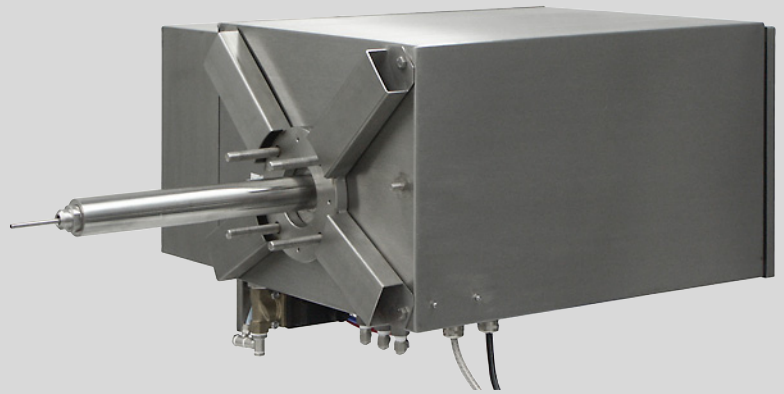


# Analyzer Unit Type “Industrial Enclosure Ex1” for EuroFID Analyzers

Installation, Commissioning, Operating Information

**SