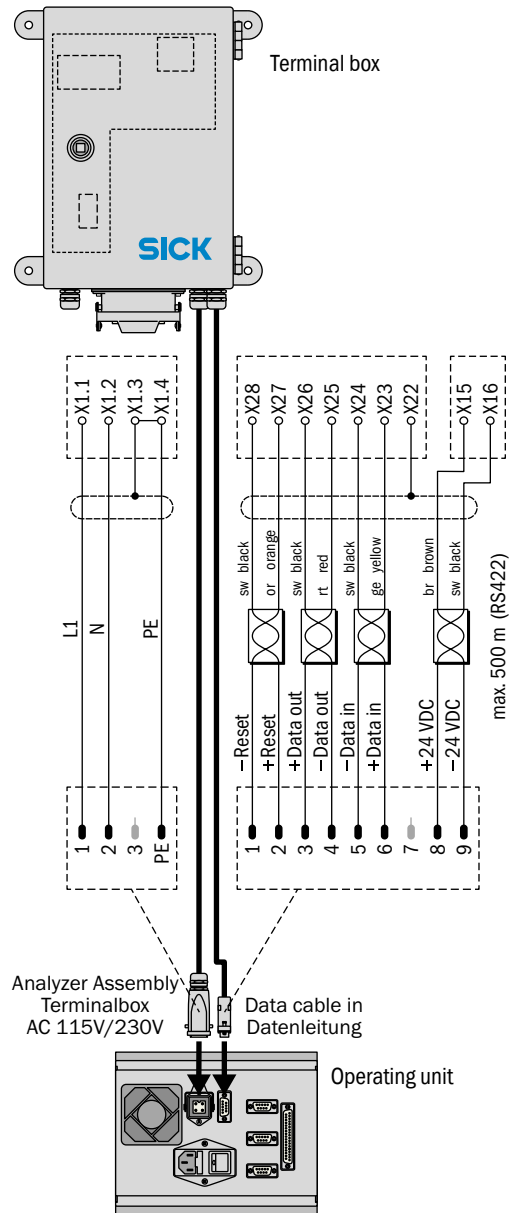
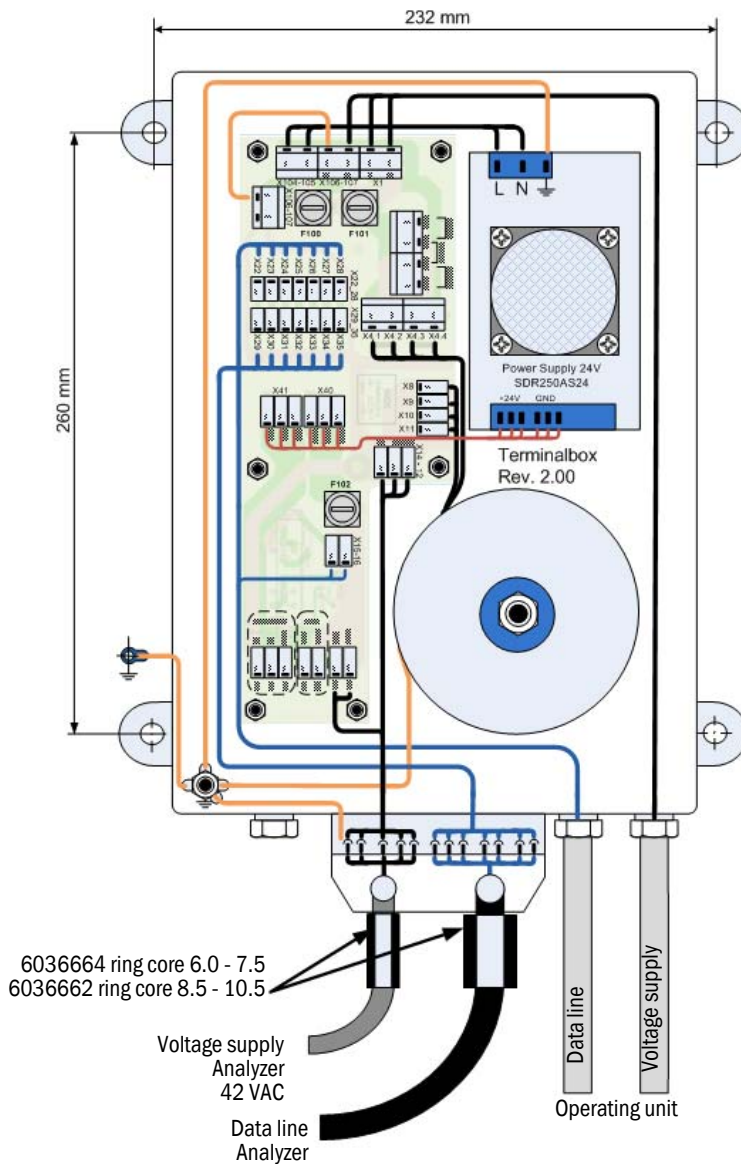


Fig. 15 Terminal box



A ferrite ring core must be attached to both the AC power line and the data line (see diagram above).

Cable	Conductor	Terminal
AC power cable	L1	X1-1
	N	X1-2
	PE	X1-3

Cable	Color	Terminal
Data cable	Brown	15
	Black	16
	Shielding	22
	Yellow	23
	Black	24
	Red	25
	Black	26
	Orange	27
Black	28	

EuroFID3010 Inline UEG

6 Installing the operating unit

Installation
Electrical connections
Signal connections

6.1 Installing the operating unit



Housing dimensions and space requirements:

- Operating unit, 19" rack type → p. 160, Fig. 35
- Operating unit, 1/2-19" rack type → p. 161, Fig. 36

- Do not obstruct the fan openings (rear of unit).
- Installation location must be free of vibrations.

6.2 Installing the 19" rack type operating unit

- ▶ Install the 19" operating unit in the normal manner in a 19" rack or corresponding enclosure.
- ▶ Use the rack rails.



NOTICE:

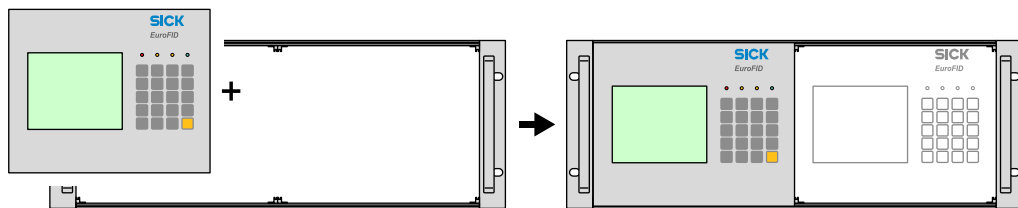
- Do not secure the housing by the front panel alone.
- ▶ Use the rails that support the housing.

6.3 Installing the operating unit, 1/2-19" rack type

- ▶ Install the 1/2-19" operating unit into a 19" rack (4 RU).

Fig. 16

Operating unit: Installing the 1/2-19" rack type operating unit



6.4 AC power connection of the operating unit



During installation and maintenance, make sure the electrical supply to affected devices or lines can be turned off via a disconnector switch/circuit breaker in accordance with EN 61010-1.

The electrical supply may only be reactivated by staff performing the installation or maintenance, after completing the work or for test purposes, and taking safety regulations into consideration.

6.4.1 External AC power switch

If the AC power switch of the operating unit (→ Fig. 17) is not visible and accessible in the operational state:

- ▶ Install an AC power supply disconnector switch near the operating unit to be able to turn the AC power supply on and off.

6.4.2 Connecting the AC power cable

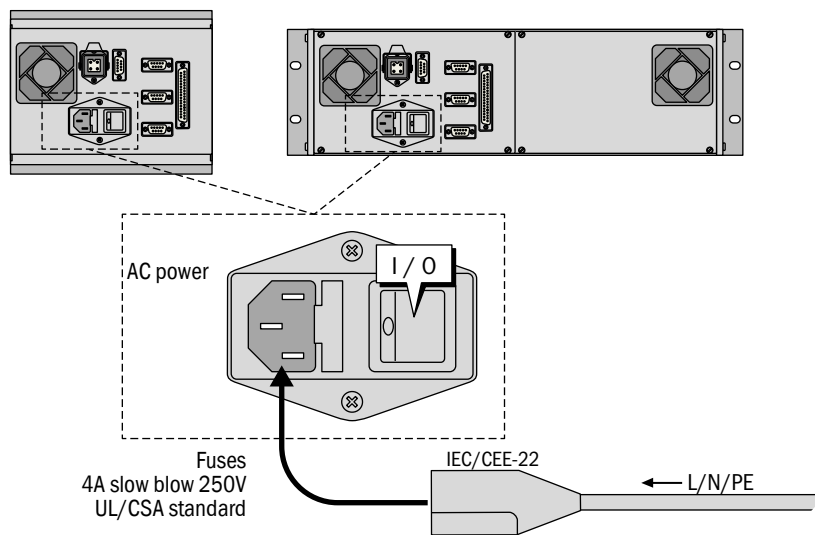
- ▶ Ensure that the supplied AC voltage corresponds to the information on the type plate of the operating unit.



Only connect the operating unit to a voltage supply with these specifications. Observe: When a 115 volt operating unit is connected to 230 V, serious damage may occur. Only connect the operating unit to a voltage supply which is equipped with a grounding conductor and only use the power cable delivered.

- ▶ Connect the AC power cable to the integrated connector on the rear of the operating unit (→ Fig. 17).
- ▶ Connect the AC power cable to the AC power supply.

Fig. 17 AC power plug, AC power switch

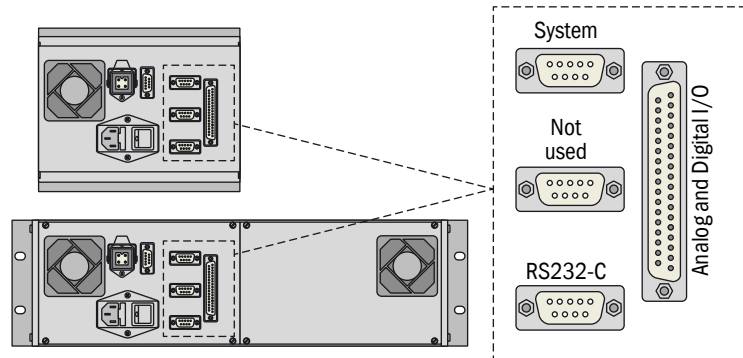


AC power cable	Part no.
AC power cord with IEC-320 male connector with grounding contact (230 V)	6026779
AC power cord with grounding contact for use in the USA (115 V)	6031563

6.5 Signal connections

6.5.1 Overview of signal connections

Fig. 18 Operating unit: Plug connector for signal connections



Interfaces

- “System” and “RS 232C” are interfaces for the manufacturer to use internally for testing and service purposes.

Measured values and signals

The V2 terminal module is connected to the 37-pin D-sub connector labeled “Analog and Digital I/O”



NOTICE:

Before signal connections are established (including with plug connections):

- ▶ Disconnect the EuroFID3010 Inline UEG and any connected devices from AC power (i.e. switch off), otherwise the internal electronics may be damaged.

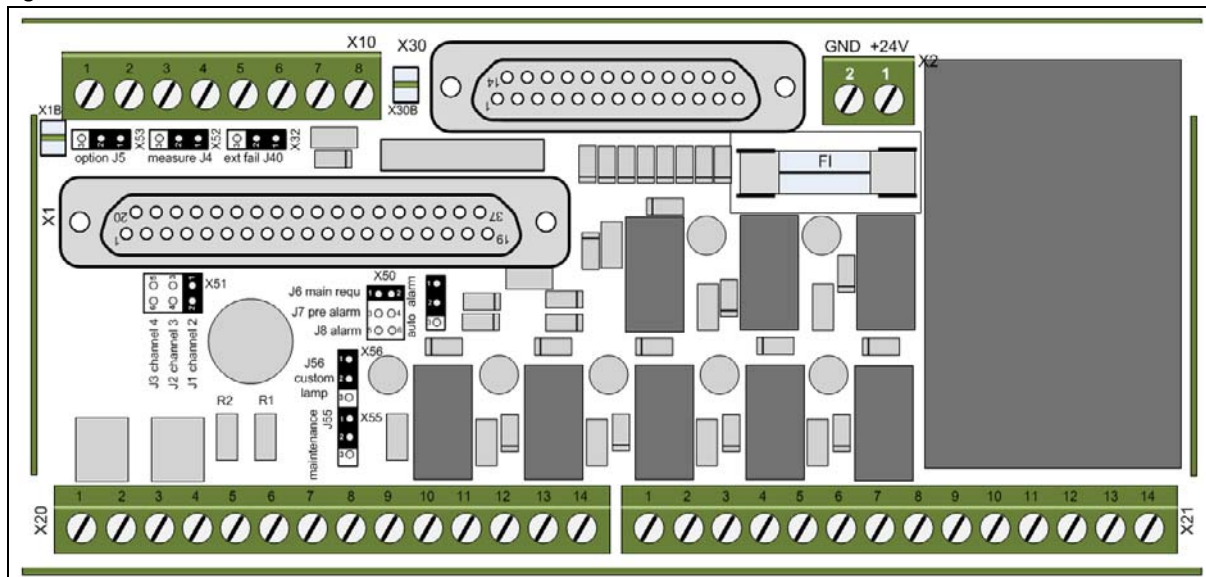
EuroFID3010 Inline UEG

7 V2 terminal module

Installation
Connection options
Configuration options

7.1 Functional description

Fig. 19 V2 terminal module



The V2 terminal module is a plug-in module for standard mounting rails in switching cabinets (dimensions → p. 171, 16.11.5).

The V2 terminal module contains:

- Analog outputs (→ p. 56, § 7.2):
 - Measured value/reference value
- Digital outputs (→ p. 57, § 7.3)
 - Main alarm/pre-alarm
 - Status outputs
- Digital inputs (→ p. 60, § 7.4)
 - Calibration control
 - Maintenance

The following can be connected to the V2 terminal module:

- Reset button to acknowledge the main alarm
- Service switch
- Indicator lights
- Button to check the indicator lights

Information

Update of the digital inputs and outputs and the analog outputs: 200 ms.

When no reset button is added, the main alarm can not be acknowledged and is continuously activated.

7.1.1 Terminal and connector pin assignments

Fig. 20 Terminal assignment

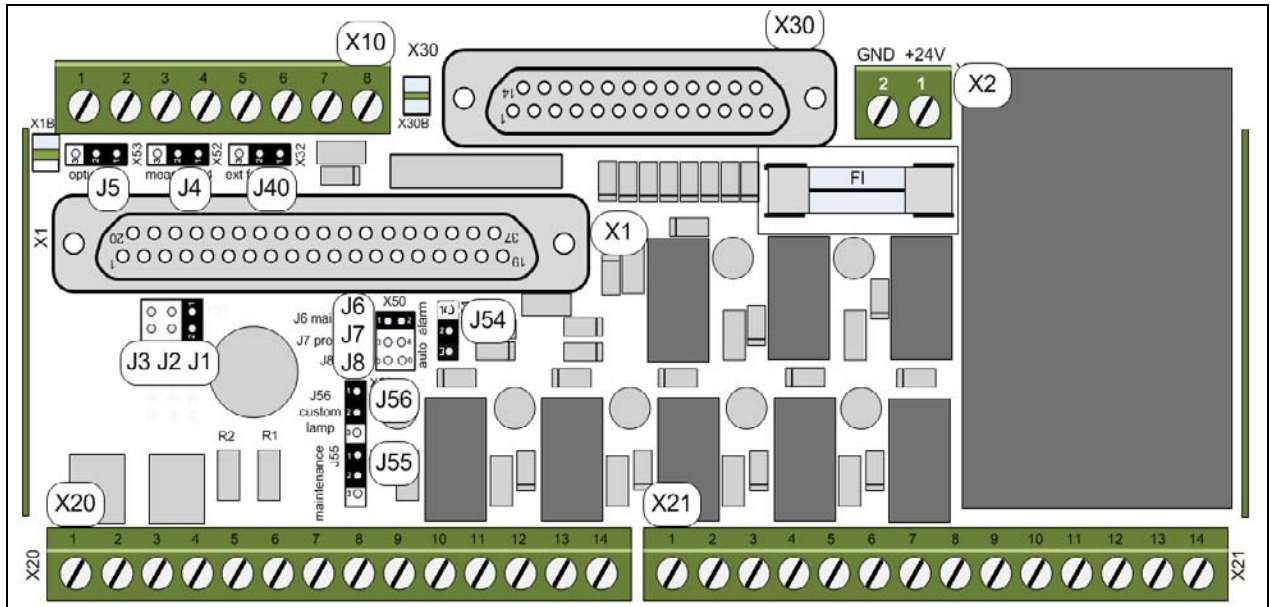
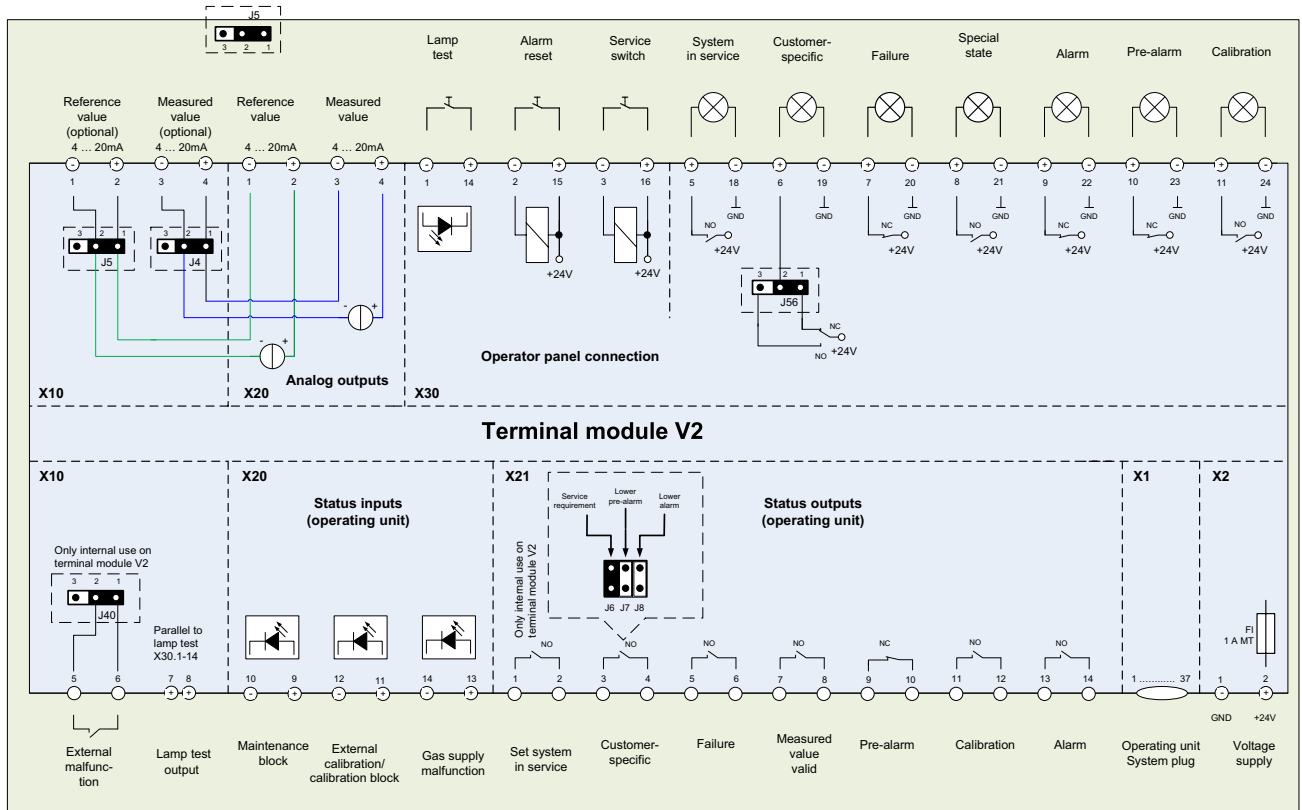


Fig. 21 Connector pin assignment



Subject to change without notice

7.2 Analog outputs

7.2.1 Description

7.2.1.1 Analog output "Measured value"



CAUTION: Higher current when turning on

When the operating unit is turned on, the analog outputs briefly output a current of 22 mA.

- ▶ Before turning on the operating unit: Inform any affected stations and/or deactivate connected devices.

Status of the "Measured value" output	Current
Failure	0 mA
Measured value not valid	2 mA
0-100% LEL	4 ... 20 mA

- The current measured value is displayed during calibration (test gas concentration).
- If the measuring range is exceeded, the analog output switches to a value greater than 21 mA.
- If the measured value is below the measuring range, the analog output switches to a value less than 4 mA.

7.2.1.2 Analog output "Reference value"

- The "Reference value" analog output corresponds to the "Measured value" analog output, but keeps the last valid measured value during calibration.

7.2.2 Terminal assignment X10 and X20

Location of the connector pins → p. 55, Fig. 20.

X10 terminal strip			
Functional group	Function		
Analog outputs	Measured value	-3	+4
	Reference value	-1	+2

X20 terminal strip			
Functional group	Function		
Analog outputs	Measured value	-3	+4
	Reference value	-1	+2

7.2.3 Configuration (jumpers)

Standard configuration: Analog outputs at X20 terminal strip only.

Optionally, parallel output at X10 is possible.

Location of the jumpers → p. 55, Fig. 20.

Table 1 Jumpers for the analog outputs X10 - X20

Analog output	at X20	at X20 and X10
Analog output 1 "Measured value"	J4, bridged: 1-2	J4, bridged: 2-3
Analog output 2 "Reference value"	J5, bridged: 1-2	J5, bridged: 2-3



The analog outputs are potential-free with respect to the electronics. They have a common negative terminal (not potential-free relative to one another).

7.3 Digital outputs (threshold value alarm, status)

7.3.1 Description

- Number of digital outputs: 7
- Type: relay outputs
 - Max. voltage: 24 V
 - Max. current: 500 mA



NOTICE:

Inductive loads (e.g. relays, solenoid valves) may destroy the relay switching contacts.

- ▶ Separate anti-surge diodes must be installed.

7.3.2 Terminal assignment

7.3.2.1 X21 terminal assignment

Location of the terminal pin → p. 55, Fig. 20.

Connector pin	Terminal	Name	Switching state [1]	Function
X21	1 - 2	DO 1	NO	System set to maintenance [2]
	3 - 4	DO 2	NO	Customer-specific
	5 - 6	DO 3	NO	Failure
	7 - 8	DO 4	NO	Measured value valid
	9 - 10	DO 5	NO	Pre-alarm
	11 - 12	DO 6	NO	Calibration
	13 - 14	DO 7	NO	Alarm

[1] NO: "Normally Open".

[2] The "System in Service" output is activated via the key switches X30.3 and X30.16.

Functions

Table 2

Digital outputs

Function	Deactivated switching state	Activated switching state
System set to maintenance [1]	OPEN	CLOSED
Customer-specific	OPEN	CLOSED
Failure[2]	CLOSED	OPEN
Measured value valid	OPEN	CLOSED
Pre-alarm	CLOSED	OPEN
Calibration	OPEN	CLOSED
Alarm	CLOSED	OPEN

[1] Activated if the EuroFID3010 Inline UEG can still perform measurement, but several internal conditions are no longer in the operating range for valid measuring values. A corresponding message is shown on the display.

[2] This switching logic means "Failure" is signaled when the AC power fails (e.g. also in case of a cable break, switched off/failed device).

Configuration (jumpers)

Location of the jumpers → p. 55, Fig. 20.

Configuration of DO 2 (→ p. 57, § 7.3.2.1):

Table 3

Jumpers

Function of the digital output	J6	J7	J8
Service requirement (preset)	Bridged	Open	Open
Pre-alarm if the threshold value is not reached (L1) or first pre-alarm (H0) [1]	Open	Bridged	Open
Alarm if the threshold value is not reached (L2) [1]	Open	Open	Bridged

[1] This function must be configured in the menu (Menu: Threshold value indicator → p. 98, § 11.9).



Only 1 alarm function can be activated,
i.e. only 1 jumper may be placed.

Alarm**NOTICE:**

► Use exclusively the digital output “Alarm” as a safety contact.

- “Alarm” remains activated until it is reset via the digital input “Alarm reset” (X30.2 + X30.15).
- “Alarm” is active during commissioning.
After switching to measuring mode, “Alarm” is automatically reset.

Note:

The first time the EuroFID3010 Inline UEG switches to the measuring mode, the alarm is automatically reset.

To prevent this function, connect jumper J54.

- “Alarm” is routed via two safety relay contacts switched in series, which are both positively driven with an N/C contact.

7.3.2.2 X30 terminal assignment

External lights (e.g. for a switching cabinet) can be connected at X30.

Location of the terminal pin → p. 55, Fig. 20.

Connector pin	Terminals		Function
X30	+5	-18	System in Service
	+6	-19	Customer-specific
	+7	-20	Failure
	+8	-21	Measured value valid
	+9	-22	Alarm
	+10	-23	Pre-alarm
	+11	-24	Calibration

Configuration (jumpers)

The digital output X30.6 + X30.19 can be inverted:

Table 4 Bridge configuration

Bridge J56	Signal not activated	Signal activated
Bridged: 1-2	Switching contact open	Switching contact closed
Bridged: 2-3	Switching contact closed	Switching contact open

Table 5 Bridge configuration

Bridge J54	Signal not activated
Bridged: 1-2	Automatic alarm
Bridged: 2-3	Manual alarm

In case of "Manual alarm," the alarm remains active even after switching to active measuring mode.

The alarm must then be acknowledged with the alarm reset button (the alarm reset button must be installed separately by the user).

7.4 Digital inputs

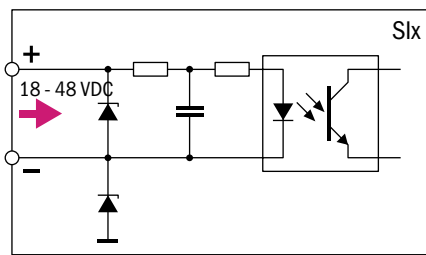
7.4.1 Description

- Number of digital inputs: 7
- The digital inputs are optical coupler inputs (→ p. 60, Fig. 22).
 - Control voltage: 18-48 VDC
The control voltage must be provided externally.

7.4.2 Terminal assignment

Fig. 22

Circuit diagram



7.4.2.1 X20 terminal assignment

Location of the terminal pin → p. 55, Fig. 20.

Connector pin	Terminals	Name	Function
X20	+9 -10	DI 1	Maintenance block
	+11 -12	DI 2	External calibration/calibration block
	+13 -14	DI 3	Malfunction, gas supply

“Malfunction, gas supply”

The digital input “Malfunction, gas supply” can be used to monitor the gas supply.

- If the digital input is “active,” the EuroFID3010 Inline UEG displays the status “Service requirement.”

“External calibration/calibration block”

- Calibration control via the “Calibration control” menu (→ p. 118, § 12.8).
- To block calibration: Input to 24 V (→ p. 121, § 12.8.1.6).
If the calibration block is active, no calibration can be carried out.
- If “External calibration” is to be used: Select “ex.auto” in the “Calibration control” menu (→ p. 119, § 12.8.1).
- To start an automatic calibration: Set the “External calibration/calibration block” input to “0 V” for 1-2 seconds.

“Maintenance block”

When the “Maintenance block” digital input is activated, it is not possible to use operating functions to interrupt the measuring mode.

7.4.2.2 X10 terminal assignment

Location of the terminal pin → p. 55, Fig. 20.

Connector pin	Terminals	Name	Function	Jumpers
X10	5 - 6	DI 1	Signals an external malfunction at X21.5 and X21.6	J40 not bridged
			Does not signal an external malfunction	J40 bridged
	7 - 8	DI 2	Not used	

“External malfunction”

The external switch can be used to signal an external malfunction (e.g. temperature monitoring).

This signal is output exclusively at terminal X21.5 and X21.6. No further processing/signaling takes place.

7.4.2.3 X30 terminal assignment

Location of the terminal pin → p. 55, Fig. 20.

Connector pin	Terminals		Name	Function
X30	-1	+14	DI 1	Lamp test ^[1]
	-2	+15	DI 2	Alarm reset
	-3	+16	DI 3	Service/maintenance switch “System in Service”

[1] Switches a photoMOS relay; the switching contact (pushbutton switch) is not subjected to lamp load.

“Lamp test”

A pushbutton switch can be connected to the “Lamp test” digital input to test connected indicator lights.

- The lamp test signal is output in parallel to the terminals X10-7 and X10-8.
- The “Lamp test” digital input switches a photoMOS relay.
- The current relay states are not changed.

“Alarm reset”

A pushbutton switch can be connected to the “Alarm reset” digital input to reset an active alarm.

The alarm is reset by closing the contact.

“Service/maintenance switch”

A switch can be connected to the “Service/maintenance switch” digital input to place the V2 terminal module into maintenance mode.

This signal is only used in the V2 terminal module and has no further effect on how the EuroFID3010 Inline UEG functions.

- ▶ The signal must be forwarded to a higher-ranking level (e.g. control center).
- The “System in Service” digital output at the X30 pin connector is activated.
- The “Measured value valid” signal is activated.
- All digital outputs for maintenance and malfunction messages are deactivated (however, the “Measured value” analog output continues to output 0 mA during malfunctions).
- The “Pre-alarm” digital output is activated.
- The “Alarm” digital output is activated as soon as the operating unit activates the alarm, but is not latching (refer to → p. 98, § 11.9).

7.5 Installation

7.5.1 Mounting rails

To mount the V2 terminal module, the following types of standard mounting rails are available:

- Top hat rail EN50022-35 x 7.5 (and 35 x 15, plus derivative profiles with a T-slot)
- G-rail EN50035-G32
- ▶ Attach the V2 terminal module to a mounting rail.

7.5.2 Signal cable

When connecting the signal lines, please observe the following:

- Use shielded cable for all signal connections.
- Take into consideration the shielding concept of the higher-level system.



NOTICE: Malfunctions due to unsuitable cables


- ▶ Use only suitable cable.
- ▶ Install the cable carefully, otherwise the specified electromagnetic compatibility (EMC) may not be achieved and malfunctions may result.



NOTICE: Sensitive electronics

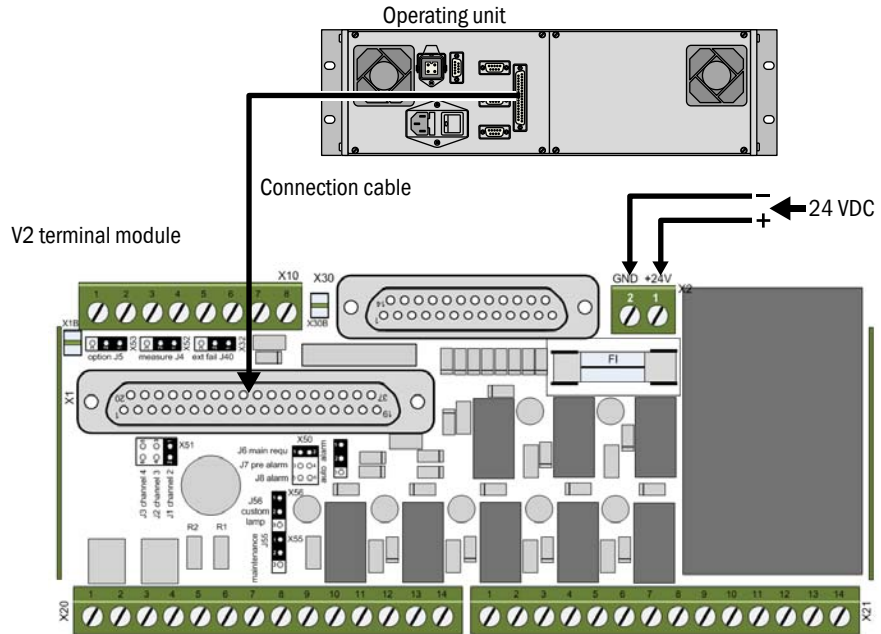
- ▶ Before making signal connections (including with plug-in connectors): Switch off power to all devices to be connected, otherwise electronic components may be damaged.

7.6 **Electrical connection**



When working on the V2 terminal module: Switch off power to the terminal module.

Fig. 23 V2 terminal module






- Fuse: 1 A (slow fuse), 250 V, D5x20

7.6.1 **Attach connection cable**

Use only the SICK connection cable (Part no. → p. 171, § 16.11.5):

- ▶ Connect the “Connecting module” plug connector to the V2 terminal module.
- ▶ Connect the “Remote unit” plug connector to the operating unit.



The pin assignments of the connection cable are not symmetric.

- ▶ Therefore do not confuse the ends of the connection cable.

7.6.2 **Connect supply voltage**

The V2 terminal module requires an external voltage supply (24 VDC/17 W). The external voltage supply must comply with SELV (safety extra low voltage).

- ▶ Connect the voltage supply to the X2 connector pin (→ p. 63, Fig. 23).

Terminal	
1	24 VDC (17 W)
2	GND

EuroFID3010 Inline UEG

8 Commissioning

Preparation
Activation procedure
Function test

8.1

Initial commissioning**WARNING:**

Never start up the device without first having it checked by authorized personnel!

- ▶ Before you use the EuroFID3010 Inline UEG in safety-relevant applications in your company, it must first be inspected and approved for use by authorized personnel.
- ▶ The results of this inspection must be documented.

Preparation

- ▶ Ensure correct supply of operation gases (specifications → p. 166, § 16.8).
- ▶ Check gas connections.
- ▶ Check gas lines for leaks: leak detection spray, sensor for combustible gases.

Procedure

- ▶ Check configuration
 - Name of analyzer
 - Sensor block temperature
 - Alarm threshold
 - Conversion factors
 - Test gas concentration
 - Classification temperature
- ▶ Calibration
 - Calibrate zero gas and span gas
 - Check calibration
- ▶ Hardware check
 - Check alarm contact
 - Check “Failure” and “Measured value valid” contacts

8.2

Activation procedure

- ▶ Turn on external AC power switch or power switch on the back of the operating unit.
- ▶ Switch on external voltage supply to the V2 terminal module.



CAUTION: Higher current when turning on

When the operating unit is turned on, the analog outputs briefly output a current of 22 mA.

- ▶ *Before turning on the operating unit:* Inform any affected stations and/or deactivate connected devices.

Note

If the operating unit has been turned off intermittently: Switch off the supply voltage to the V2 terminal module, otherwise the automatic alarm reset will not be activated and the active alarm will have to be acknowledged with the alarm reset button.

- 1 The “Alarm” signal is active during commissioning.
- 2 RAM-Test running. This message is displayed for approx. 2 minutes:

<p>Start RAM-Test running</p>	<p>Internal memory test. Duration of display: Several minutes.</p> <p>No entries can be made here.</p>
-----------------------------------	--

- 3 Then, the following will be displayed:

<pre> E U R O F I D Software Rev. 5.2 Configuration 5.2 V5.2 02.07.03 Type 100%LEL scale 5562 Prod.date 08.2013 0.0 % LEL Range ... 100 </pre>	<p>← Device name</p> <p>← Software version</p> <p>← Software version / Release date (Day.Month.Year)</p> <p>← Software type</p> <p>Date of manufacture of the operating unit (Month.Year)</p>
--	---

- 4 No LED is lit up.
- 5 Instrument air is introduced.
- 6 Zero gas is introduced.

7 The following is displayed during the heating up phase:

<pre> Warm Up Temp. sensor 1380 s 193.3 195.0 CEL Pump ON Act 2450 mbar Flame OUT </pre>	<p>← Maximum remaining running time^[1]</p> <p>← Current actual temperature / set temperature</p>
--	---

[1] If the set temperature is not reached within the remaining running time, the error message “36 Analyz.heat.” is displayed (→ p. 149, §15.6).



The heating up phase can take up to 1.5 hours.

8 Fuel gas is introduced.

9 The flame is ignited.

The following is displayed during the ignition process:

<pre> Ignition 30.05.2013 Ignition Flame OUT Current ON </pre>	<p>← Status of the FID flame</p>
--	----------------------------------

10 When the EuroFID3010 Inline UEG and all peripheral devices with connected status signals are ready for operation, the EuroFID3010 Inline UEG switches to measurement mode:

- The measurement display appears on the operating unit screen (→ p. 77, §10.3).

<pre> 10.05.2013 13:08:10 382 0.0 Propane % LEL FID1 ----- Range . . . 100.0 </pre>	<p>← Current date/current time</p> <p>← Operating hours</p> <p>← Current measured value</p> <p>← Physical unit</p> <p>← Name of analyzer</p> <p>← Bar display of the measured value</p> <p>← Current measuring range (measuring range end value)</p>
---	--

- The “Alarm” signal is reset. → p. 118, §12.8 EuroFID3010 Inline UEG.



If the EuroFID3010 Inline UEG has not been in operation for quite some time, it may occur that it is not completely warmed up despite the heating up phase.

- ▶ Wait another two hours and perform a “Manual calibration” (→ p. 122, §12.10).

11 If the function "Manual calibration" is activated (→ p. 118, § 12.8): Start manual calibration (→ p. 122, § 12.10).

8.2.1 **How to ascertain that the device is in proper operating condition**

Analyzer unit

- Supply of operating gases verified (Specifications → p. 166, § 16.8).
 - Instrument air
 - Fuel gas
 - Calibration gas
- Fan (optional) is running (noise, moving air).

Operating unit

- "OK" LED lights up.
- No malfunction messages (display).
- V2 terminal module:
 - "Alarm" digital output inactive.
 - "Measure" digital output active.

8.2.2 **Recognizing a special state**

- The "OK" LED does not light up.
- V2 terminal module: "Special state" digital output.

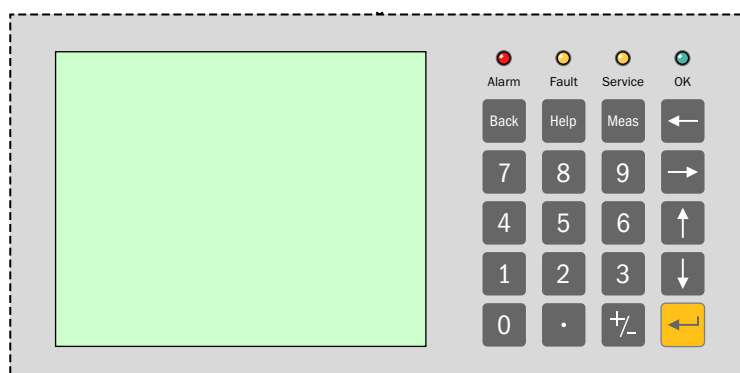
EuroFID3010 Inline UEG

9 Operation (General)

Access
Operation
Status messages

9.1 Controls and indicators/displays

Fig. 24 Controls and indicators/displays







9.1.1 LEDs (indicators)

LED	Significance
Alarm	<ul style="list-style-type: none"> The measured value has exceeded an alarm threshold value.^[1] ▶ Reset alarm (→ p. 100, § 11.11).
Fault	<ul style="list-style-type: none"> The EuroFID3010 Inline UEG has failed. The EuroFID3010 Inline UEG does not show the current measured value. ▶ For reasons, refer to the “Diagnosis” menu (→ p. 79, § 10.6).
Service	<ul style="list-style-type: none"> Maintenance is required. <p>Or:</p> <ul style="list-style-type: none"> The “System in Service” status is activated (→ p. 100, § 11.10). <p>The EuroFID3010 Inline UEG continues to show the current measured value.</p> <ul style="list-style-type: none"> ▶ For reasons, refer to the “Diagnosis” menu (→ p. 79, § 10.6).
OK	<ul style="list-style-type: none"> The EuroFID3010 Inline UEG shows the current measured value. The measured value is valid. If “OK” is not lit up: Special state (→ p. 123, § 12.11) (e.g. ignition, calibration).

[1] Is not displayed as long as the “System in Service” status is activated.

9.1.2



Keypad

Button	Function
	<ul style="list-style-type: none"> - <i>If the measurement display is activated:</i> Leads to main menu - <i>In the menu system:</i> Leads to the previous menu level - <i>For entry functions:</i> Deletes the last entry - <i>After changes:</i> It is asked whether changes should be saved
	Invokes information about the current function
	Jumps directly to the measuring screen Do not save changes Aborts running programs (e.g. calibration)
	Concludes entry Confirms any changes Toggles between entries




9.1.2.1

Navigation principle

Opening the main menu:

- ▶ *If the measurement display is active :* Press  once.
- ▶ *If a menu function is active:* Press  (several times if needed) until the main menu appears.

To change settings:

- 1 Press  or  until the relevant field has been highlighted.
- 2 *With input fields:* Enter the desired value.
With selection boxes: Press  until the desired setting is displayed.

To finish:

- 1 Press  or  until End is highlighted.
- 2 Press .

EuroFID3010 Inline UEG

10 Menu

- Measuring screen
- Manual calibration
- Manual ignition of the FID flame
- Diagnosis displays
- Language selection
- Help

10.1

Menu structure

Menu structure	Refer to
Measure	→ p. 77, § 10.3
Calibration	→ p. 78, § 10.4
Flame ignition	→ p. 78, § 10.5
Diagnosis	→ p. 79, § 10.6
Maintenance	→ p. 87, § 11
Calibr. Gas Value	→ p. 112, § 12.5.1
Conversion factors	→ p. 113, § 12.5.2
Standby	→ p. 89, § 11.2
Error archives	→ p. 90, § 11.3
Disp. of err. arch.	→ p. 91, § 11.3.2
Delete error arch.	→ p. 91, § 11.3.3
Filter change	→ p. 93, § 11.4
System Parameters	→ p. 94, § 11.5
User level	→ p. 95, § 11.6
Calibration control	
Calibration control	
Calibration time	
Setup temp. sensbl.	→ p. 96, § 11.7
I/O parameters	→ p. 97, § 11.8
I/O parameters	
Alarm value setup	→ p. 98, § 11.9
Purging parameters	→ p. 117, § 12.7
Next menu	
Time and date set	
Summer/winter time	
Next menu	
Name of analyzer	
Expert level	
Zero check	→ p. 122, § 12.10
Calib. Gas check	→ p. 122, § 12.10
Hardware check	→ p. 103, § 11.15
Inputs and Outputs	→ p. 104, § 11.15.1
Analog Outputs	
Digital Inputs	
Digital Outputs	
Analog inputs ana.	
Digital inputs ana.	
Digital Outputs	
Interface Check	→ p. 106, § 11.15.3
Interface Check	
Front panel	→ p. 106, § 11.15.4
LED's	
LCD test	
Keyboard test	
Restart	→ p. 107, § 11.16
Set Service Yes/No	→ p. 100, § 11.10
Threshold reset	→ p. 100, § 11.11
Language	→ p. 85, § 10.8
Language A - M	
Language N-Z	
General Help	→ p. 85, § 10.9

10.2

Main menu

<pre> Main Menu V5.2 15:08.53 D 1 Measure 2 Calibration 3 Flame ignition 4 Diagnosis 5 Maintenance 6 Language 7 General Help 0.0 % LEL Range ... 100 </pre>	<p>← Menu title</p> <p>← Software version/date/menu language</p> <p>→ p. 77, §10.3</p> <p>→ p. 78, §10.4</p> <p>→ p. 78, §10.5</p> <p>→ p. 79, §10.6</p> <p>→ p. 88, §11.1</p> <p>→ p. 85, §10.8</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
--	---

Procedure

- ▶ Open the measurement display
 - Main menu → Measure
 or
 - Press **Meas** (from any menu).
 If the “System in Service” status is activated (→ p. 100, § 11.10), this status is maintained.
- ▶ To return to the main menu: Press **Back**.

10.3

Measurement display

Function

The “Measure” menu item activates the measurement display:

<pre> 10.05.2013 13:08:10 382 0.0 Propane % LEL FID1 ----- Range ... 100.0 </pre>	<p>← Current date/current time</p> <p>← Hours of operation of the operating unit^[1]</p> <p>← Current measured value</p> <p>← Physical unit ^[2]</p> <p>← Name of analyzer</p> <p>← Bar display of the measured value ^[3]</p> <p>← Current measuring range (measuring range end value)</p>
--	---

[1] Counter starts at manufacturer's works.
 [2] Supplemental text for the physical unit→ p. 102, §11.13.
 [3] Measuring range 0 ... 100% LEL is permanently set.

The measured value is displayed digitally with plus or minus sign and units.
 Display if the measured value is above or below the limits of the measuring range:

- The current measured values are shown.
- The bar diagram also flashes if the measured value is exceeded.
- If the physical measuring range of the A/D converter is exceeded:
 - The message “OVF” appears on the display.
- If the measured value is below the measuring range, the measured value is displayed with a minus sign in front of it.

10.4 Calibration (note)

Manual calibration can be carried out via the “Calibration” menu (Main menu → Calibration).

For a detailed description, refer to → p. 119, § 12.8.1.1

10.5 Flame ignition

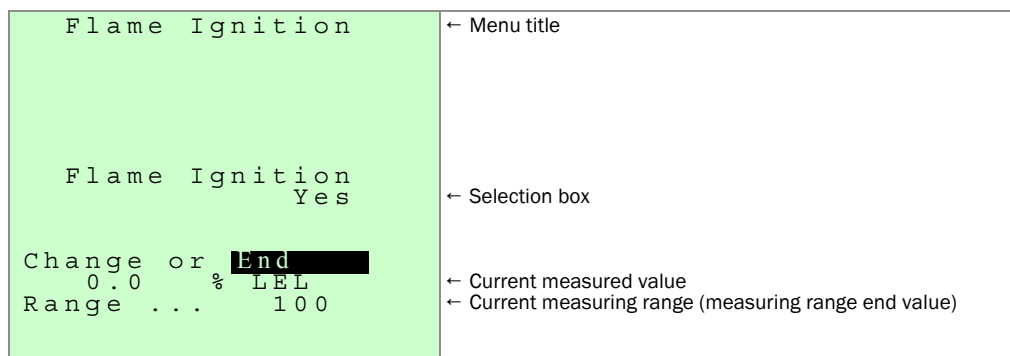
Function

This menu function is used to manually ignite the FID flame.

If 10 consecutive ignition attempts are unsuccessful, a malfunction message is displayed.

Procedure

- 1 Open the menu: Main menu → Flame ignition




The main menu appears – with the addition of the word Ignition.

10.6 Diagnosis

10.6.1 Accessing the diagnosis messages

1 Open the menu: Main menu → Diagnosis

<pre> Diagnosis System failure msg. 0 Service requ. repor. 0 < Continue > 0.0 % LEL Range ... 100 </pre>	<p>← Menu title</p> <p>← No. of current system failure messages</p> <p>← No. of current service requirement messages</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
---	---

2 Press  to view the next message in the queue.

» Any malfunction messages are displayed first (→ p. 79, § 10.6.2).

» These are followed by the displays of the operating parameters (→ p. 80, § 10.6.3).

10.6.2 Malfunction messages in the diagnosis function

Classification of malfunction messages

- “System failure”: Malfunctions that lead to a special state.
- “Maintenance requirement”: Malfunctions that do not (yet) negatively affect the measured values.

Example of a malfunction message

<pre> Diagnosis System failure Flame not burning Please check fuel Gas- and fuel- Air ways and the Flame control < Continue > Range ... 100 </pre>	<p>← Menu title</p> <p>← Malfunction classification</p> <p>← Message text</p> <p>← Current measuring range</p>
---	--



The malfunction messages cannot be manually deactivated.

A malfunction message disappears when the malfunction has been remedied.

10.6.3

Operational displays in the diagnosis function

The following displays appear in succession:

Alarm status (threshold value messages)

<pre> Diagnosis Alarm Threshold H2 NO Threshold H1 YES Threshold L1 NO Threshold L2 NO < Continue > 0.0 % LEL Range ... 100 </pre>	<p>← Menu title</p> <p>← Alarm status [1] [2]</p> <p>←</p> <p>←</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
---	--

[1] YES = activated / NO = not activated.

[2] If YES is displayed although the current measured value is inside the threshold value: The latching function is activated and needs to be deactivated manually (→ p. 100, §11.11).

Temperature of the electronics in the analyzer unit

<pre> Diagnosis Inside Temp.EleAnaly Actual 32.8 CEL < Continue > 0.0 % LEL Range ... 100 </pre>	<p>← Menu title</p> <p>← Current temperature (CEL = °C)</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
---	--



If the temperature of the analyzer unit rises above:

- 85 °C: “Service requirement” is activated.
- 90 °C: “Failure” is activated.

In both cases, a malfunction message is displayed and the heating of the sensor block is completely turned off.

If the failure occurs due to an error during calibration, you can attempt to reset the cause of the failure by opening the Calibration menu again (calibration is not started).

The second time the calibration menu is opened, the calibration will start again if the error has been reset.

In case of failure, you can attempt to reset the error through manual ignition.

Pressure ratios at the ejector pump



NOTICE:

The dilution factor must be between 2900 and 4900.

<pre> Diagnosis Sample Input Pressur actual 996.5mbar Instr. -Air Pressure actual 2404.6mbar Sample Gas Pressure actual 1145.3mbar Factor Pinp./Pmeagas 0.8766 Factor Pdriv/Pmeagas 2.1013 < Continue > 0.0 % LEL Range ... 100 </pre>	<p>← Menu title</p> <p>← P2 (P): Sample gas pressure at the gas inlet of the analyzer unit [1]</p> <p>← P1 (T): Pressure of instrument air at the ejector pump [2]</p> <p>← P3 (M): Sample gas pressure before the sample gas capillary [3]</p> <p>← Q1: Ratio of P2 to P3</p> <p>← Q2: Ratio of P1 to P3</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
---	--

- [1] Target range: Ambient pressure: ± 50 mbar; greater deviations trigger a malfunction message (system failure).
- [2] Determines the suction of the ejector pump.
- [3] Backpressure upstream from the sample gas capillary; is kept constant relative to the ambient pressure.

Control of the ejector pump

<pre> Diagnosis Ejector Fixed P Sample Input Pressur actual 1006.6 mbar Instr. -Air Pressure actual 2404.6 mbar Sample Gas Pressure actual 1145.3 mbar Factor 3741.6650 < Continue > 0.0 % LEL Range ... 100 </pre>	<p>← Menu title</p> <p>← Setpoint value: ambient pressure - (5-10 mbar)</p> <p>← Setpoint value: 2350-2500 mbar</p> <p>← Setpoint value: ambient pressure + 130 mbar</p> <p>← Display: 2900-4900 (valid range)</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
--	---

Temperature control of the sensor block

<pre> Diagnosis Sensor block settemp 195 CEL Setup temp. sensbl. 194.76 CEL SensHeating On/Off ON 42.1% < Continue > 0.0 % LEL Range ... 100 </pre>	<p>← Menu title</p> <p>← Setpoint temperature of the sensor block (CEL = °C) [1]</p> <p>← Current temperature of the sensor block (CEL = °C)</p> <p>← Current heater output</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
--	--

[1] Notes → p. 96, § 11.7.

Status of flame control and solenoid valves

<pre> Diagnosis Flame Control Temp. 267 CEL Ignit. Coil OUT SV Ignit. Gas OUT SV Ejector ON SV Ignit. Gas ON SV Span Gas OUT SV Zero Gas OUT Flow barrier OUT < Continue > 0.0 % LEL Range ... 100 </pre>	<p>← Menu title</p> <p>← Temperature near the flame (CEL = °C)</p> <p>← Status of the ignition coil of the FID flame[1]</p> <p>← Solenoid valve status[2] [3]</p> <p>← Solenoid valve status[2] [4]</p> <p>← Solenoid valve status[2] [5]</p> <p>← Solenoid valve status[2]</p> <p>← Solenoid valve status[2]</p> <p>← Flow barrier status (optional) [6]</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
---	--

[1] ON as long as the ignition coil is heated during the ignition process

[2] SV = solenoid valve; ON = valve open / OFF = valve closed.

[3] ON during ignition of the FID flame.

[4] ON when the sensor block has reached the set temperature and there are no malfunctions.

[5] ON when the FID flame burns and instrument air is supplied and there are no malfunctions.

[6] ON as long as the solenoid valve of the flow barrier (optional) is activated (i.e. during maintenance of the sample gas filter).

Calibration drift (deviation)

The results of the last calibration are displayed:

<pre> Diagnosis Calibration Date 10.05.2013 14:48:29 Zero drift 0.2% Calib. gas dr. total 5.2% Drift since last Cal 3.8% < Continue > 0.0 % LEL Range ... 100 </pre>	<ul style="list-style-type: none"> ← Menu title ← Date/time of last calibration ← Zero drift since last basic calibration ← Sensitivity shift since last basic calibration [1] ← Sensitivity shift since last calibration [1] ← Current measured value ← Current measuring range (measuring range end value)
---	---

[1] Relative to measuring range end value.



The “deviations” are automatically compared to the alarm settings.

Software system type

<pre> Diagnosis System type Type_100%-LEL_scale 4321 Prod.date 08.2013 V6.0.0.4 02.07.13 Analyzer V2.05 < Continue > 0.0 % LEL Range ... 100 </pre>	<ul style="list-style-type: none"> ← Menu title ← Configuration type of the installed software ← Serial number of the operating unit ← Manufacturing date of the operating unit ← Version/release date of the installed software ← Version of the analyzer firmware ← Current measured value ← Current measuring range (measuring range end value)
--	--

Data of the installed ejector pump

There are four data records for the ejector pump (1/4 to 4/4, with data for A3x to A0x):

<pre> Diagnosis Param. SampleGasPump Fixed P Ser.No.: 90204042 1 / 4 A33 = +5.72905122 A32 = -10.2348748 A31 = +5.18833320 A30 = -0.50595734 DiluFac: 3645.10 < Continue > 0.0 % LEL Range ... 100 </pre>	<ul style="list-style-type: none"> ← Menu title ← Type of propellant pressure setting ← Serial number of the ejector pump (factory setting) ← Data record no. 1 of 4 ← Coefficients of the ejector characteristic curve ← ← ← Current dilution factor^[1] ← ← Current measured value ← Current measuring range (measuring range end value)
---	---

[1] Internal unit (not a physical value)

Last display of Diagnosis:

<pre> Diagnosis Param. SampleGasPump Fixed P Ser.No.: 90204042 4 / 4 A03 = +8.70768063 A02 = -65.9470894 A01 = +92.9065891 A00 = -36.9345441 DiluFac: 3645.10 < END > 0.0 % LEL Range ... 100 </pre>	<ul style="list-style-type: none"> ← Menu title ← Type of propellant pressure setting ← Serial number of the ejector pump (factory setting) ← Data record no. 4 of 4 ← Coefficients of the ejector characteristic curve ← ← ← Dilution factor for this ejector pump ← ← Current measured value ← Current measuring range (measuring range end value)
--	---

10.7

Maintenance (note)



Refer to → p. 87, § 11

10.8 Language (language selection)

- German
- English
- French
- Spanish
- Russian

Procedure

1 Open the menu: Main menu → Language.

<pre> Language 1 Language A - M 2 Language N - Z </pre>	← Menu title
---	--------------

2 Open Language A - M.

<pre> Language Language A - M 1 2 German 3 4 5 French 6 English 7 8 9 0.0 % LEL Range ... 100 </pre>	← Menu title
---	--------------

- 3 Select the desired language.
- 4 Press **Back** to exit the menu.

10.9 General help


Function

The “General Help” contains brief information on the keypad and menu functions.

Procedure

► Open the menu: Main menu → General Help.

<pre> General Help German The following sections offer general information for the EUROFID. A menu item will be selected with the arrow keys or the hotkeys. < Continue > 0.0 % LEL Range ... 100 </pre>	← Menu title
---	--------------

- To view additional information: Press .
- To close the help function: Press **Back**.

EuroFID3010 Inline UEG

11 Maintenance menu

Settings
System information
Test functions

11.1 Maintenance menu

Password protection

The Maintenance submenu is password-protected. A password must be entered to access it.



- The password is 123789 and cannot be changed.
- As long as the “Service lock” digital input is activated, access to the Maintenance submenu is blocked; a corresponding message appears after entering the password.

How to open the Maintenance submenu:

1 Open the Maintenance submenu: Main menu → Maintenance.

» The dialog for entering the password appears:

<pre>Maintenance Passwordinput Escape: _____ <BACK> = _____* 0.0 % LEL Range ... 100</pre>	<p>← Menu title</p> <p>← Input field (unchangeable: 123789)</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
--	--

2 Enter the following password into the input field: 1 2 3 7 8 9

3 Press .

» The “Maintenance” menu appears and is available for use.

<pre>Maintenance 1 Calibr. Gas Value 2 Conversion factors 3 Standby 4 Error archives 5 Filter change 6 System parameters 7 Set Service 8 Threshold reset 0.0 % LEL Range ... 100</pre>	<p>← Menu title</p> <p>→ p. 112, §12.5.1</p> <p>→ p. 113, §12.5.2</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
--	--

» Access to the “Maintenance” submenu is allowed until the measurement display is opened once more.

11.2

Standby**Function**

Special state “Standby”:

- The fuel gas supply is cut off and the flame is extinguished.
- All components remain at operating temperature.
- The measuring system is continuously purged with zero gas.
- The “Measured value valid” digital output is deactivated.
- The “Alarm” digital output is deactivated.
- The analog outputs are maintained.
- The “OK” LED does not light up.
- The ejector pump and the heater of the sensor block remain in operation.

Procedure

- 1 Open the menu: Main menu → Maintenance → Standby

<pre> Standby Standby < NO > < End > 0.0 % LEL Range . . . 100 </pre>	<p>← Menu title</p> <p>← Selection box</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
--	---

- 2 Ending standby:

- a) Change selection box to “NO”: The FID flame is automatically ignited.
- b) The “Maintenance” menu is displayed (→ p. 88, § 11.1).



“Standby” mode is automatically deactivated as soon as you open the measurement display (→ p. 77, § 10.3).

11.3 Error archives

11.3.1 Function of the error archives

The EuroFID3010 Inline UEG saves the following in the Error archives:

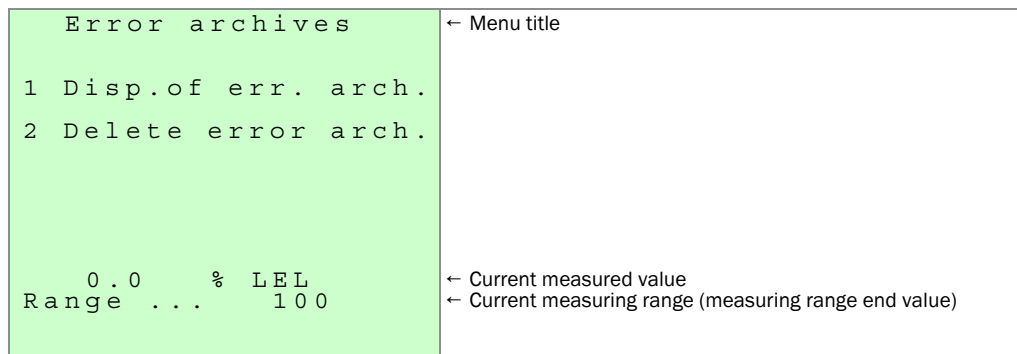
- Malfunction messages in abbreviated form
- Activation of the “System in Service” status

The error archives contain the most recent messages.

These messages can be:

- Viewed on the display
- Fully deleted

Open: Main menu → Maintenance → Error archives



Note

The error archive is automatically deleted

- after a restart
- after a switch off
- after a failure of the power voltage

11.3.2 Displaying the error archives

Function

The “Error archives” menu is used to display the saved error messages on the screen. Two messages are displayed on each “page”.



- Deleting all error messages → p. 91, § 11.3.3
- Error messages in full detail (diagnosis function) → p. 79, § 10.6.2







Procedure

- 1 Open the menu: Main menu → Maintenance → Error archives → Disp. of err. archiv
 - » Existing error messages are displayed in the sequence they occurred (most recent first); two error messages are shown per display page. *Example:*

Disp. of err. archiv	← Menu title
15.05.2013 09:52:31	← Date/time
In Service 00079	← Message / localization ^[1]
Service_requir (Diag)	← Automatic reaction
15.05.2013 09:52:33	← Date/time
In Service 0074	← Message / localization ^[1]
Service_requir (Diag)	← Automatic reaction
< END >	
0.0 % LEL	← Current measured value
Range ... 100	← Current measuring range (measuring range end value)

[1] Number of the program section in which the error was localized.

» If additional error messages are available, < Continue > will be displayed.

- 2 < Continue > or < END >: Press .
- 3 Browse:  or 
Skip to beginning or end  or 
► To cancel: Press .

11.3.3 Deleting the error archive

Function

All saved error messages in the error archives can be deleted.



NOTICE:

Deletion is permanent and cannot be reversed.

Procedure

1 Open the menu: Main menu → Maintenance → Error archives → Delete error archive

Delete error archive	← Menu title
Instrum.log.register Delete <NO >	← Selection box
<div style="text-align: center; background-color: black; color: white; padding: 2px;">< END ></div>	← Current measured value
0.0 % LEL Range ... 100	← Current measuring range (measuring range end value)

- All error messages are deleted.
- The Error archives menu appears.

11.4

Filter change special state (menu)**NOTICE:**

- ▶ Only open the sample gas filter when the “Filter change” status is activated. (Procedure → p. 135, § 14.5.2).
Otherwise dust-laden ambient air can enter the measuring system.



For a detailed description of the operating steps and maintenance work, refer to → p. 135, § 14.5.2

Function

The “Filter change” menu function assists you during maintenance work on the sample gas filter in two steps:

- a) Safeguarding before starting maintenance:
 - The supply of instrument air to the ejector pump is stopped. The ejector pump is deactivated as a result; the supply of sample gas to the measuring system is stopped.
 - The supply of fuel gas is stopped, the FID flame is extinguished.
 - *On devices with the “flow barrier” option:* The external solenoid valve is activated, causing the sample gas in the sample gas filter to be displaced by instrument air.
- b) Safe restart:
 - The sample gas filter is heated to operating temperature to prevent condensation.
 - The FID flame is re-ignited.
 - *On devices with the “flow barrier” option:* The external solenoid valve is deactivated.
 - The sample gas supply is activated again.

Opening the menu

The menu can only be opened when the device status “System in Service” is active.

- ▶ Main → Maintenance → Filter change

Maintenance	← Menu title
Filter change	
Filter change	← Selection box 1
NO	
Filter is replaced	← Selection box 2
NO	
Change or End	← Current measured value
0.0 % LEL	← Current measuring range (measuring range end value)
Range . . . 100	
System in Service	

Procedure (abbreviated)

- a) *Before commencing maintenance work:*
 - ▶ Open the “Filter change” menu (Main menu → Maintenance → Filter change).
 - ▶ Set the “Filter change” status to “YES” (Selection box 1).
 - ▶ Close the “Filter change” menu (“END,” enter key).
- b) *After maintenance work:*
 - ▶ Open the “Filter change” menu once again.
 - ▶ Set the “Filter is replaced” status to “YES” (Selection box 2).
 - ▶ Close the “Filter change” menu (“END,” enter key).
 - ▶ Wait until measurement mode is automatically activated once again (approx. 15 min.).

11.5 System parameters (overview)

Functions in the “System parameters” submenu

- User settings
- Calibration settings
- Reset and test of the integrated microcomputer
- Device configuration by the manufacturer (protected)

“System parameters” menu

It is only possible to open the “System parameters” menu if the device status “System in Service” is activated.

- 1 *If the device status “System in Service” is not activated:* Activate the device status “System in Service” (→ p. 100, § 11.10).
- 2 Main menu → Maintenance → System parameters.

System Parameters	← Menu title
1 User level	→ p. 95, § 11.6
2 Expert level	← Not described in these Operating Instructions
3 Zero check	→ p. 122, § 12.10.1
4 Calib. Gas check	→ p. 122, § 12.10.2
5 Hardware check	→ p. 103, § 11.15
6 Restart	→ p. 107, § 11.16
Meas.value(format)unit	
Measuring range ..value	
System in Service (blink)	
Service_requir(Diag)	

11.6

User level (activation)**Functions**

The “User level” contains device settings for users. The functions are divided into two menus, which can be opened in succession.

Opening the “User level” menu

- Open the “User level” submenu: Main menu → Maintenance → System parameters → User level

<pre>System Parameters User level 1 Calibrationcontrol 2 Setup temp.sensbl. 3 I/O - parameters 4 Alarm value set up 5 Purging parameter 6 Next menu 0.0 % LEL Range ... 100 System in Service</pre>	<p>← Menu title</p> <p>→ p. 117, §12.7</p> <p>← Opening the second selection menu</p>
---	---

- *To open the second selection menu: Select Next menu.*

<pre>System Parameters User level 1 Time and date set 2 Summer/winter time 3 Unit of measurem. 4 Name of analyzer 0.0 % LEL Range ... 100 System in Service</pre>	<p>← Menu title</p>
---	---------------------

11.7

Temperature of the sensor block**Function**

The sensor block is heated to prevent condensation in the parts in contact with the sample gas. The setpoint temperature of the heater is adjustable.

Setpoint temperature T_A	Setting range	Factory setting
Sensor block temperature	60 ... 230 °C	195 °C.

**NOTICE:**

The setpoint temperature (T_A) must be set to a value at least 25 K below the classification temperature (T_C , refer to type plate).

The sensor block temperature may not be set to a value above 195 °C.

Example: $T_C = 220\text{ °C}$; $T_{Amax} \leq 195\text{ °C}$

Procedure

- 1 Open the menu: Main menu → Maintenance → System parameters → User level → Setup temp. sensbl.

System Parameters	← Menu title
Setup temp. sensbl.	← Menu title
Sensor block settemp	
195.00 CEL	← Input field
Up : CEL	← Minimum value
up to : 60.00	← Maximum value
230.00	
Change or End	
0.0 % LEL	← Current measured value
Range ... 100	← Current measuring range (measuring range end value)

11.8 Display of measurement

Function

The following properties of the measurement display (→ p. 77, § 10.3) can be modified:

- Resolution of the measurement display (number of digits)
- Display mode for the measured value: Instantaneous value or damped value

Opening the “I/O-Parameters” menu

- ▶ Open the “User level” submenu: Main menu → Maintenance → System parameters → I/O-Parameters

<pre>System Parameters I/O-Parameters 1 Display of measur. 0.0 % LEL Range ... 100 System in Service</pre>	← Menu title
--	--------------

Settings for numeric measurement display

Display: - numeric -	
1/100	Resolution = 1 % of the measuring range end value
1/1000	Resolution = 0.1 % of the measuring range end value

Procedure

- 1 Open the menu: Main menu → Maintenance → System parameters → User level → I/O-Parameters → Display of measur.

<pre>System Parameters Display: - numeric - 1 / 1 0 0 0 Change or End 0.0 % LEL Range ... 100</pre>	← Menu title ← Menu title ← Selection box 1 ← Current measured value ← Current measuring range (measuring range end value)
---	--

11.9

Configuring threshold value indicators (alarms)**Function**

LEL threshold values can be set to monitor the LEL concentration.

If the LEL threshold is exceeded:

- The respective alarm switching contact is activated (→ p. 57, §7.3)
- The “Alarm” LED lights up (→ p. 72, §9.1.1).



- An alarm signal can only be reset when the measured value is inside the respective threshold value once more.
- The alarms are not in operation when the “System in Service” device status is activated (→ p. 100, §11.10).

Threshold value modes

There are two threshold value modes:

- Two threshold values for alarm alert when the threshold value is not reached (L1, L2) and if the threshold value (H1, H2) is exceeded.
- Three threshold values for alarm alert if the threshold value is exceeded (H0, H1, H2).

Table 6

Threshold value modes and threshold value abbreviations

Mode: GRZ 2H 2L / Median value		Mode: GRZ 3H	
Alarm – when the threshold value is not reached	L2	First pre-alarm	H0
Pre-alarm – when the threshold value is not reached	L1	Second pre-alarm	H1
Pre-alarm – when the threshold value is exceeded	H1	Alarm	H2
Alarm – when the threshold value is exceeded	H2		

Relations: H0 < H1 < H2

Relations: L2 < L1 < H1 < H2

Factory setting:

- Lower threshold: 20% LEL
- Alarm: 40% LEL

Threshold values

The threshold values are displayed in the %LEL menu.

The second pre-alarm H1 is output on the V2 terminal module (X21.9+X21.10) as a pre-alarm.

The first pre-alarm H0 is output on the V2 terminal module (X21.3+X21.4).

Prerequisite: the J8 jumper has been placed.

- ▶ To deactivate a threshold value: Set it to 0.
- ▶ Choose the threshold values to ensure that the alarm is triggered in a timely manner before a dangerous situation occurs.

Limit	Setting range	Factory setting
Threshold value	0.0 ... 99.99%	0.0 ^[1]

[1] 0.0: Threshold value is deactivated

Trigger delay

Setting: 0.0.

This setting may not be changed.

Latching of alarms

Setting: NO.

This setting may not be changed.

- The main alarm on the V2 terminal module is latching (“selfheld”).

Procedure

- Open the menu: Main menu → Maintenance → System parameters → User level → Alarm value set up

<pre>Alarm value set up GRZ 3H ppm Thresh2 0.00 Thresh1 0.00 Thresh0 0.00 Delay 0.0s Hyster. 5 % Alarm selfhelded NO Change or End 0.0 % LEL Range ... 100</pre>	<p>← Menu title</p> <p>← Selection box 1</p> <p>← Physical unit of the threshold values</p> <p>← Input field 1a</p> <p>← Input field 1b</p> <p>← Input field 1c</p> <p>← Input field 2, must be set to 0.0</p> <p>← Input field 3</p> <p>← Selection box 2, must be set to “NO”</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
--	--

<pre>Alarm value set up GRZ 2H 2L ppm Thresh2 0.00 Thresh1 0.00 ThreshL1 0.00 ThreshL2 0.00 Delay 0.0s Hyster. 5 % Alarm selfhelded NO Change or End 0.0 % LEL Range ... 100</pre>	<p>← Menu title</p> <p>← Selection box 1</p> <p>← Physical unit of the threshold values</p> <p>← Input field 1a</p> <p>← Input field 1b</p> <p>← Input field 1c</p> <p>← Input field 1d</p> <p>← Input field 2, must be set to 0.0</p> <p>← Input field 3 (Range: 0-30%)</p> <p>← Selection box 2, must be set to “NO”</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
--	---

Note

- The V2 terminal module is responsible for the latching of the main alarm.
- The pre-alarms in the V2 terminal module are non-latching. This non-latching / “non-self-holding” cannot be changed.


11.10 Special state “System in service”

Effect

- The “Measured value valid” digital output is deactivated (→ p. 57, § 7.3).
 - The threshold value indicators (alarms) are deactivated (for information refer to → p. 98, § 11.9).
 - The “Service” LED lights up.
 - The “OK” LED does not light up.
- Procedure (menu)

Open the menu: Main menu → Maintenance → Set Service

<pre> Maintenance System in Service < NO > < END > 0.0 % LEL Range . . . 100 </pre>	<p>← Menu title</p> <p>← Selection box</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
--	---

 Digital output: → p. 57, § 7.3

When “System in Service” is reset, it can take up to 30 seconds to take effect.

11.11 Threshold reset

Function

The alarm signal for the H2 and L2 threshold values can be configured “latching” (→ p. 98, § 11.9).

You can reset activated latching alarm signals in the “Threshold reset” menu.

The H2 alarm can be reset via the X30-2 and X30-15 digital input with a button.

Deactivation is not possible as long as the measured value is outside the threshold value.

Procedure

- Open the menu: Main menu → Maintenance → Threshold reset

<pre> Alarm reset Alarm reset NO Change or End 0.0 % LEL Range . . . 100 </pre>	<p>← Menu title</p> <p>← Selection box</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
---	---

The alarm from the V2 terminal module must be separately reset (→ p. 61, § 7.4.2.3).

11.12 **Time settings**

11.12.1 **Time and date set**

Function

This menu is used to set the internal clock of the EuroFID3010 Inline UEG.



WARNING: Potential hazard resulting from failure of the operating function

When the clock is reset, the EuroFID3010 Inline UEG restarts. The device temporarily shuts down as a result.

► Make sure that this will not cause any problems.

Procedure

- 1 Open the menu: Main menu → Maintenance → System parameters → User level → Next menu → Time and date set

<pre>System Parameters Time and date set Year 1997...2099 2013 Month 1...12 11 Day 1...31 29 Hour 0...23 17 Minute 0...59 39 Second 0...59 45 Change or End 0.0 % LEL Range ... 100</pre>	<p>← Menu title</p> <p>← Date^[1]</p> <p>←</p> <p>← Time^[1]</p> <p>←</p> <p>←</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
--	---

[1] When opening the menu: Current values at the time the menu was opened.

To set a value:

- 2 Enter the desired value.

<pre>System Parameters System restarts Data accept ? Yes Change or End 0.0 % LEL Range ... 100</pre>	<p>← Menu title</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
---	--

11.12.2 **Summer/winter time (automatic switchover)****Function**

The EuroFID3010 Inline UEG can automatically switch the internal clock between summer (daylight savings) time and winter (standard) time. Some national rules for switching the time have been programmed and can be activated in this menu.

Procedure

- 1 Open the menu: Main menu → Maintenance → System → User level → Next menu → Summer/winter time

System Parameters Summer/winter time D - Official	← Menu title ← Selection box
Change or End 0.0 % LEL Range ... 100	← Current measured value ← Current measuring range (measuring range end value)

11.13 **Supplementary text for physical unit (unit of measurement)****Function**

A supplementary informative text (12 characters max.) can be appended to the displayed physical unit, e.g. as a comment on the measured value or to name the measuring component (e.g. C2H6).

Procedure

- 1 Open the menu: Main menu → Maintenance → System parameters → User level → Next menu → Unit of measurement

System Parameters Unit of measurement	← Menu title
Unit of measurement aBc123456789	← Input field (12 characters)
Change or End 0.0 % LEL Range ... 100	← Current measured value ← Current measuring range (measuring range end value)

11.14 Name of analyzer

Function


The measurement display (→ p. 77, § 10.3) contains a text line you can program yourself – for example, to name the sampling point of the EuroFID3010 Inline UEG.

Procedure

- 1 Open the menu: Main menu → Maintenance → System parameters → User level → Next menu → Name of analyzer

<pre>System Parameters Name of analyzer Name of analyzer aBc1234567XyZ3456789 Change or End 0.0 % LEL Range ... 100</pre>	<p>← Menu title</p> <p>← Input field (20 characters)</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
--	---


11.15 Hardware check

	<p>Carry out the hardware checks annually. Note: The outputs may change during the hardware check.</p>
--	---

Function

In this menu, you can test the following functions:

Inputs and Outputs	→ p. 104, § 11.15.1
Interfaces	→ p. 106, § 11.15.3
LED's	→ p. 106, § 11.15.4
Keypad	→ p. 106, § 11.15.4.3
Watchdog	→ p. 106, § 11.15.5

	<p>The EuroFID3010 Inline UEG goes into Standby (→ p. 89, § 11.2) when the “Hardware check” menu is opened.</p>
---	---

Procedure

- 1 Open the menu: Main menu → Maintenance → System parameters → Hardware check

<pre>Hardware check Hardware check !!! Measurement OFF < End > Meas.value(format)unit Measuring range ...value System in Service (blink) Service_requir(Diag)</pre>	<p>← Menu title</p> <p>← Start hardware check !!!! Do you want to confirm with “YES”?</p>
--	---

Subject to change without notice

11.15.1 **Testing inputs/outputs**

- 1 Open the menu: Main menu → Maintenance → System parameters → Hardware check → Inputs and outputs

Hardware check	← Menu title
1 Inputs and Outputs	← Select test menu
2 Interface Check	
3 Front panel test	
4 Watchdog	
Meas.value(format)unit	
Measuring range ..value	
System in Service (blink)	
Service_requir(Diag)	

11.15.1.1 **Analog output**

The analog outputs of the V2 terminal module are tested in this menu.

- 1 Open the menu: Main menu → Maintenance → System parameters → Hardware check → Inputs and outputs → Analog outputs operating unit

Hardware check	← Menu title
Analog Outputs	
mA	
AnOutMeasva1 +2.00	← Enter setpoint value (0 ... 21 mA) here
AnOutMeasva2 +2.00	← Enter setpoint value (0 ... 21 mA) here
Meas.value(format)unit	
Measuring range ..value	
System in Service (blink)	
Service_requir(Diag)	

11.15.2 **Digital inputs**

This menu shows the digital inputs of the V2 terminal module.

- 1 Open the menu: Main menu → Maintenance → System parameters → Hardware check → Inputs and outputs → Digital inputs, operating unit

<pre>Digital Inputs I_Calibgextr 1 I_Cali.stop 1 I_Serv.barri 1 < END > Meas.value(format) unit Empty System in Service (blink) Service_requir(Diag)</pre>	← Menu title
---	--------------

11.15.2.1 **Digital outputs, operating unit**

The digital outputs of the V2 terminal module are tested in this menu.

- 1 Open the menu: Main menu → Maintenance → System parameters → Hardware check → Inputs and Outputs → Digital outputs, operating unit

<pre>Hardware check Digital Outputs DOU Calibr. 1 Stat: Meas. 1 Stat: InsFail 0 Stat: MaintRe 1 Sta: ThreL1H0 0 Stat: Thre.L2 0 Stat: Thre.H1 0 Stat: Thre.H2 0 Change or END Meas.value(format) unit Empty System in Service (blink) Service_requir(Diag)</pre>	← Menu title
---	--------------

11.15.2.2 Digital input, analyzer

This menu shows the presence of suction voltage.



Only specialists should use this menu.

11.15.2.3 Digital outputs, analyzer

Solenoid valves can be switched in this menu.

0 = On

1 = Off



Only specialists should use this menu.

11.15.3 Interface Check

The function of the interfaces can be checked in this menu.



Only specialists should use this menu.

11.15.4 Front panel**11.15.4.1 LED testing**

The LEDs on the operating unit can be tested in this menu.

0 = Off

1 = On

11.15.4.2 LCD (Display) testing

Various test patterns can be shown on the display in this menu.

11.15.4.3 Keypad testing

The keypad can be tested in this menu.

Pressed buttons will be displayed in inverted mode.

To exit the menu, press the ESC button twice.

11.15.5 Watchdog testing

A reset occurs automatically after the watchdog is triggered.

11.16

Restart

Function

The `Restart` function starts the microcomputer of the operating unit in the same manner as when the AC power supply is switched on. Measured value processing then restarts. All saved values remain unchanged.

Procedure



CAUTION: Risk for connected devices/systems

During restarting, all device functions of the EuroFID3010 Inline UEG are temporarily shut down. This also applies to measured value outputs and status messages.

► Ensure that this will not cause any problems in connected stations.

- 1 Open the “System parameters” menu: Main menu → Maintenance → System parameters.
- 2 Select `Restart`.

EuroFID3010 Inline UEG

12 Calibration

- Types of calibration
- Calibration requirements
- Manual calibration procedure
- Automatic calibration

12.1 When is calibration necessary?

The EuroFID3010 Inline UEG should be calibrated:

- After commissioning
- At regular intervals during operation



Recommended calibration interval: 1 week

- After every time the test gas cylinder is changed

The user is responsible for deciding how often to calibrate the unit.



Calibration data are saved in the operating unit.

- ▶ Calibrate the device after changing the operating unit.



- ▶ After commissioning, it is recommended to repeat the calibration approx. 2 hours after the flame is ignited.

to ensure that the operating temperature and the measured values are stable.

12.2 Requirements for calibration

- The EuroFID3010 Inline UEG is ready for operation.
- The calibration gas is supplied.
- The setpoint (calibration gas value) has been set correctly (→ p. 112, § 12.5.1).

12.3 General sequence of a calibration

The calibration of the zero and end points is automatic.

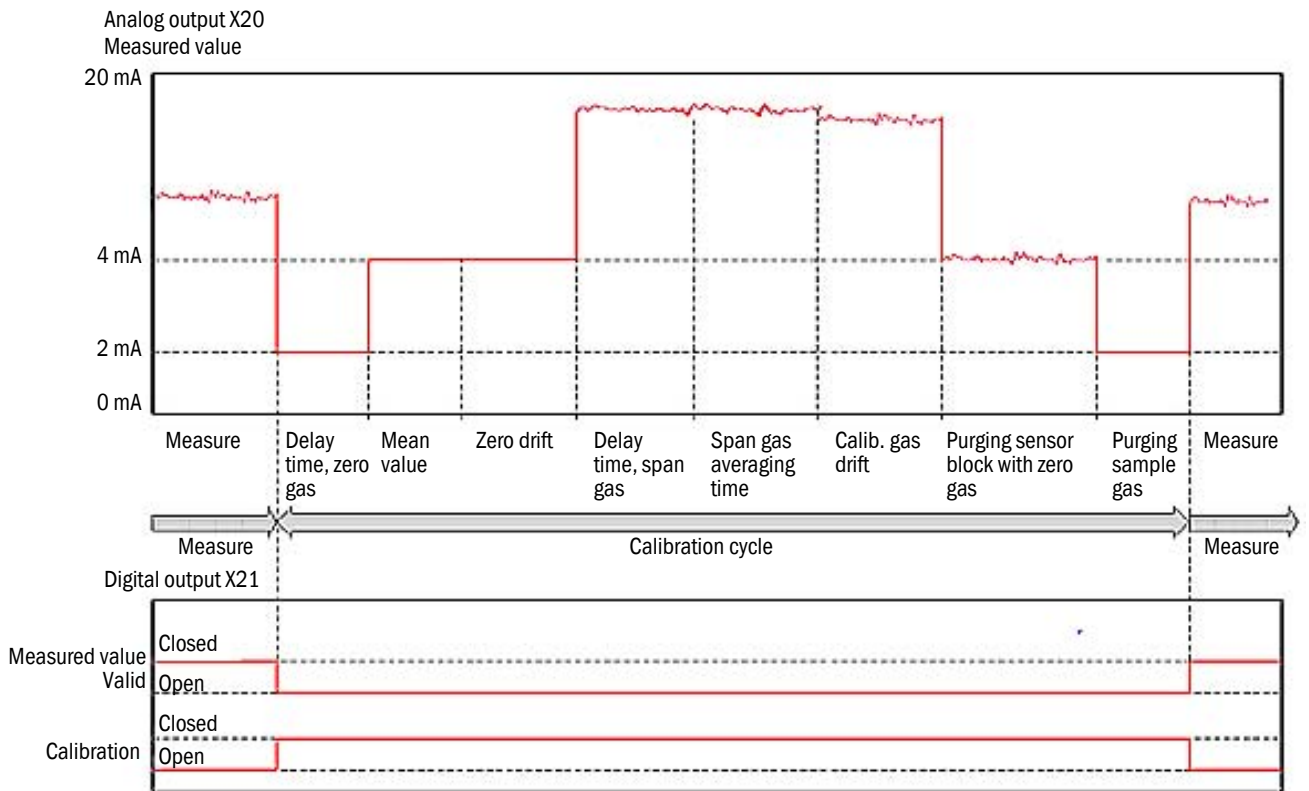
The following parameters must be set:

- Calibration gas values (→ p. 112, § 12.5.1)
- Conversion factors (→ p. 113, § 12.5.2)
- Duration of calibration (→ p. 121, § 12.8.1.5)
- Calibration control (→ p. 118, § 12.8)
- Calibration parameters (→ p. 112, § 12.5)

The following diagram shows the sequence of calibration events:

- Output measured value
- Status contact “Measured value valid”
- Status contact “calibrate”

Fig. 25 Sequence of calibration events



Signaling states:

- The “reference value” analog output is maintained at the last valid measured value.
- LEDs on the operating unit: Refer to Table
- States of the status contacts on the V2 terminal module, terminal X21: Refer to Table

Terminal	Contact		Relay during calibration ^{[1] [2]}	Relay during measurement ^{[1] [3]}
X21	1 - 2	System in Service	0	0
	3 - 4	Customer-specific	1	1
	5 - 6	Failure	1	1
	7 - 8	Measured value valid	0	1
	9 - 10	Pre-alarm	1	1
	11 - 12	Calibration	1	0
	13 - 14	Alarm	1	1

[1] 0 = not switched, 1 = switched

[2] All LEDs on the operating unit are OFF

[3] Only the “OK” LED lights up.

After calibration is finished:

- The green “OK” LED on the operating unit lights up.
- The EuroFID3010 Inline UEG is in measuring mode again.

12.4 Calibration gases

12.4.1 Zero gas

Zero gas: Connected instrument air.

12.4.2 Span gas

Span gas: Propane in synthetic air.

Concentration of the span gas: recommended 8,000 ppm.

12.5 Calibration parameters



WARNING: Risk of explosion with wrong calibration gas

All of the following examples are for calibration with propane gas only.

- ▶ Calibrate the EuroFID3010 Inline UEG exclusively with propane in synthetic air.

12.5.1 Calibration gas value

Menu: Main menu → Maintenance → Calibr. Gas Value

This menu is where the span gas value (from the test gas cylinder) is entered.

<pre> Maintenance Calibration gas value Zero gas : 0.00 ppm Span gas : 8000.00 ppm 47% LEL Change or End 0.0 % LEL Range ... 100 </pre>	<p>← Menu title</p> <p>← Setpoint for zero gas (cannot be changed)</p> <p>← Input field for test gas concentration ← Display of span gas in LEL^[1] []</p> <p>← Current measured value</p> <p>← Current measuring range (measuring range end value)</p>
---	---

[1] The LEL concentration is calculated using the value entered in the “Conversion factors” menu

Table of input ranges

	Input range ^[1]	Factory setting
Zero gas	---	0.00 ppm
Span gas	3,000 ... 18,000 ppm	---

[1] Potential input range for the menu

12.5.2 Conversion factors

Menu: Main menu → Maintenance → Conversion factors

The factor for converting between the concentration of calibration gas (in ppm) and the corresponding LEL value is entered in this menu.

Maintenance Conversion factors	← Menu title
Ref. calib. gas value ppm 8000	← Input field for calibration gas value (concentration) and LEL (standard setting)
% LEL 47.00	
ppm 1	← Reserved for future use
mgC 1.608	
Change or End	
0.0	← Current measured value
Range ... 100	← Current measuring range (measuring range end value)

Table showing the relationship between scaled calibration gas values and possible input range.

	Input range ^[1]	Factory setting
Calibration gas value	3,000 ... 9,000 ppm	8,000 ppm
LEL	30-100%LEL	47% LEL

[1] Potential input range for the menu

12.6

Cross calibration

If the EuroFID3010 Inline UEG is to be used to measure for example n-hexane mixed with air with a measurement range of 0-100% LEL, cross calibration is necessary.

Procedure

- 1 Enter the concentration of the propane test gas (in ppm) in the “Maintenance - Calibration gas value” menu.
Example: Span gas: 8800 ppm
- 2 Enter the test gas concentration and the converted LEL value for the sample gas in the “Maintenance - Conversion factor” menu.
Refer to the Table for the conversion factor (f_{LEL}) for the cross gas (sample gas).
Example: Test gas concentration
8000 ppm propane corresponds to 47.0% LEL propane
→ 8800 ppm propane corresponds to 51.8% LEL propane

Take the f_{LEL} for n-hexane (1.14) from the Table.

51.8% LEL propane / 1.14 n-hexane = 45.5% LEL n-hexane

Ref. calib. gas value

<i>ppm</i>	<i>%LEL</i>
8800	45.5

12.6.1 Table of response factors

12.6.1.1 Performance-tested response factors

The following is a list of performance-tested response factors.

-> Additional response factors available by request

	LEL [% by vol.]	f _{LEL}
Propane	1.7	1.00
Acetone	2.5	0.99
Ethanol	3.1	0.83
Ethyl acetate	2.0	1.01
Methanol	6.0	0.82
n-hexane	1.0	1.14

1 percent by volume = 10,000 ppm

- The LEL values are temperature-dependent.
The specified values refer to a temperature of 20 °C.
At other temperatures, multiply the result by LEL (T)/LEL (20 °C).
- The LEL values listed in the table correspond to the CHEMSAVE data Version 2.6 (2010).
- The fluctuation margin of the response factors leads to deviations of $\leq \pm 5$ % LEL or $\leq \pm 10$ % of the measured value.
The largest value applies in each case.

12.6.1.2 Performance-tested response factor for Parafol 1014

The following characteristic material data apply for Parafol 1014:

LEL	0.6 % (V/V)	Source: EC Safety Data Sheet SASOL
Liquid density	0.76 kg/l	Source: EC Safety Data Sheet SASOL
Molar mass	165 g/mol	Source: SASOL Germany GmbH

- Response factor f_{LEL}: 1.24
- Response time:
 - T₅₀: ≤ 2.4 s
 - T₉₀: ≤ 4.5 s

Also see 6th Supplement to EC Type Examination Certificate BVS 05 ATEX G 005 X.

12.6.1.3 Non-performance-tested response factors

**WARNING: Risk of explosion**

These response factors are no LEL response factors (f_{LEL}) and may not be used for safety-relevant measurements.

- Fluctuation margin: $\pm 10\%$.
- The response factors reference propane.

Substanz	substance	Formel formula	CAS-Nr.	Response factor
Benzol	benzene	C ₆ H ₆	71-43-2	0,99
Chlorbenzol	chlorbenzene	C ₆ H ₅ Cl	108-90-7	1,08
Cyclohexan	cyclohexane	C ₆ H ₁₂	110-82-7	0,95
Dichlormethan, Methylenchlorid	methylene chloride	CH ₂ Cl ₂	75-09-2	1,02
Essigsäure	acetic acid	C ₂ H ₄ O ₂	64-19-7	0,59
Ethin, Acetylen	acetylene	C ₂ H ₂	74-86-2	1,05
i-Butylacetat Essigsäure-Isobutylester	isobutyl acetate	C ₆ H ₁₂ O ₂	110-19-0	0,80
Isooctan, 2,2,4 Trimethylpentan	isooctane	C ₈ H ₁₈	540-84-1	1,03
Isopropanol, 2-Propanol	isopropanol	C ₃ H ₈ O	67-63-0	0,74
Methylacetat, Essigsäuremethylester	methylacetate	C ₃ H ₆ O ₂	79-20-9	0,69
n-Butan	n-butane	C ₄ H ₁₀	106-97-8	1,00
n-Heptan	n- heptane	C ₇ H ₁₆	142-82-5	0,93
n-Propanol	n-propanol	C ₃ H ₈ O	71-23-8	0,83
Propen	propene	C ₃ H ₆	115-07-1	0,96
p-Xylol, 1,4 Dimethylbenzol	xylene	C ₈ H ₁₀	106-42-3	0,93
Toluol	toluene	C ₇ H ₈	108-88-3	1,10
Trichlorethen, Ethylentrichlorid, Tri	trichloroethylene	C ₂ HCl ₃	79-01-6	1,05
Trichlormethan	trichlormethane	CHCl ₃	67-66-3	0,69



The EuroFID3010 Inline UEG is a summation instrument for measuring hydrocarbons.

The table with the response factors shows only a selection of measuring components.

12.7

Purging parameters


After calibration is finished, the sample gas path is purged with zero gas (instrument air). After purging is complete, sample gas is once again drawn in.

The duration of purging (purging time) is set in this menu.

Menu: Main menu → Maintenance → System parameters → User level → Purging parameters

<pre>System Parameters Purging parameters Purgetime f.shutdown 1-3600 30 s Change or End 0.0% LEL Range ... 100</pre>	← Menu title
	← Input field

Purging parameters		
Name	Input range	Factory setting
Purgetime f. shutdown	1 ... 3600 s	30 s

	NOTICE:
	<p>▶ It is recommended to purge for a relatively long time than for too short a time. Otherwise the device may switch to measuring mode when there is still calibration gas in the sample gas path. This leads to incorrect measured values.</p>

12.8

Calibration control

In the “Calibration control” menu, you specify the start and sequence of calibration procedures and you can also decide whether the “Ext. calibration/calibration block” digital input is used to start automatic calibration (→ p. 60, § 7.4).

Menu:

Main menu → Maintenance → System parameters → User level → Calibration control → Calibration control

System Parameters	← Menu title
Calibration control	← Menu title
Cal.Mod manual	← Selection box 1
Max calib duration	← Input field 3
600-3600 1200 s	
Auto.cal.bef.Measur	← Selection box 2
<NO >	
Change or End	← Current measured value
0.0 % LEL	← Current measuring range (measuring range end value)
Range ... 100	

Table 7

Explanation of the “Calibration control” menu

Cal.mod	manual	Calibration is started and monitored by the operator only, via a menu function ^[1]
	auto	Automatic calibration starts automatically at the specified times (→ p. 122, § 12.10) (manual calibration is still possible)
	ex.auto	Automatic calibration is started via the “Calibration block” digital input (→ p. 60, § 7.4)
	ex.Steu	Reserved for future use
Max calib duration	Specifies how long the EuroFID3010 Inline UEG tries to find a constant measured value (average value) that can be used for calibration with the help of a calibration gas. If this does not succeed within “Max calib duration,” calibration is aborted and a failure message is activated.	

[1] Standard factory setting.

12.8.1 Types of calibration

The EuroFID3010 Inline UEG offers a number of ways to conduct a calibration:

Cal.mod	manual	Calibration is started and monitored by the operator only, via a menu function ^[1]
	auto	Automatic calibration starts automatically at the specified times (→ p. 122, § 12.10) (manual calibration is still possible)
	ex.auto	Automatic calibration is started via the “Calibration block” digital input (→ p. 60, § 7.4)
	ex.Steu	Reserved for future use

[1] Standard factory setting.

12.8.1.1 Start manual calibration

In “manual calibration,” calibration is started from the operating unit. The calibration results are only saved if a button is pressed to confirm. If the results are not saved, the previous calibration remains valid.



When the digital input “Calibration block” is activated, (→ p. 60, § 7.4) no calibration can be conducted.

Menu: Main menu → Calibration.

<pre> Calibration Zero gas : 0.00 ppm 0.00 % LEL Span gas : 8.000 ppm 47 % LEL Start YES Change or End 0.0 % LEL Range ... 100 </pre>	<p>← Menu title</p> <p>← Setpoint of the zero gas ^[1]</p> <p>← Setpoint of the zero gas ^[2]</p> <p>← Setpoint of the span gas ^[3]</p> <p>← Setpoint of the span gas ^[2]</p> <p>← Selection box</p> <p>← Current measured value</p> <p>← Current measuring range</p>
--	---

[1] Cannot be changed.

[2] In the selected physical unit.

[3] Settings → p. 112, § 12.5.1.

► Wait until the following display appears (example):

<pre> Calibration 10.09.2012 15:08:53 Zerogasdrift 1.32 % Calib. gas dr. total -2.76 % Drift since last Cal -0.47 % Save Cal results Yes End 0.0 % LEL Range ... 100 </pre>	<p>← Menu title</p> <p>← Date/time of the calibration</p> <p>← Zero drift since last basic calibration</p> <p>← Sensitivity shift since last basic calibration ^[1]</p> <p>← Sensitivity shift since previous calibration ^[1]</p> <p>← Selection box</p>
--	---

[1] Relative to measuring range end value.

The calibration can be accepted and saved, or rejected.

► Calibration finished: The measurement display appears and the green “OK” LED lights up.

The calculated “drifts” are automatically compared with the threshold values. If the drift is larger, a malfunction message is generated.


Threshold values:

- Drift > 30 %: “Service requir” malfunction message
- Drift > 50 %: “System failure” malfunction message

12.8.1.2 Scheduled calibration (auto)

In “auto” calibration mode, calibration takes place automatically at specified times (→ p. 120, § 12.8.1.3).

Automatic calibration can be blocked via the “Ext. calibration/calibration block” digital input. No calibration is carried out as long as there is a block signal at the input. Calibration is not triggered until enabled via the digital input.



- When the “calibration block” digital input (→ p. 60, § 7.4) is activated, no calibration is started.
- If a scheduled start time is blocked as a result, the calibration in question is automatically performed later as soon as the “Calibration block” digital input is deactivated.

The results of calibration are automatically saved.

12.8.1.3 Calibration time

Automatic (scheduled) calibration can be set up to start at specified times.

Three start times per day can be set. Each of the start times can be individually activated or deactivated at any time.

These settings are only effective if Cal. Mod is set to auto (→ p. 119, § 12.8.1).

Procedure


Menu: Main menu → Maintenance → System parameters → User level → Calibration control → Calibration time

Calibration time	← Menu title
Sunday :	← Weekday (cannot be changed)
N00:00 Y12:00 N00:00	← Selection box for activation / input fields for hour:minute
Monday :	
Y07:30 N10:15 Y19:45	
Tuesday :	
N00:00 N00:00 N00:00	
Wednesday :	
N07:30 Y10:15 Y19:45	
Thursday :	
N00:00 N00:00 N00:00	
Friday :	
N07:30 Y10:15 Y19:45	
Saturday :	
N00:00 N12:00 Y23:30	
Change or End	

3 times can be entered per day.

N: Calibration deactivated

Y: Calibration will be carried out at the specified time




Scheduled calibration can be canceled one minute after starting by pressing the MEAS button.

12.8.1.4 **Externally controlled calibration (Ex.auto)**


Calibration is started externally via the “Ext. calibration/calibration block” digital input (→ p. 60, §7.4).

12.8.1.5 **Maximum calibration duration**

 For more information, refer to → p. 60, § 7.4

Max calib duration	Specifies how long the EuroFID3010 Inline UEG tries to find a constant measured value (average value) that can be used for calibration with the help of a calibration gas. If this does not succeed within “Max calib duration,” the calibration is aborted and a malfunction message is activated. Max. calibration duration: 1-3600 s Factory setting: 600 s
--------------------	--

12.8.1.6 **Calibration block**

 For more information, refer to → p. 60, § 7.4

12.9 **Diagnosis, calibration drift**

The results of the last calibration including date are shown in this menu.

<pre> Diagnosis Calibration Date 10.05.2013 14:38.17 Zero drift 0.2 % Calib. gas dr. total 5.2 % Drift since last Cal 3.8 % < Continue > 0.0 % LEL Range ... 100 </pre>	<p>← Menu title</p> <p>← Date/time of the calibration</p> <p>← Zero drift since last basic calibration</p> <p>← Sensitivity shift since last basic calibration [1]</p> <p>← Sensitivity shift since previous calibration [1]</p>
--	--

[1] Relative to measuring range end value.

12.10 Zero check and calibration gas check

Menu: Main menu → Maintenance → System parameters

<pre> System Parameters 1 User level 2 Expert level 3 Zero check 4 Calib. Gas check 5 Restart System fail. (Diagn) Range ... 100 </pre>	<p>← Menu title</p> <p>→ p. 95, §11.6</p> <p>← Not described in these Operating Instructions</p> <p>→ p. 122, §12.10.1</p> <p>→ p. 122, §12.10.2</p> <p>→ p. 107, §11.16</p>
---	--



Measurements are interrupted during zero check and calibration gas check.

- ▶ Inform any affected stations.
- ▶ Deactivate any attached devices if necessary for safety.

12.10.1 Zero check

Function

This function allows you to feed zero gas.

- The zero gas supply is activated.
- The EuroFID3010 Inline UEG shows the measured value of the zero gas.

This state ends automatically if the specified time (approx. 5 min) runs out or you cancel the function from the menu.

12.10.2 Sensitivity test (calibration gas check)

Function

This function allows you to feed in span gas.

- The span gas supply is activated.
- The EuroFID3010 Inline UEG shows the measured value of the span gas.

This state ends automatically if the specified time (approx. 5 min) runs out or you cancel the function from the menu.

12.11 Special states

The following conditions are designated as special states:

- Power off
- Maintenance mode
- Failure
- Start phase
- Warm-up phase
- Ignition
- Calibration
- Purging
- Filter change
- Standby
- Bridging the V2 terminal module with the service/maintenance switch



NOTICE: No monitoring when a special state is in effect

When the EuroFID3010 Inline UEG is in a special state, the gas concentration is not monitored.

12.12 Ending a special state

Special states are ended:

- By pressing the MEAS button.
- Automatically after the state is finished.
- Depending on the state of the EuroFID3010 Inline UEG: Manual abort.

12.13 Signaling a special state

- By opening the “Measured value valid” contact (X21.7+X21.8) (closed current principle).
- Outputting 2mA at the “Measured value” analog output (X20.3+X20.4).
- In the special state of “Failure,” the measured value is set to 0 mA.
- During calibration, the “Measured value valid” contact is open and the “Calibration” contact (X21.11+X21.12) is closed.
- In the special state of “Failure,” the “Failure” contact is open.

EuroFID3010 Inline UEG

13 Decommissioning

Preparation
Decommissioning procedure

13.1 Preparing decommissioning



WARNING: Hazard from process gases

For processes with overpressure, hot or toxic gases may escape when the sampling point is opened.

- ▶ Undertake suitable safety measures.

13.1.1 Secure connected systems

- ▶ Inform any connected stations.
- ▶ Secure/deactivate connected devices (e.g. process control).
- ▶ Deactivate connected signaling devices (alarms, status indicators).

13.1.2 Protect against condensation



NOTICE:

The sensor block of the EuroFID3010 Inline UEG is heated to prevent condensation in the internal measuring system.

When the EuroFID3010 Inline UEG is taken out of operation, condensation may occur in the sensor block as it cools.

- ▶ Always purge the internal sample gas path with a “dry” neutral gas before decommissioning.

- ▶ Use the “zero check” to feed instrument air (= zero gas) into the measuring system (→ p. 122, § 12.10.1).

13.2 Deactivation procedure

- 1 Perform safeguarding measures (→ § 13.1).
- 2 Shut off the calibration gas supply (if on).
- 3 Close the fuel gas supply (external valve).
 - The FID flame goes out. The EuroFID3010 Inline UEG measuring system is purged with instrument air (→ § 13.1.2 „Protect against condensation“).
- 4 Deactivate the H₂ leakage detector (if installed).
- 5 Purge for at least ten minutes.
- 6 Close off the instrument air supply.
- 7 Switch off the operating unit:
 - *Either:* externally interrupt the AC power supply (e.g. via the main system switch)
 - *Or:* turn off the power switch on the back of the operating panel.
- 8 Let the analyzer unit cool before starting work on the interior of the device (risk of burns).

13.3 Transport

Sampling probe

- ▶ Treat the sampling probe with care and protect it.
 - Observe the lifting points (→ p. 35, Fig. 7).
 - Protect the sampling probe from stress and impact.

13.4

Disposal

- ▶ Observe locally applicable legal regulations.
- ▶ The device can be disposed of as industrial scrap.
- ▶ Dispose of the following parts separately (may contain dangerous or polluting substances):
 - Operating unit battery

13.5

Declaration of clearance

Regarding biological risk and hazardous materials.

Repair, maintenance or returns of devices/components will only be carried out if they contain no hazardous materials and an official, fully-completed declaration of clearance is provided. If this is not the case, SICK may refuse to accept returns or to perform repairs or maintenance.

This declaration may only be filled out by authorized personnel and requires a legally binding signature.

EuroFID3010 Inline UEG

14 Maintenance

Maintenance plan
Maintenance work
Preventative maintenance
Recommended spare parts

14.1

Safety instructions for maintenance work**WARNING: Hazard from process gases**

For processes with overpressure, hot or toxic gases may escape when the sampling point is opened.

- ▶ Undertake suitable safety measures.

**WARNING: Malfunction due to wrong spare parts**

Improper repairs may lead to loss of safety functions.

- ▶ Use original SICK spare parts only.

**WARNING: Risk of explosion from escaping fuel gas**

- ▶ Shut off the fuel gas supply before performing maintenance.
- ▶ After maintenance is completed, check the fuel gas supply for leak tightness.

**CAUTION: Risk of burns**

- During the operating state, the sensor block and the sample gas filter are hot ($\approx 200^\circ\text{C}$). This also applies to their surfaces.
- The surface of the sampling probe and the probe tube can reach temperatures of 350°C .
- ▶ Wear protective gloves.
- ▶ Keep dismantled, hot components away from electrical components and cables and allow to cool in a protected place.

**CAUTION: General hazards from voltage**

- ▶ If it is necessary to open the device during setting or maintenance work and the voltage supply needs to remain on, this work may only be performed by skilled persons who are familiar with electrical hazards and potential risks.
- ▶ If it is necessary to open or remove internal electrical components: Disconnect the device from all power sources before starting work.
- ▶ If liquids have penetrated electrical components, take the device out of operation and externally disconnect the AC power supply (e.g. unplug the power cord). Then contact the manufacturer's service technicians or other suitably trained skilled persons to have the device serviced.
- ▶ If the device can no longer be operated without hazard, take the device out of operation and secure against unauthorized commissioning.
- ▶ Never disconnect the protective conductor connections inside or outside the device, otherwise the device could pose a hazard.

**WARNING: Health risk through contact with toxic gases**

Residues of noxious gases can be released when opening parts with sample gas contact.

- ▶ Carry out a decontamination before opening parts with sample gas contact:
 - »» Removing gaseous residues: Purge all parts with sample gas contact with dry N_2 for two hours.
 - »» Removing fluid/solid residues: Carry out decontamination appropriate for the requirements arising from this contamination. Contact SICK Customer Service when necessary.

If the enclosure also has contact with toxic gases during the application, decontaminate the enclosure as well before carrying out maintenance/repairs.

- ▶ Decontaminate the enclosure appropriately for the requirements resulting from this type of contamination. Observe all relevant cleaning information.

14.2

Technical knowledge needed for maintenance work

- Device components may only be replaced by authorized skilled persons (generally only the manufacturer's service technicians).
- When carrying out maintenance and service work, always comply with applicable national laws, regulations and codes of practice.
- Installation, operation and maintenance of the H₂ leak detector (recommended) should be performed or supervised by skilled persons with suitable qualifications.

14.3 **Maintenance plan****WARNING: Loss of safety functions**

Improper maintenance may make the device unsafe to use.

- ▶ Only personnel specifically trained on the device may perform work on the device.
- ▶ Use original SICK spare parts only.
- ▶ Observe DIN EN 60079-29-2 and national guidelines valid at your location.

14.3.1 **Maintenance by the user**

Maintenance interval ^[1]					Maintenance work	Instructions/Notes	Comment
1 wk	1 mo	3 mo	6 mo	1 yr			
x	x	x	x	x	▶ Visual inspection ▶ Perform calibration	→ p. 69, §8.2.1 → p. 122, §12.10	a a
	x	x	x	x	▶ Check alarm function	→ p. 103, §11.15	
	x	x	x	x	▶ Check/clean exhaust gas lines	→ p. 31, §3.5.1	a
	(x)	x	x	x	▶ Check/clean sample gas filter	→ p. 134, §14.5	a
			x	x	▶ Check the leak tightness of the gas paths	→ p. 29, §3.4.2	
				x	▶ Conduct hardware check: Optical test of the display and the LEDs	→ p. 103, §11.15	
				x	▶ Check the overtemperature shutoff	→ p. 141, §14.5.5	

[1] wk = week(s), mo = month(s), yr = year(s)

Comment	Explanation
a	The maintenance interval depends on the individual application



- ▶ Also observe the statutory and works regulations valid for the individual application.

14.3.2

Maintenance by the manufacturer's service technicians**WARNING: Loss of safety functions**

Improper repairs may lead to loss of safety functions.

- ▶ Work on the device may be performed exclusively by SICK service technicians or personnel authorized by SICK.

Maintenance interval ^[1]					Maintenance work	Comment
6 mo	1 yr	3 yr	5 yr	9 yr		
(x)	x	x	x	x	▶ Check pressure sensors, adjust as necessary	a
(x)	x	x	x	x	▶ Check operating parameters	a
	(x)	x	x	x	▶ Clean ejector pump, replace O-rings	a b
	(x)	x	x	x	▶ Clean FID, replace FID components	a b
		x	x	x	▶ Replace zero gas valve	
			x	x	▶ Replace battery (lithium, operating unit) Data will be lost if the battery discharges	
	x	x	x	x	▶ Check sample gas flow monitoring	b

[1] mo = month(s), yr = year(s).

Comment	Explanation
a	The maintenance interval depends on the individual application
b	Have performed at the manufacturer's works or a suitably qualified shop

14.4

Cleaning of the enclosure

- ▶ Use a soft cloth to clean the enclosure.
- ▶ Moisten the cloth with water and a mild detergent when necessary.
- ▶ Do not use mechanically or chemically aggressive cleaning agents.
- ▶ Ensure no fluid penetrates the enclosure.

**CAUTION: Hazard through penetrating fluid**

If liquids have penetrated the equipment:

- ▶ Do not touch the equipment any more.
- ▶ Shut the equipment down immediately by disconnecting the power voltage at an external source (e.g., pull out the power cable at the power socket or switch off the external power fuse).
- ▶ Contact the manufacturer's customer service or other trained skilled persons able to repair the equipment.

14.5 Servicing the sample gas filter

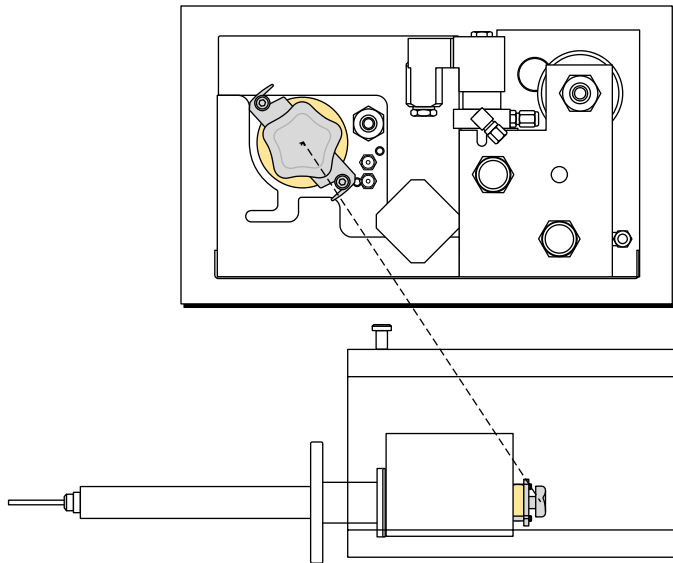


- If the sample gas filter is dismantled for maintenance work (e.g. the filter element has been removed for cleaning), use new sealing rings when reassembling (spare parts → p. 140, § 14.5.4).

14.5.1 Accessing the sample gas filter

- ▶ Remove the outer housing.

Fig. 26 Sample gas filter: Location in the analyzer unit



14.5.2

Replacement/cleaning of the filter insert (procedure)

Maintenance work will be easier and faster if you have an assembled, clean filter element ready to replace the old one (→ p. 140, § 14.5.4).



Measuring operation is interrupted during maintenance.

- ▶ Inform any affected stations.
- ▶ *If necessary for safety reasons:* Deactivate any attached devices.

▶ **Activate the “Filter change” status:**

- 1 *If the display shows the measurement display:* Press **Back** to open the main menu.
- 2 Open the “Filter change” menu: Main menu → Maintenance → Filter change.
- 3 *If the “System in Service” status has not yet been activated:*
Activate “System in Service” in the displayed menu (→ p. 100, § 11.10).

»» The “Filter change” menu is displayed:

Maintenance Filter change	← Menu title
Filter change NO	← Selection box 1: If filter to be changed, select YES
Filter is replaced NO	← Selection box 2: After filter changed, select “YES”
Change or End 0.0 % LEL	← Current measured value
Range ... 100	← Current measuring range (measuring range end value)
System in Service	

▶ **Open the housing:**

The sample gas filter is inside the analyzer unit. To open the analyzer unit:

- 1 Pull the locking knob on the right-hand side of the analyzer unit.
- 2 Pull the outer enclosure away from the flange and remove completely.

► Remove the filter insert:



CAUTION: Risk of burns

- During the operating state, the sensor block and the sample gas filter are hot ($\approx 200\text{ }^{\circ}\text{C}$). This also applies to their surfaces.
 - The sampling probe is pulled out of the filter insert. In some applications, the probe tube can reach temperatures of $350\text{ }^{\circ}\text{C}$.
- Wear protective gloves.
- Keep dismantled, hot components away from electrical components and cables and allow to cool in a protected place.



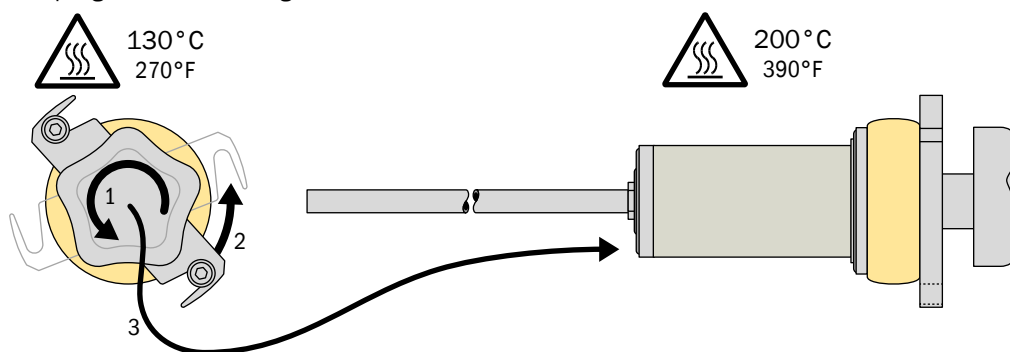
WARNING: Hazard from discharged process gas

Does not apply to devices with the "flow barrier" option.

- When sample gas filter is opened, a certain amount of the unfiltered process gas (sample gas) is released.
 - If the process gas pressure is higher than the ambient pressure, process gas may flow out of the filter housing as long as the filter is open.
- *If the process gas poses a health risk:* Undertake protective measures against discharged process gas (respirator, ventilation).
- Protect the analyzer unit against the effect of discharged process gas (dust, corrosive gases).

Fig. 27

Sample gas filter: Removing the filter insert



- 1 Turn the handwheel of the filter insert counterclockwise until the latch is unlocked.
- 2 Swing the latch to the side.
- 3 Pull the filter insert (\rightarrow p. 140, Fig. 29) out by the handle.
- 4 Place the filter insert in a safe location and allow to cool down.

► **Clean the filter housing:**

- 1 Inspect the interior of the filter housing.

If cleaning is necessary:

- 2 Remove coarse dirt. Look for displaced O-rings.
- 3 If necessary, clean the interior and/or blow out carefully with instrument air (not under high pressure).

► **Clean the filter element:**

\rightarrow p. 138, § 14.5.3

► **Fit a clean filter insert:**

- 1 Clean the sealing surface on the face side of the filter housing.
- 2 Insert the filter insert into the filter housing. Pay attention to the correct position of the sealing rings.
- 3 Swing the latch to the locking position
- 4 Tighten the handwheel clockwise by hand until the filter is gas-tight. Do not use any tools.



CAUTION: Hazards resulting from a leaky sample gas filter



- *If the process gas is combustible:* A leaky sample gas filter may cause an explosion.
 - *If the process gas poses a health risk:* A leaky sample gas filter may cause damage to health.
 - A leaky sample gas filter can cause incorrect measured values.
- Replace damaged or deformed sealing rings with new ones.
- When reassembling the filter, make sure it does not leak.

► **Deactivate the “Filter change” status:**

Maintenance Filter change	← Menu title
Filter change Yes	← Selection box 1
Filter is replaced NO	← Selection box 2: Appears after entering “YES”
Change or End 0.0 % LEL	← Current measured value
Range . . . 100 System in Service	← Current measuring range (measuring range end value)

► **Make ready for operation:**

- 1 Wait until the sample gas filter has once again reached operating temperature (approx. 15 minutes).
- 2 Calibrate the device (→ p. 122, §12.10).



If the displayed calibration deviations are unusually high, the sample gas filter is probably not tight.

14.5.3

Cleaning the filter



- The filter element is a cylindrical sleeve of sintered metal. Impurities deposit on the *inside* of the sleeve.
- The probe tube of the sampling probe is directly attached to the filter insert.
- Spare parts → p. 140, § 14.5.4

Dismantle the filter insert:

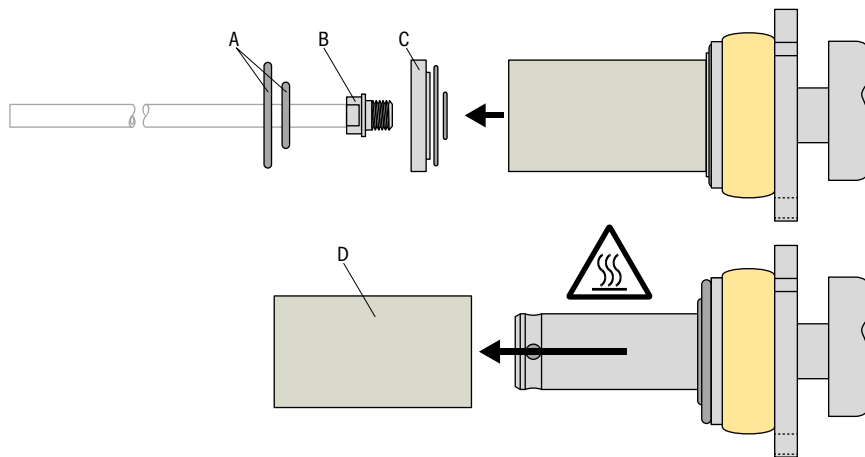
**CAUTION: Risk of burns**

The filter insert is hot ($\approx 200^\circ\text{C}$) when the device is in the operational state.

- ▶ *Before dismantling:* Let the filter insert cool down.

Fig. 28

Sample gas filter: Dismantling the filter insert



- 1 Remove sealing rings [A] from the face side of the filter insert.
- 2 Remove screw fitting [B].
- 3 Remove pressure plate [C].
- 4 Remove filter element [D].

Clean the filter element:

- ▶ *For impurities that are easy to remove:* Clean the filter element with dry compressed air. Blow from the outside inwards.

**NOTICE:**

- ▶ Use oil-free compressed air, otherwise the measuring system may be contaminated.

- ▶ *In case of significant impurities:* Clean the filter element in an ultrasonic bath with suitable cleaning liquid. Then dry the filter element completely.

Clean the filter insert:

- ▶ Inspect the other parts of the filter insert.
- ▶ Check and clean sealing surfaces.
- ▶ Always replace the sealing rings.

**CAUTION: Risk of measurement errors**

The filter insert should never have residues containing hydrocarbons.

- ▶ *If organic cleaning agents have been used:* Rinse all cleaned components carefully with pure water and dry.

Inspect/clean the probe tube

- ▶ Inspect the probe tube. Remove deposits that could cause clogging.

Assemble the filter insert

- ▶ Use new sealing rings (spare parts → p. 140, § 14.5.4).
- ▶ Apply a thin layer of grease to sealing rings and metal threads (grease type → p. 140, § 14.5.4).
- ▶ During assembly, ensure that the device is sealed against dust.

Check the EuroFID3010 Inline UEG

- ▶ Check the EuroFID3010 Inline UEG → p. 69, § 8.2.1
- ▶ Then calibrate the device (→ p. 122, § 12.10).

14.5.4 Spare parts for the sample gas filter

Fig. 29 Filter insert

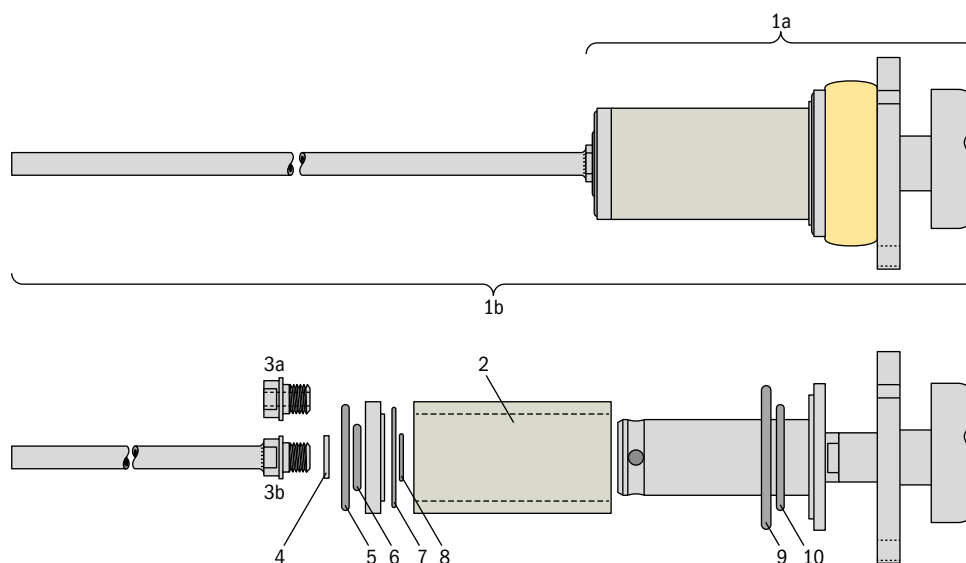


Table 8 Spare parts for the sample gas filter (→ Fig. 29)

No.	Part no.	Name
2	5315538	Sintered metal filter element 1 μ
	5315642	Sintered metal filter element 3 μ
	5324591	Sintered metal filter element 5 μ
3a	4042054	Hollow bolt
3b	2028684	Sampling pipe 6/5, 590 mm long
	2045686	Sampling pipe 6/5, 810 mm long
	2045366	Sampling pipe 8/6 for EuroFID, 1300 mm long
4 ... 10	2028683	Sealing ring service kit, EuroFID, O rings made of Viton
	2028689	Sealing ring service kit, EuroFID, O rings made of Kalrez
-	2028678	Service kit EuroFID - for annual maintenance [1]
-	5602979	Grease, Barrierta L55/2, 50 g

[1] Comprising: Filter element, sealing ring service kit (as for 2028683), capillaries

14.5.5 Checking the overtemperature shutoff

Preparation

- 1 Limit the operating conditions so that the EuroFID3010 Inline UEG cannot become hazardous if the classification temperature is exceeded (shut down any connected systems).
- 2 Open the housing of the analyzer unit to access the sensor block.

Test procedure

- 3 Measure the temperature of the sensor block with a temperature gage (measuring accuracy : $\pm 3^{\circ}\text{C}$ or better).
- 4 Open the menu "Setup temp. sensbl." (\rightarrow p. 100, § 11.10).
- 5 Check whether the actual displayed value of the sensor block corresponds with the measured temperature.
If this is not the case: Clear the malfunction in the "temperature sensor" section.
- 6 Note which sensor block setpoint temperature is set.
- 7 Set the sensor block setpoint temperature just above the classification temperature (refer to type plate).
- 8 Observe the temperature of the sensor block; the temperature monitor must turn heating off before the sensor block temperature reaches the classification temperature.
If this is not the case: The temperature monitor needs to be adjusted (please contact SICK Customer Service).

Final tasks

- 9 Reset the sensor block setpoint temperature to the noted value.
- 10 Wait until the sensor block has cooled to the sensor block setpoint temperature.
- 11 Reset the temperature monitor.
- 12 Close the housing of the analyzer unit.
- 13 Reestablish normal operating conditions.

**NOTICE:**

The function of the thermostat is safety-relevant.

- Check that it is working on an annual basis.

EuroFID3010 Inline UEG

15 Clearing malfunctions

- General malfunctions
- Malfunction messages
 - Display messages
 - Measurement errors

15.1

Safety instructions when clearing malfunctions**WARNING: Loss of safety functions**

Improper clearing of malfunctions may make the device unsafe to use.

- ▶ Only personnel specifically trained on the device may perform work on the device.
- ▶ Use original SICK spare parts only.
- ▶ Observe DIN EN 60079-29-2 and national guidelines valid at your location.

**WARNING: Health risk through contact with toxic gases**

Residues of noxious gases can be released when opening parts with sample gas contact.

- ▶ Carry out a decontamination before opening parts with sample gas contact:
 - »» Removing gaseous residues: Purge all parts with sample gas contact with dry N₂ for two hours.
 - »» Removing fluid/solid residues: Carry out decontamination appropriate for the requirements arising from this contamination. Contact SICK Customer Service when necessary.

If the enclosure also has contact with toxic gases during the application, decontaminate the enclosure as well before carrying out maintenance/repairs.

- ▶ Decontaminate the enclosure appropriately for the requirements resulting from this type of contamination. Observe all relevant cleaning information.

15.2

If the EuroFID3010 Inline UEG does not work at all...

Possible cause	Information
The AC power cord is not connected.	▶ Check the power cord and the connections.
The main switch is turned off.	▶ Check the AC power switch on the EuroFID3010 Inline UEG (rear of operating unit).
AC power supply failure.	▶ Check the external switches and fuses. ▶ Check AC power.
The internal power fuse is defective.	▶ Check the internal power fuse (→ p. 146, § 15.4).
Internal operating temperatures are incorrect.	▶ Check the malfunction messages (→ p. 79, § 10.6).
The supply of sample gas is not working.	▶ Check the supply of sample gas (→ p. 32, § 3.6).
The internal software is not working.	▶ Switch off the EuroFID3010 Inline UEG operating unit and switch on again after a few seconds.
The overtemperature switch of the analyzer unit has been triggered.	→ p. 148, § 15.5

15.3

If the measured values are obviously incorrect ...

Possible cause	Information
The EuroFID3010 Inline UEG is not ready for operation.	<ul style="list-style-type: none"> ▶ Follow the commissioning procedure (→ p. 65, § 8). ▶ Pay attention to the status messages (→ p. 79, § 10.6).
The EuroFID3010 Inline UEG is not correctly calibrated.	<ul style="list-style-type: none"> ▶ Check the span gas used. ▶ Check the setpoint value (→ p. 112, § 12.5.1). ▶ Re-calibrate if necessary (→ p. 122, § 12.10).
The pressure at the sample gas inlet is either too high or too low.	<ul style="list-style-type: none"> ▶ Check the supply of sample gas (→ p. 32, § 3.6).
<i>If observed at only one analog output:</i> The load is too high.	<ul style="list-style-type: none"> ▶ Ensure that the internal resistance of the connected devices is not greater than 500 Ω.
The EuroFID3010 Inline UEG measuring system is contaminated.	<ul style="list-style-type: none"> ▶ Contact the manufacturer's service department.



The stability of the zero and calibration points depends on the consistency of the temperature of the gas-carrying components.

15.4 Electrical fuses



CAUTION: Health risk

If the housing of the AC power fuses is removed, electrical contacts are exposed which carry line voltage.

- ▶ *Before testing the fuses:* Disconnect the EuroFID3010 Inline UEG from AC power or switch the power supply off at an external point.



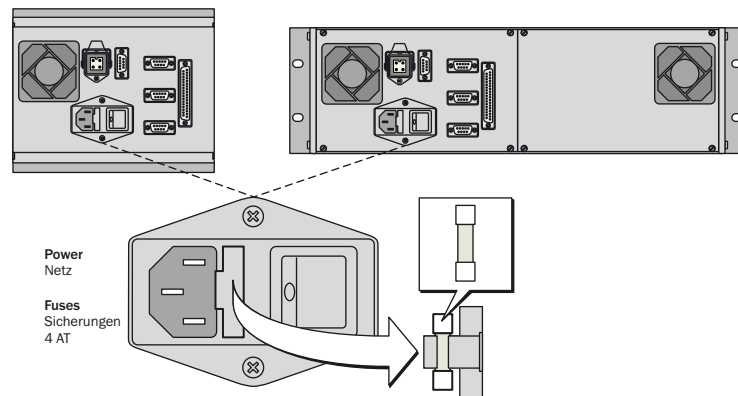
CAUTION: Fire hazard / danger of irreparable damage

If the wrong fuses are fitted, a fire can occur in the event of a defect.

- ▶ Only use replacement fuses that correspond exactly to the stated ratings (design, breaking current, trigger characteristic, UL/CSA standard).

15.4.1 Power fuse of the operating unit

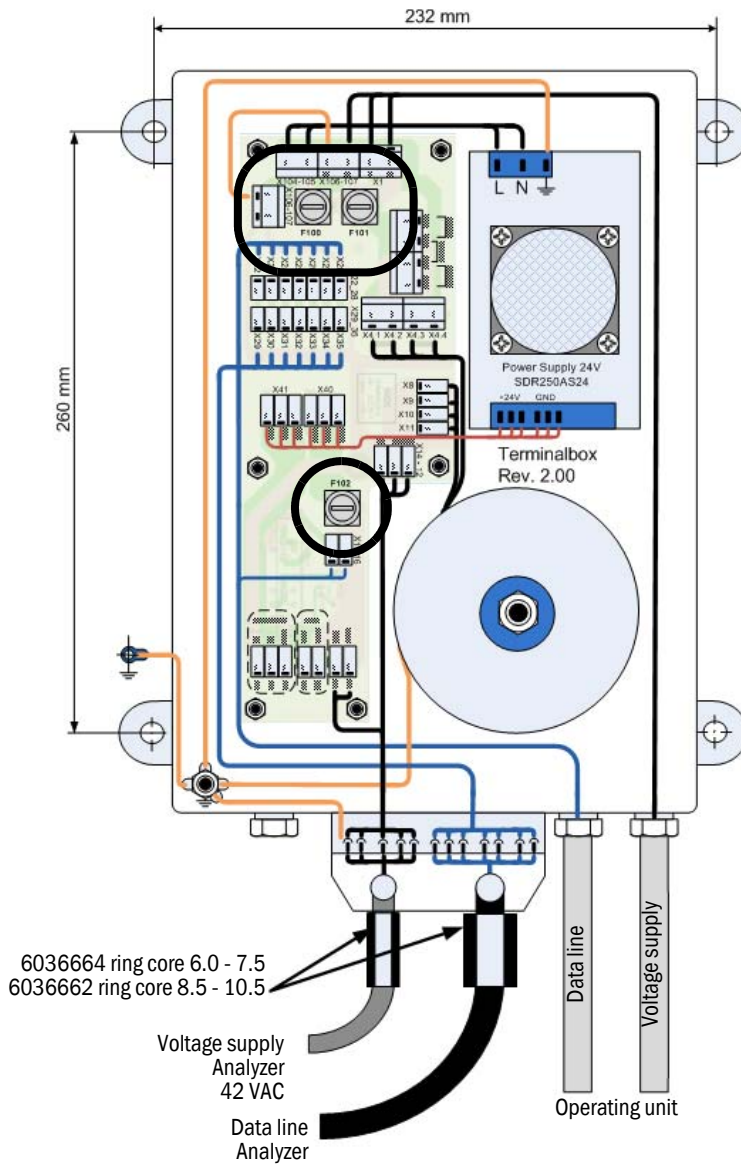
Fig. 30 Power fuse of the operating unit



Fuse	Part no.
4A slow blow 250V UL/CSA standard	6004310

15.4.2 Fuses in the terminal box

Fig. 31 Fuses in the terminal box



F100 fuse	Voltage	Link	Part no.
3.15A slow-blow	230 VAC	Fuse link T3A15 D5x20	6049591
6.3A slow-blow	115 VAC	Fuse link T6A3 D5x20	6006661
F101 fuse	Voltage	Link	Part no.
1.25A slow-blow	230 VAC	Fuse link T1A25 D5x20	6049592
2.5A slow-blow	115 VAC	Fuse link T2A5 D5x20	6004305
F102 fuse	Voltage	Link	Part no.
2.0 AT	230 VAC	Fuse link T2A0 D5x20	6004303

Subject to change without notice

15.5 Overtemperature shutoff on the analyzer unit

15.5.1 Function of overtemperature shutoff (explosion protection)

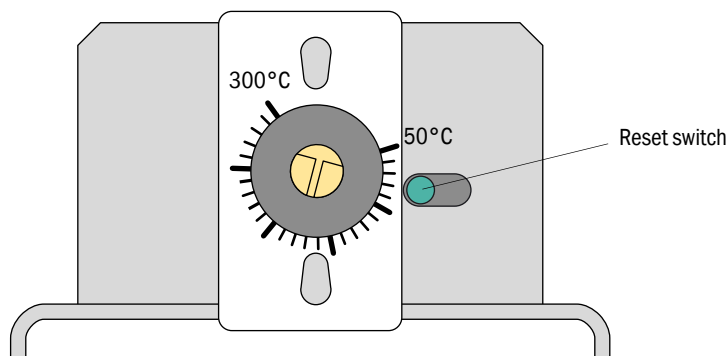
The analyzer unit is equipped with a thermoelectric temperature monitor (thermostat) to avoid an explosion due to an overheated system in an error case. If the temperature in the analyzer unit becomes too high, the temperature monitor automatically switches off the heating of the analyzer unit.

15.5.2 Resetting the overtemperature shutoff (after tripping)

If the overtemperature shutoff has been tripped:

- 1 Allow the analyzer unit to cool.
- 2 Open the housing of the analyzer unit.
- 3 Press the reset switch on the temperature monitor (→ Fig. 32).
- 4 Close the analyzer unit.

Fig. 32 Temperature monitor in the analyzer unit



NOTICE:

- When the operating temperature is exceeded,
- The measured values may be incorrect
 - Components of the measuring system can be damaged
 - The analyzer unit may pose a hazard.
- Do not change the setting of the temperature monitor.
- Have the function of the overtemperature shutoff checked at least once a year (→ p. 141, § 14.5.5).



NOTICE:

- On devices which are used as a gas detector, the overtemperature shutoff ensures compliance with the classification temperature (refer to the type plate for the specification).
- Do not change the setting of the temperature monitor.

15.5.3 Overtemperature shutoff (thermostat)



NOTICE: Observe maintenance interval

- The function of the thermostat is safety-relevant.
The operator is responsible for this work (→ p. 141, § 14.5.5).
If an adjustment of the temperature monitor is necessary, do not operate the device until adjustment has been carried out.
- Observe the maintenance interval of one year.

15.6 Malfunction messages

15.6.1 Malfunction messages on the display (general)

The EuroFID3010 Inline UEG reports a malfunction with a display window such as this one (example):

<pre>System failure 10.05.2013 12:24:35 System failure Look at diagnosis! System failure</pre>	<p>← General message</p> <p>← Time of the malfunction (DD.MM.YYYY HH:MM:SS)</p> <p>← General message</p>
--	---

- All malfunction messages are automatically stored in the “error archives” (→ p. 90, §11.3).
- The malfunction messages are stored there until they are deleted via the menu (→ p. 91, §11.3.3) or the device is restarted.

15.6.2 Possible malfunction messages

No.	Archive text	Diagnosis text	Significance	Countermeasures
1	Power on.	This message appears after the system has been turned on. It is for diagnostic purposes only.	Error archives only	None
2	Progr. Error	SYSTEM ERROR A program bug has occurred. Please report bug to SICK AG.	Failure	<ul style="list-style-type: none"> ▶ Switch the EuroFID3010 Inline UEG off and on again. ▶ If that does not help: ▶ Inform SICK's service department.
3	Software bug	SYSTEM ERROR A program bug has occurred. Please report bug to SICK AG.	Failure	<ul style="list-style-type: none"> ▶ Switch the EuroFID3010 Inline UEG off and on again. If that does not help: ▶ Inform SICK's service department.
4	Watchdog err	SYSTEM ERROR The watchdog control has triggered a reset. Please report bug to SICK AG.	Failure	<ul style="list-style-type: none"> ▶ Switch the EuroFID3010 Inline UEG off and on again. If that does not help: ▶ Inform SICK's service department.
5	Parametererr	SYSTEM ERROR The parameters have been lost. Reconfigure the system.	Failure	<ul style="list-style-type: none"> ▶ Inform SICK's service department.
6	Param_error	SYSTEM ERROR Analyzer parameters are wrong or lost. Reconfigure the parameters of the analyzer.	Failure	<ul style="list-style-type: none"> ▶ Inform SICK's service department.
7	GParam.error	SYSTEM ERROR The last change in parameters has been lost. Please reconfigure the parameters and enable them.	Failure	<ul style="list-style-type: none"> ▶ Inform SICK's service department.
8	Par.release	CAUTION The measurement is not valid. The parameters have not been released. Please check and release the parameters.	Service requirement	<ul style="list-style-type: none"> ▶ Inform SICK's service department.
9	Maint.swi.ON	CAUTION Several factory switches are set. The system is in test mode. The measurement is not valid.	Service requirement	<ul style="list-style-type: none"> ▶ Inform SICK's service department.
10	Average err.	SYSTEM ERROR The average archives have been lost. All entries have been deleted. A new archive will be created.	Service requirement	<ul style="list-style-type: none"> ▶ Switch the EuroFID3010 Inline UEG off and on again.
11	Errorfil.err	SYSTEM ERROR The error archives have been lost. All entries have been deleted. A new archive will be created.	Service requirement	<ul style="list-style-type: none"> ▶ Switch the EuroFID3010 Inline UEG off and on again.

12	ClockparaERR	SYSTEM ERROR The parameters of the clock chip have been lost. Please reinitialize the parameters.	Failure	► Inform SICK's service department.
13	RAM Error	SYSTEM ERROR The system check has detected a RAM error. Restart the system!	Failure	► Switch the EuroFID3010 Inline UEG off and on again. If that does not help: ► Inform SICK's service department.
14	EPROM NO	SYSTEM ERROR The entered number of FLASH EPROM is wrong. Please change, update the system parameters and release them.	Failure	► Inform SICK's service department.
15	EPROMBLK1 Er	SYSTEM ERROR The parameters of block 1 are not up to date. The memory is possibly defective. The copy of the parameters in block 2 is OK.	Service requirement	► Inform SICK's service department.
16	EPROMBLK2 Er	SYSTEM ERROR The parameters of block 2 are not up to date. The memory is possibly defective. The copy of the parameters in block 1 is OK.	Failure	► Inform SICK's service department.
17	LCD-Disp-Err	SYSTEM ERROR The system check has detected an LCD display error.	Failure	► Switch the EuroFID3010 Inline UEG off and on again. If that does not help: ► Inform SICK's service department.
18	Battery low	SERVICE REQUIREMENT Clock battery backup power too low. Please change the batteries. Type BR-1225; 12.5 mm diameter 2.5 mm height 3.0 V voltage	Service requirement	► Inform SICK's service department.
19	Time input	SERVICE REQUIREMENT The time has been lost and will restart at 00:00:00. Please re-set the time.	Service requirement	► Reset the time of the internal clock. ► Inform SICK's service department.
20	Clockerror	SYSTEM ERROR The clock chip is defective and must be replaced.	Failure	► Inform SICK's service department.
21	Clockramerr	SERVICE REQUIREMENT The parameters in the clock chip have been lost. Please check the clock chip.	Failure	► Inform SICK's service department.
22	EPROM_ERROR	SYSTEM ERROR Cycl. test. EPROM memory test ErroroccurredduringEPROMread.	Failure	► Inform SICK's service department.

23	ROMRAM_ER-ROR	SYSTEM ERROR Cycl. test. Error occurred during program code test between EPROM and RAM.	Failure	<ul style="list-style-type: none"> ▶ Switch the EuroFID3010 Inline UEG off and on again. If that does not help: ▶ Inform SICK's service department.
24	RAM_RW_ER-ROR	SYSTEM ERROR Cycl. test. RAM memory test. Error occurred during RAM read/write.	Failure	<ul style="list-style-type: none"> ▶ Inform SICK's service department.
25	FLASH_RAMERR	SYSTEM ERROR Cycl. test. Error in operating unit parameters when comparing FLASH EEPROM and RAM.	Failure	<ul style="list-style-type: none"> ▶ Inform SICK's service department.
26	ANAPARAMERR	SYSTEM ERROR Cycl. test Errors in analyzer parameters in RAM.	Failure	<ul style="list-style-type: none"> ▶ Inform SICK's service department.
27	RAMCLOCK_ERR	SYSTEM ERROR Cycl. test. Clock parameters and RAM data are no longer identical.	Failure	<ul style="list-style-type: none"> ▶ Inform SICK's service department.
28	Anal. Restart	MESSAGE There is an error in the microprocessor of the analyzer unit.	Error archives only	<ul style="list-style-type: none"> ▶ Inform SICK's service department.
29	EPROMANAERR	SYSTEM ERROR Cycl. test. EPROM memory test Error occurred when reading EPROM in analyzer unit.	Failure	<ul style="list-style-type: none"> ▶ Inform SICK's service department.
30	RAM_ANA_ERR.	SYSTEM ERROR Cycl. test. RAM memory test. Error reading from / writing to RAM in analyzer unit.	Failure	<ul style="list-style-type: none"> ▶ Inform SICK's service department.
31	NVRAMANAFEHL	SYSTEM ERROR Cycl. test. NVRAM memory test. Error reading from / writing to NVRAM in analyzer unit.	Failure	<ul style="list-style-type: none"> ▶ Inform SICK's service department.
32	DeteOut_300V	SYSTEM ERROR FID detector voltage is too low.	Failure	<ul style="list-style-type: none"> ▶ Inform SICK's service department.
33	DeteOff_Flam	SYSTEM ERROR Flame off. Please check fuel gas, fuel gas line and the detector with flame control.	Failure	<ul style="list-style-type: none"> ▶ Check whether the supply of operating gases is working correctly. ▶ Ignite the flame via the menu. ▶ If that does not help: Inform SICK's service department

34	Det.flamFAIL	SYSTEM ERROR Sensor of flame detector too hot or defective.	Failure	► Inform SICK's service department.
35	OfenFlimTemp	SYSTEM ERROR Overtemperature in the sensor block. Please check temperature control and reset the overtemperature switch.	Failure	► Inform SICK's service department.
36	Analyz.heat.	SYSTEM ERROR The heating of the sensor block is defective.	Failure	► Inform SICK's service department.
37	Elect.too hot	SERVICE REQUIREMENT The electronics of the analyzer assembly are too hot.	Service requirement	► Inform SICK's service department.
38	Elect.too hot	SYSTEM ERROR The electronics of the analyzer assembly are too hot.	Failure	► Inform SICK's service department.
39	Filterchnge	SERVICE REQUIREMENT The sample gas filter is worn out and needs to be replaced.	Service requirement	► Clean or replace the sample gas filter. Inform SICK's service department.
40	Filtererror	SYSTEM ERROR The sample gas filter is clogged. Please replace the sample gas filter.	Failure	► Clean or replace the sample gas filter. ► Inform SICK's service department.
41	In Service	SERVICE REQUIREMENT The system is in maintenance mode. The contact that signals readiness for measurement is not active. Turn off service mode.	Service requirement	► End the "System in Service" state, if desired and if the actual conditions allow.
42	AnallntrSgas	SYSTEM ERROR The calibration gas is not connected. Calibration is not possible.	Service requirement	► Check calibration gas cylinder.
43	OfenWarmTime	SYSTEM ERROR The maximum warm-up time has been exceeded. Please check the sensor block and the ambient temperature of the analyzer assembly.	Failure	► Inform SICK's service department.
44	AnallfaiOgas	SYSTEM ERROR Zero calibration is not possible. Please check the zero gas path in the analyzer assembly.	Failure	► Inform SICK's service department.
45	AnallfaiSgas	SYSTEM ERROR Span calibration is not possible. Please check the span gas path in the analyzer assembly.	Failure	► Inform SICK's service department.
46	Service-IVL	SERVICE REQUIREMENT The service interval has expired. The system must be serviced.	Service requirement	► Inform SICK's service department and carry out preventative maintenance.

47	MesValNotPla	SYSTEM ERROR The measured value is not plausible.	Failure	► Inform SICK's service department.
48	AnalMlimOpoi	SERVICE REQUIREMENT Zero drift is out of tolerance. Please check the sample gas filter and gas-carrying parts in the analyzer assembly.	Service requirement	► Inform SICK's service department.
49	AnalMlimSpan	SERVICE REQUIREMENT Span drift is out of tolerance. Please check the sample gas capillary and gas-carrying parts in the analyzer assembly.	Service requirement	► Check the test gas concentration at the gas cylinder.
50	OfenMlimTemp	SERVICE REQUIREMENT The temperature of the sensor block is instable. Please check the heating of the sensor block.	Service requirement	► Inform SICK's service department.
51	AnalFlimOpoi	SYSTEM ERROR Zero drift is out of tolerance. Please check the sample gas filter and gas-carrying parts in the analyzer assembly.	Failure	► Inform SICK's service department.
52	AnalFlimSpan	SYSTEM ERROR Span drift is out of tolerance. Please check the sample gas capillary and gas-carrying parts in the analyzer assembly.	Failure	► Check the test gas concentration at the gas cylinder. ► If that does not help: Inform SICK's service department
53	Sensb.ov.Tem	SYSTEM ERROR The temperature of the sensor block is out of tolerance. Please check the sensor block temperature and the ambient temperature.	Failure	► Check the ambient temperature at the analyzer. ► If that does not help: Inform SICK's service department
54	An-RCCommCabl	SYSTEM ERROR Communication between the analysis component and the operating unit does not function. Please check the connection cables.	Failure	► Check the connection cables between the analyzer and the operating unit. ► If that does not help: Inform SICK's service department
55	Version:Anal	ERROR !!! Software -> Version: Analyzer	Service requirement	► Inform SICK's service department.

EuroFID3010 Inline UEG

16 Specifications

Certificate of conformity
Approvals
Parameter lists
Technical data

16.1 Conformity and approvals

The technical design of the device conforms to the following EU Directives and EN standards:



- EN 50270: Electromagnetic compatibility - Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen
- EN 50271: Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen - Requirements and tests for apparatus using software and/or digital technologies.
Additional requirements for compliance with EN 61508 (SIL1) are not fulfilled.
- EN 60079-29-1: Explosive atmospheres - Part 29-1: Gas detectors - Performance requirements of detectors for flammable gases
- EN 61000-6-4: Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments
- EC Directive on EMC (electromagnetic compatibility) in its currently valid version
- EN 61010-1: Safety requirements for electrical equipment for measurement, control, and laboratory use
- DIN EN 60079-0: Explosive atmospheres – Part 0: Equipment – General requirements
- DIN EN 60079-1: Explosive atmospheres – Part 1: Equipment protection by flameproof enclosures “d”

16.1.1 Electrical protection

- Insulation: Protection class I according to EN 61140
- Insulation coordination: Overvoltage category II in accordance with EN 61010-1
- Pollution: Pollution degree II in accordance with EN 61010-1

16.1.2 ATEX

- ATEX Directive 2014/34/EU

16.1.3 Approvals (suitability tests)

- Gas detector BVS 05 ATEX G 005 X



II 2/- G IIB+H2 [xxx]°C (analyzer)

The classification temperature xxx can be between 170°C and 220°C and is specified on the type plate.

II (2) G (operating unit)

- Testing institute: DEKRA GmbH, Bochum
- EC type examination BVS 05 ATEX G 005 X

16.2 **Parameter input ranges**

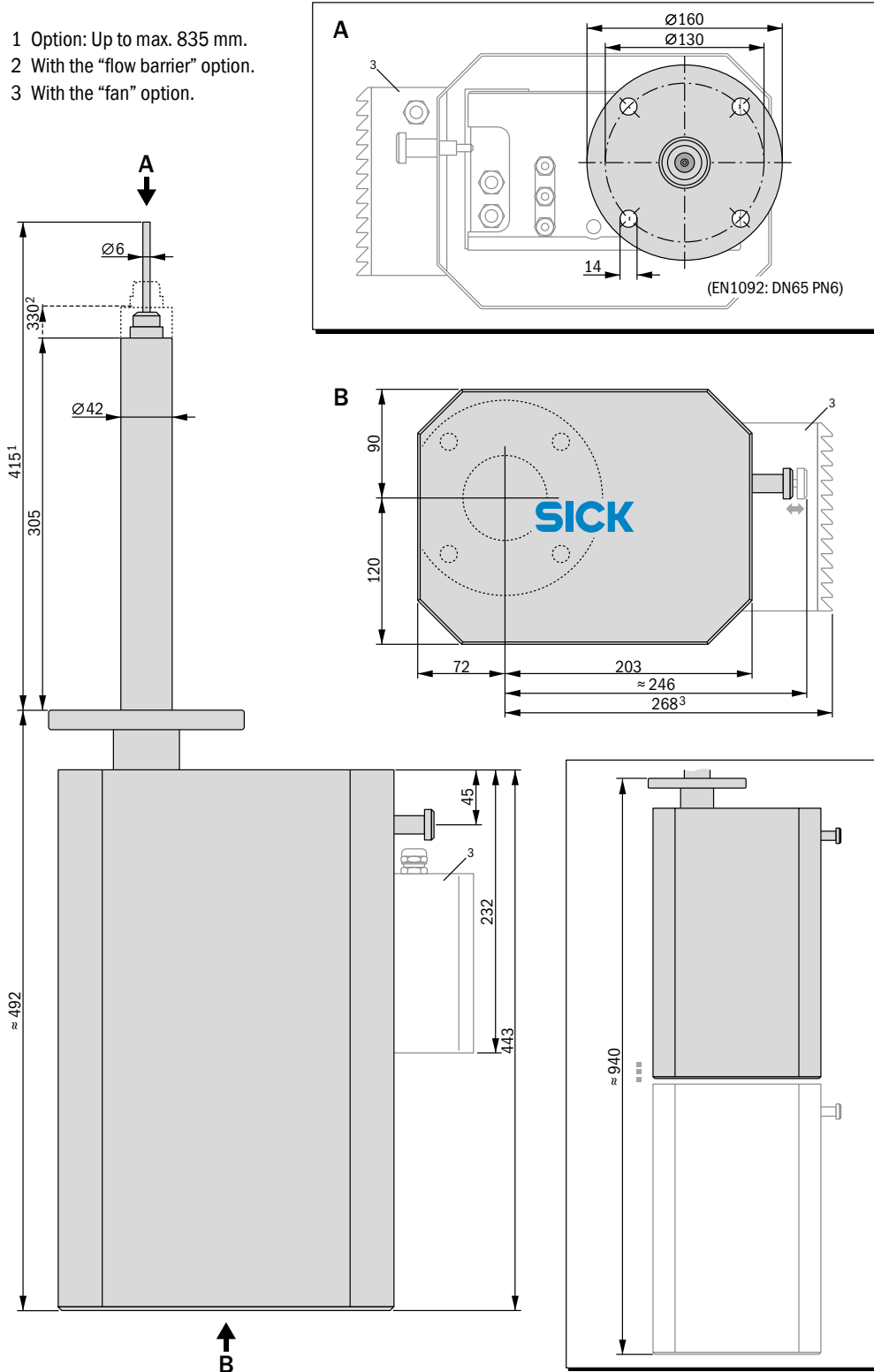
	Name	Valid input range	Unit	Section
Setup temp. sensbl.	Sensor block temperature	60 ... 230	°C	→ p. 96, § 11.7
Alarm value setup GRZ 3H	Threshold H2	0.00 ... 99.99	%LEL	→ p. 98, § 11.9
	Threshold H1	0.00 ... 99.99	%LEL	
	Threshold H0	0.00 ... 999.99	%LEL	
	Delay	0	s	
	Hysteresis	0 ... 99	%	
Alarm value setup GRZ 2H 2L	Threshold H2	0.00 ... 999.99	%LEL	→ p. 98, § 11.9
	Threshold H1	0.00 ... 999.99	%LEL	
	Threshold L1	0.00 ... 99.99	%LEL	
	Threshold L2	0.00 ... 999.99	%LEL	
	Delay	0	s	
	Hysteresis	0 ... 99	%	
Time and date settings	Year	1997 ... 2099	y	→ p. 101, § 11.12.1
	Month	1 ... 12	m	
	Day	1 ... 931	d	
	Hour	0 ... 923	h	
	Minute	0 ... 59	m	
	Second	0 ... 59	s	
Information on unit of measurement	Unit of measurement	abc...zABC...Z1234567890		→ p. 102, § 11.13
	Name of analyzer	abc...zABC...Z1234567890		→ p. 103, § 11.14
Calibration gas values	Span gas	3,000 ... 18,000	ppm	→ p. 112, § 12.5.1
Conversion factors	Calibration gas value	3,000 ... 9,000	ppm	→ p. 113, § 12.5.2
	LEL	30 ... 9100	%LEL	→ p. 113, § 12.5.2
Purging parameters	Purgetime f. decommissioning	1 ... 92600	s	→ p. 117, § 12.7
	Max calib duration	600 ... 3600	s	→ p. 118, § 12.8
Calibration time		00:00 ... 23:59	hh:mm	→ p. 120, § 12.8.1.3

16.3 **Technical data**

16.3.1 **Dimensions**

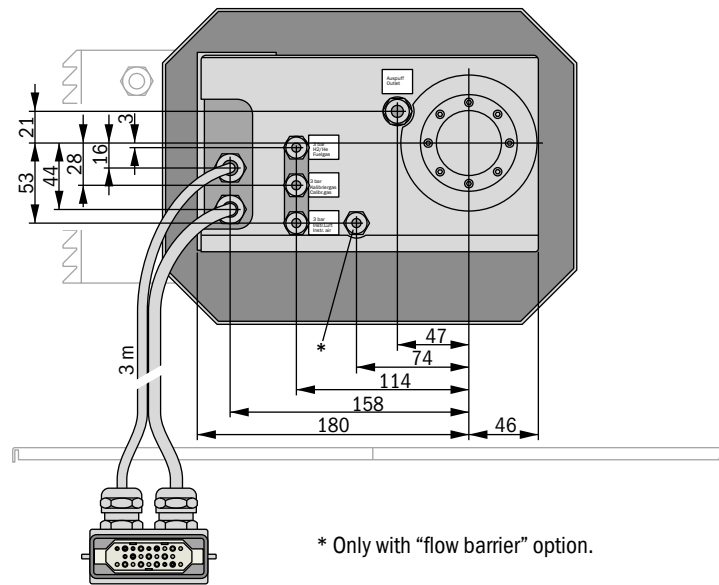
Fig. 33 Analyzer unit

- 1 Option: Up to max. 835 mm.
- 2 With the "flow barrier" option.
- 3 With the "fan" option.



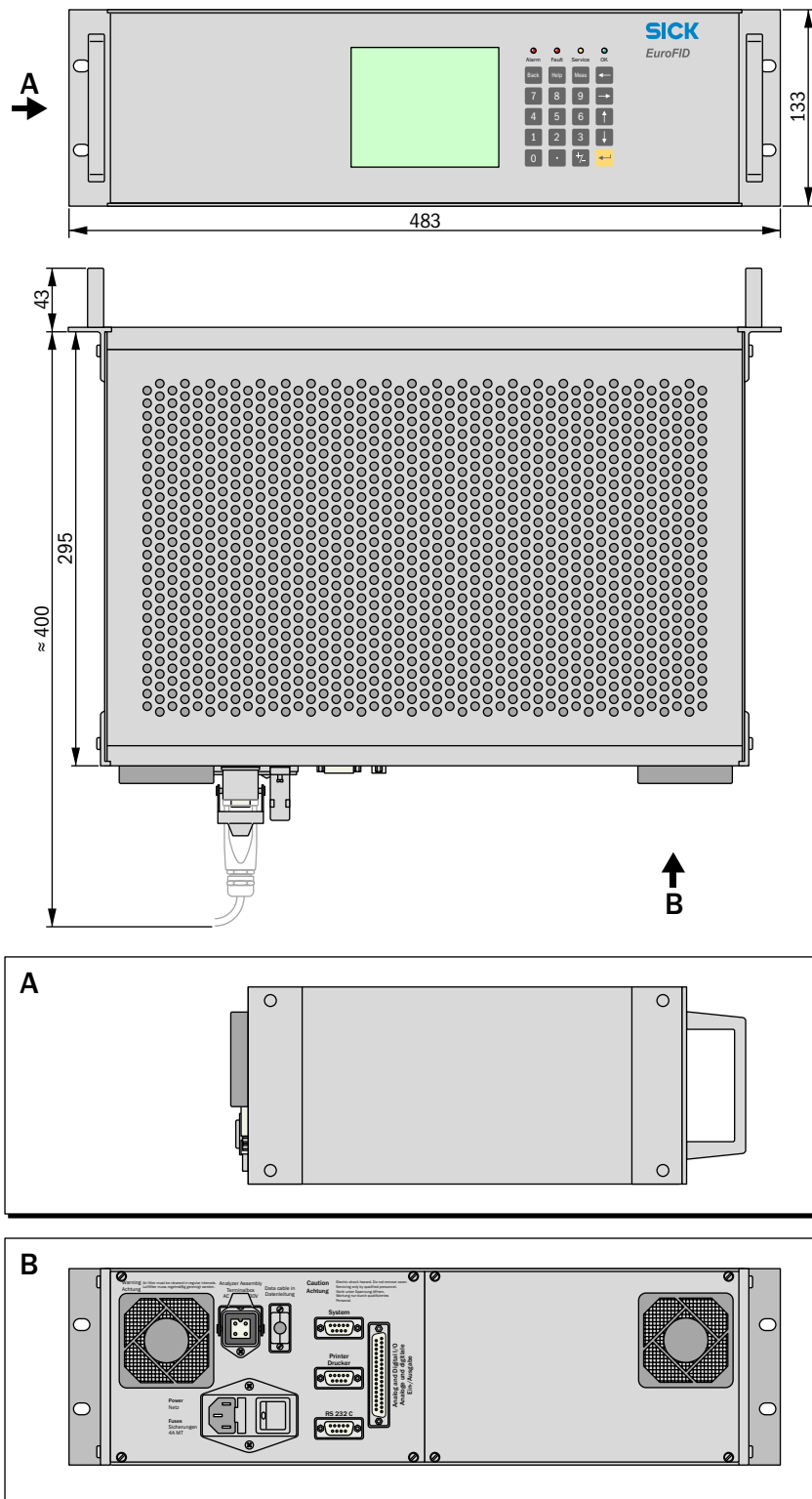
Subject to change without notice

Fig. 34 Analyzer unit – location of the connections



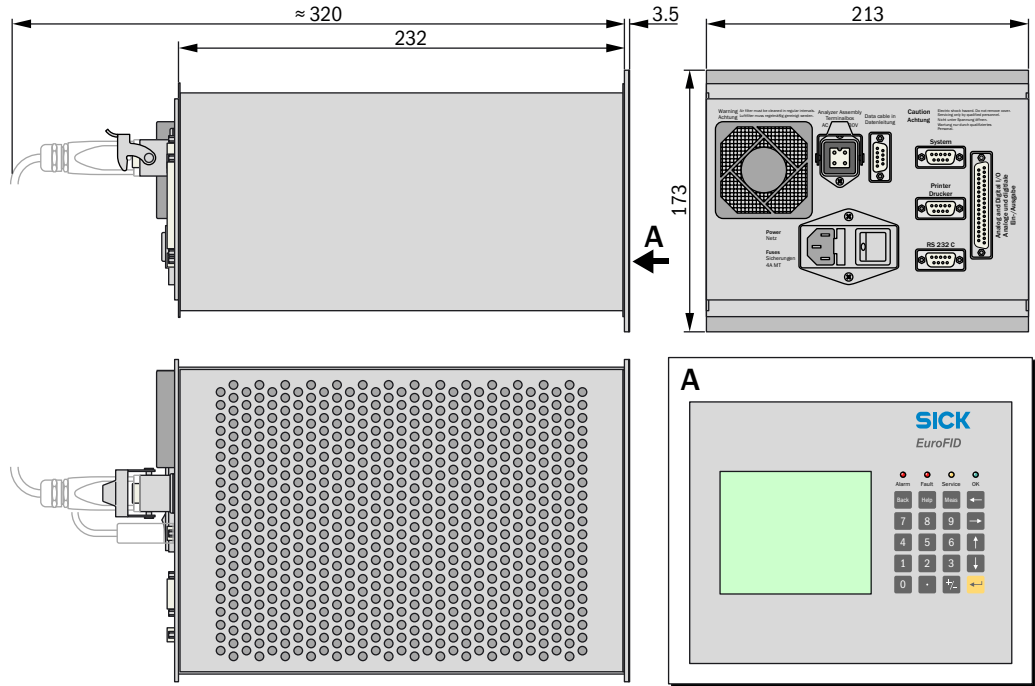
16.3.2 Operating units

Fig. 35 19" rack type operating unit



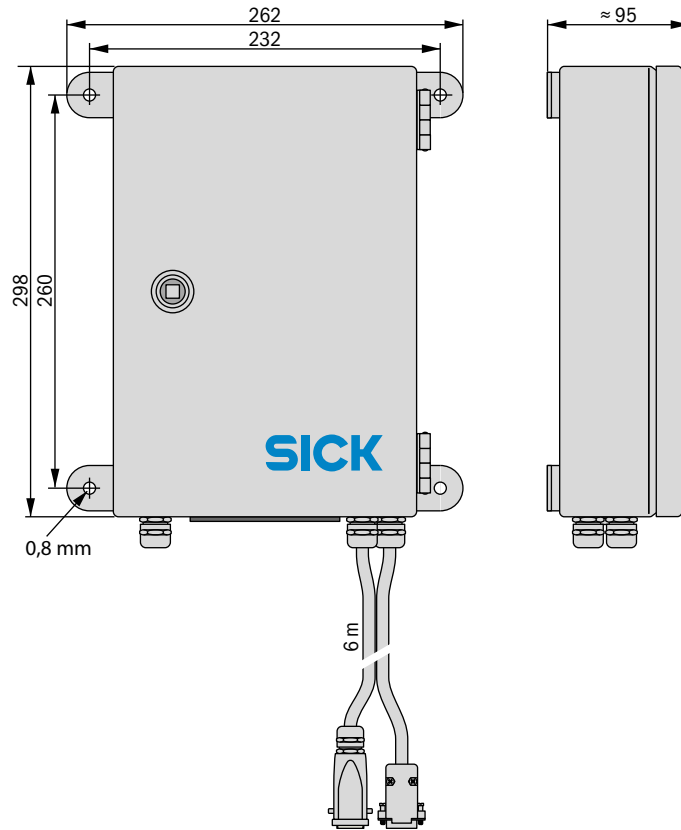
Subject to change without notice

Fig. 36 1½-19" rack type operating unit



16.3.3 Terminal box

Fig. 37 Terminal box



Subject to change without notice

16.4 Housing specifications

16.4.1 Operating units

Type	Protection class ^[1]	Weight
19" rack module	IP20	5.5 kg
½-19" rack module	IP20	4.5 kg

[1] EN 60529.

16.4.2 Analyzer units

Type	Protection class ^[1]	Weight	
"Inline" type	- Base frame with probe:	-	17 kg
	- With standard outer housing:	IPX2D	25 kg
	- With standard outer housing + weatherproof cover ^[2] :	IPX4D	40 kg
	- With ventilated ^[3] outer housing:	IPX2D	27 kg

[1] EN 60529.

[2] "Weatherproof cover" option.

[3] "Fan" option.

16.4.3 Terminal box

Type	Protection class ^[1]	Weight
Separate housing	IP65	8 kg

[1] EN 60529.

16.4.4 V2 terminal module

Type	Protection class ^[1]	Weight
Separate housing	IP20	300 g

[1] EN 60529.

16.4.5 Flange specification

Version	Flange	Material	Threaded bolt
EU	EN 1092 DN65 / PN6	1.4541	M12
US	ANSI B16.5 150lb/sq.in. DN2"	1.4541	5/8" UNC

16.5

Ambient conditions

Analyzer unit	
Ambient temperature	0 ... 55 °C (32 ... 131 °F)
Storage temperature:	-25 to 70 °C (-13 to 158 °F)
Relative humidity:	5-90%, external moisture condensation permissible
Ambient air pressure:	800-1100 hPa
Atmospheric influences:	<ul style="list-style-type: none"> ● Installation site protected against the weather. ● Exposure to direct sunlight is not permissible.
Vibration/jolts:	In the frequency range from 10-150 Hz, vibratory stress may not exceed 0.2 g (= 1.96 m/s ²).
Pollution degree:	2
Elevation:	0-2000 m above sea level

Operating unit	
Ambient temperature:	0 to 40 °C (32 to 104 °F)
Storage temperature:	-25 to 70 °C (-13 to 158 °F)
Relative humidity:	5-90%, external moisture condensation not permissible
Atmospheric influences:	<ul style="list-style-type: none"> ● Use indoors. ● Completely protect against the weather. ● Protect from aggressive atmosphere.
Vibration/jolts:	The installation site must be virtually free of vibration.
Pollution degree:	2
Elevation:	0-2000 m above sea level

V2 terminal module	
Ambient temperature:	0 to 40 °C (-32 to 104 °F)
Storage temperature:	-25 to 70 °C (-13 to 158 °F)
Relative humidity:	5-90%, external moisture condensation permissible
Atmospheric influences:	<ul style="list-style-type: none"> ● Use indoors. ● Completely protect against the weather. ● Protect from aggressive atmosphere.
Vibration/jolts:	The installation site must be virtually free of vibration.
Pollution degree:	2
Elevation:	0-2000 m above sea level

Terminal box	
Ambient temperature:	-10 to 55 °C (14 to 131 °F)
Storage temperature:	-25 to 70 °C (-13 to 158 °F)
Relative humidity:	5-90%, external moisture condensation permissible
Atmospheric influences:	<ul style="list-style-type: none"> ● Installation site protected against the weather. ● Protect from aggressive atmosphere.
Vibration/jolts:	The installation site must be virtually free of vibration.
Pollution degree:	2
Elevation:	0-2000 m above sea level



- Weather-protected installation as stipulated in EN 60721-3-3
- Degree of contamination 2 = Only non-conductive contamination occurs. However, expect temporary conductivity due to moisture condensation.



Analyzer unit, operating unit, V2 terminal module and terminal box may not be used in an oxygen-enriched atmosphere (oxygen concentration > 25% by volume). Electrically safe operation in oxygen-enriched atmospheres (explosion protection) is not guaranteed.

16.6 Electrical specifications

16.6.1 Operating unit

Supply voltage	
AC line voltage:	230 V AC +/- 10% or 115 V AC +15%/- 10% [1][2]
Line frequency:	50/60 Hz
Power input:	- Operating state: 250 VA - Switch-on process: approx. 400 VA
Fuse protection:	4 AT (slow)

[1] For applicable value, refer to the type plate of the operating unit.

[2] Free of interference voltage.



Electrical fuses → p. 146, § 15.4

16.6.2 Terminal box

Supply voltage	
AC line voltage:	230 V AC ($\pm 10\%$) or 115 V AC (+15%/- 10%) [1][2]
Line frequency:	50/60 Hz
Power input:	275 VA
Fuse protection:	→ p. 147, § 15.4.2

[1] For applicable value, refer to the type plate of the terminal box.

[2] Free of interference voltage.



Electrical fuses → p. 146, § 15.4

16.6.3 Analyzer unit

The supply voltages are provided by the terminal box.

Supply voltage	
Supply voltage:	42 V AC; 24 V DC; 50 ... 60 Hz
Consumption:	230 VA

16.6.4 V2 terminal module

Electrical specifications	
External voltage supply:	24 V (± 2 V)
Permissible residual ripple	± 5 %
Power input:	17 W

The external voltage supply must comply with SELV (safety extra low voltage).

16.6.5

Batteries

- RAM in the clock chip in the operating unit:
Battery-buffered with 2 lithium batteries
Type BR-1225, 12.5 mm x 2.5 mm
Typical battery life: 10 years
Charge is monitored.
- RAM in the microcontroller of the analyzer:
Battery-buffered
Battery cannot be replaced
Battery life > 10 years (manufacturer's information) at ambient temperature < 65 °C
with 1% failure rate.

16.7 Gas connections

Straight G1/8"

Gas connection	Type
Gas inlet:	Clamping ring screw connections, "Swagelok" type for tubes with an outside diameter of 6 mm [1]
Gas outlet:	Clamping ring screw connections, "Swagelok" type for tubes with an outside diameter of 6 mm [2]

[1] Recommended: Stainless steel tube, wall thickness 1 mm

[2] Recommended: Teflon tube, wall thickness 1 mm

16.8 Auxiliary gases

16.8.1 Instrument air

Table 9

Specifications for instrument air

Composition:	Purified fresh atmospheric air or compressed air	
Purity:	- Oil content:	Class 2[1]
	- H ₂ O content:	Class 2
	- Particles:	Class 2
Hydrocarbon content:	1% of the used measuring range	
	≤ 4 ppm C _n H _m	
	Constant (non-fluctuating)	
H ₂ O content:	≤ 0.12 g/m ³	
Oil content:	≤ 0.1 mg/m ³	
Particle content:	≤ 1 mg/m ³	
Particle size:	≤ 1 μm	
Pressure dewpoint:	10 K below the lowest ambient temperature	

[1] As described in ISO 8573-1.

Table 10

Operating conditions for instrument air

Supply pressure:[1]	400 kPa ± 20 kPa (4.0 bar ± 0.2 bar)(58 psig ± 2.9 psig)	
Volume flow during operation:	Standard:	Approx. 360 L/h (6 L/min)

[1] At the gas inlet of the analyzer unit.



Industrial compressed air typically does not meet the specifications, but can be used if it is purified:

- Use an adsorption drier to remove the air moisture.



Notes on installation → p. 29, §3.4.3

16.8.2 **Fuel gas**

Table 11 Specifications for the fuel gas

Fuel gas type:	Hydrogen H ₂
Purity:	≥ 5.0

Table 12 Operating conditions for the fuel gas

Supply pressure:[1]	300 kPa ± 20 kPa (3.0 bar ± 0.2 bar) (43.5 psig ± 2.9 psig)	
Volume flow during operation:[2]	- H ₂ :	1.3-1.8 L/h

[1] At the gas inlet of the analyzer unit.

[2] During ignition of the FID flame: Approx. 9 L/h.



Notes on installation → p. 30, §3.4.4

16.8.3 **Span gas**

Table 13 Specifications for the span gas

Type of span gas:	Propane in synthetic air
Concentration:	Approx. 8,000 ppm

Table 14 Operating conditions for the span gas

Supply pressure:[1]	300 kPa ± 20 kPa (3.0 bar ± 0.2 bar) (43.5 psig ± 2.9 psig)
Volume flow during calibration	Approx. 250 L/h

[1] At the gas inlet of the analyzer unit.

16.9 **Sample gas conditions**

- The sample gas may not contain any substances that could chemically react with the components carrying the sample gas.
- The sample gas may not contain any gas components that might condense in the measuring system.
- The sample gas may not contain any substances whose deposits might cause loss of sensitivity.
These substances include e.g. silicon-enriched gases (silane), which may cause surfaces to vitrify.

Materials for components carrying the sample gas	
Stainless steel 1.4301, graphite, quartz, sapphire, Teflon, Kalrez, ceramic	

Properties of the sample gas		
Oxygen content	0-21% by volume	
Permissible sample gas temperature:	0-350°C (32-662°F)	
Permissible dewpoint of the sample gas:	Below ambient temperature	
Permissible internal sample gas pressure: [1]	Atmospheric pressure ± 5 kPa (± 50 mbar)	
Sample gas volume flow:	- Minimum:	72 L/h (1,200 cm ³ /min)
	- Maximum:	170 L/h (2,800 cm ³ /min)

[1] Relative to ambient/atmospheric air pressure.

16.10

Measuring characteristics

Measuring ranges, detection limit	
Measuring range:	100% LEL
Detection limit:	< 3% [1]

[1] Of the measuring range end value.

Response characteristics	
Start-up time:	< 1.5 hours
Response time (for an ejector pump discharge of 1.2 L/min)	
- with standard sampling probe (l = 580 mm):	≤ 2.6 s
- with longer sampling probe (l ≤ 1000 mm, option):	≤ 3.1 s
Stabilization time:	≤ 16 s

Influencing variables	
Ambient pressure:	< 0.5% ^[1] /10 hPa
Sample gas pressure:	< 1.0% ^[1] /10 hPa
Ambient temperature	
- Zero point shift:	< 2% ^[1] /10 K
- Sensitivity shift:	< 1% ^[1] /10 K

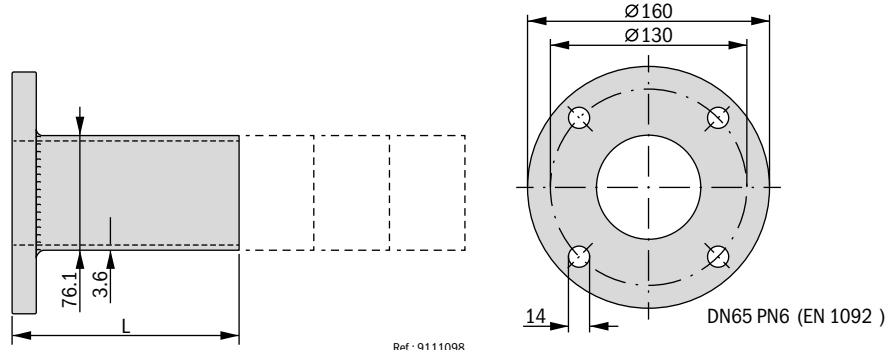
[1] Of the measuring range end value.

Long-term behavior	
Zero drift:	< 0.5%/month
Sensitivity drift:	< 3%/month

16.11 **Accessories and order numbers**

16.11.1 **Mounting flange**

Fig. 38 Mounting flange

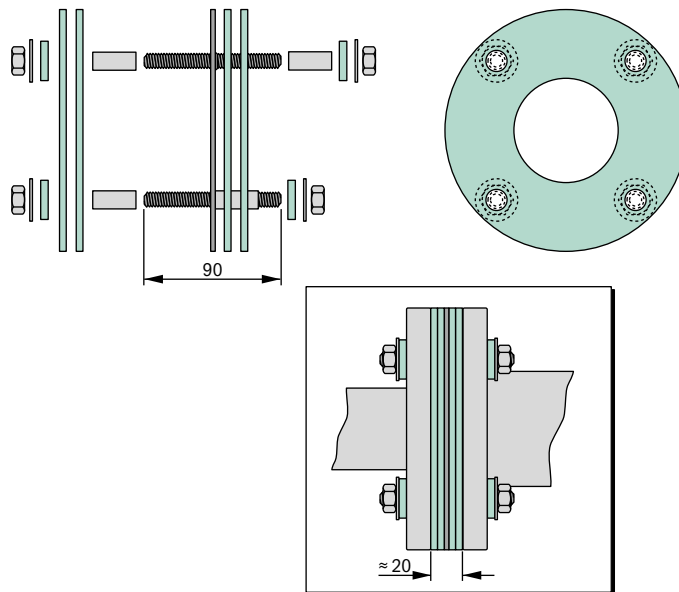


Component	Part no.
Mounting flange ^[1] L = 150 mm, 1.4571	2033623
Mounting flange ^[1] L = 200 mm, 1.4571	2033435
Mounting flange ^[1] L = 250 mm, 1.4571	2033436
Mounting flange ^[1] L = 300 mm, 1.4571	2033437

[1] Only for versions with EU flange (→ p. 162, § 16.4.5).

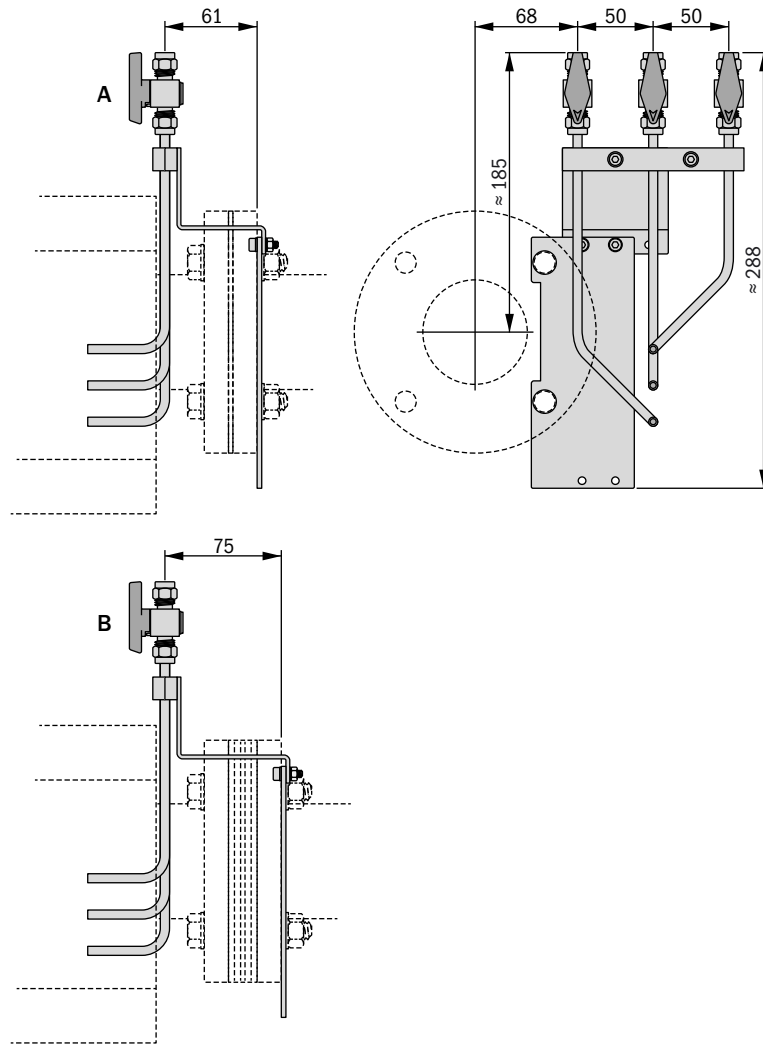
16.11.2 **Heat insulation flange**

Fig. 39 Heat insulation flange for mounting flange



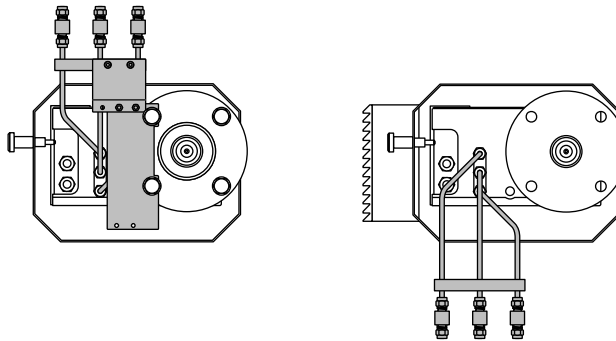
16.11.3 Shut-off fittings

Fig. 40 Shut-off fittings: Dimensions



A With standard seal rings in mounting flange.
 B With heat insulation flange in mounting flange.

Fig. 41 Shut-off fittings: Typical applications



Subject to change without notice

16.11.4 **Plug connector for the operating unit**

Component	Part no.
Plug connector set 1 (connection material for the EuroFID3010 Inline UEG), comprising: - 9-pin D-sub plug (for "data line" plug connector type) - 4-pin special plug (for the "Analyzer Assembly" plug connector) - CEE-22 AC power socket (for AC power to the operating unit)	2028690
Plug connector set 2 (connection material for the EuroFID3010 Inline UEG), comprising: - Same as plug connector SET 2028690, plus: - 25-pin D-sub plug (for the V2 terminal module)	2032879

16.11.5 **V2 terminal module**

Component	Part no.
V2 terminal module (active, with relay disconnection, requires 24 VDC supply voltage)	2028818
Connection cable between the V2 terminal module and the operating unit, with plug connectors, 5 m long	2028680

16.11.6 **Cable**

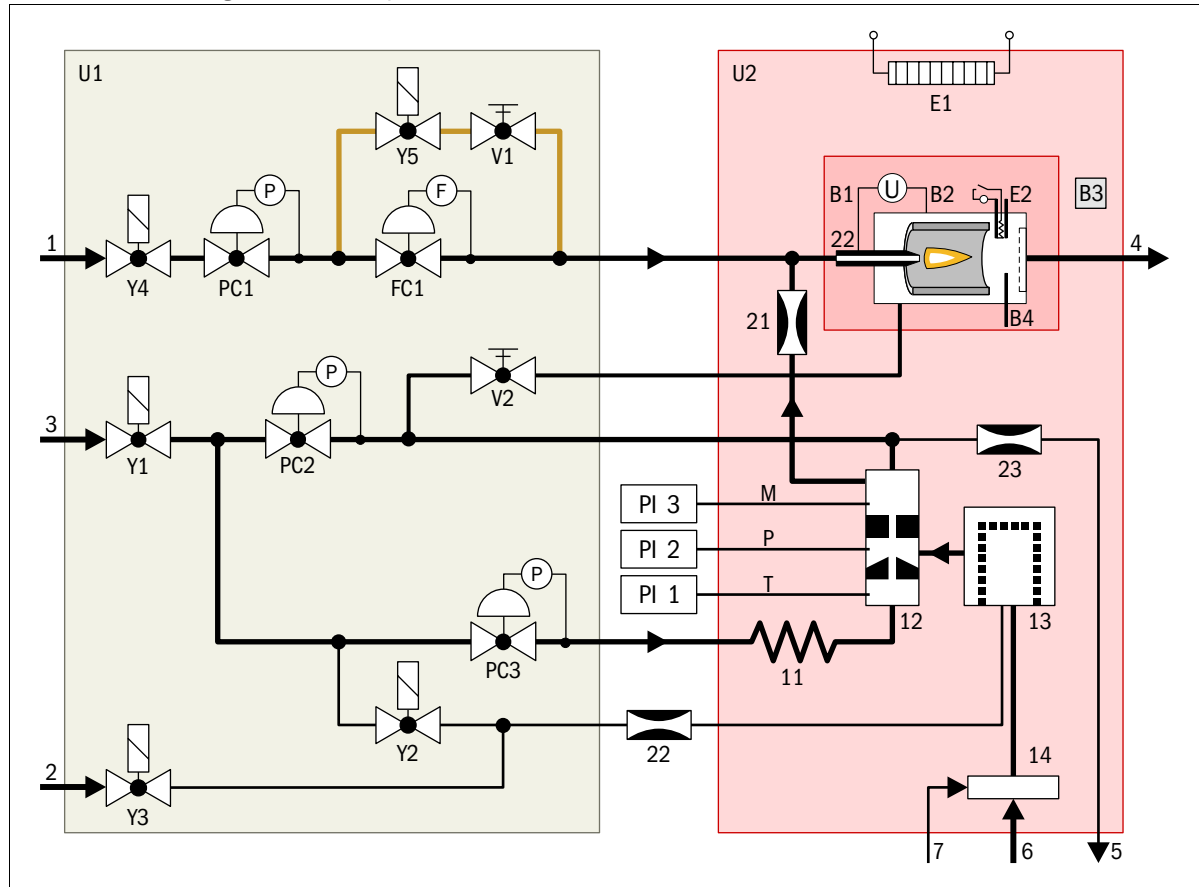
Operating unit - terminal box	Part no.
Voltage supply: 3G 1.5 Ölflex Classic 110 CY ^[1]	6029379
Data line: 4-pole x 0.34mm ² AWG22 twisted in pairs with shield LIYC2Y (TP) UL-style no. 2464/1061 ^[1]	6030048

[1] Sold by the meter; specify required length when ordering.

16.12
Fig. 42

Internal gas flow

Pneumatic circuit diagram of the analyzer unit



1	Fuel gas inlet
2	Span gas inlet
3	Instrument air inlet
4	Outlet
5	Bypass
6	Sample gas inlet
7	Instrument air inlet for flow barrier (option)
11	Heating plate / pre-heating of instrument air
12	Ejector pump
13	Sample gas filter
14	Flow barrier (option)
21	Sample gas capillary
22	Orifice for calibration gas
23	Orifice for bypass
B1	Electrode 1 long ("suction voltage")
B2	Electrode 2 short ("collector electrode")
B3	Temperature sensor for detector block

B4	Temperature sensor for flame temperature
E1	Detector heating
E2	Glow plug
PC1	Pressure regulator for fuel gas
PC2	Pressure regulator for control air
PC3	Pressure regulator for propellant air
PI 1	Pressure sensor for propellant air pressure
PI 2	Pressure sensor for intake pressure
PI 3	Pressure sensor for sample gas pressure
V1	Needle valve for ignition gas
V2	Needle valve for combustion air
U1	Pneumatics
U2	Detector
Y1	Solenoid valve for instrument air
Y2	Solenoid valve for zero gas
Y3	Solenoid valve for span gas
Y4	Solenoid valve for fuel gas
Y5	Solenoid valve for ignition gas
FC1	Fuel gas control valve

Subject to change without notice

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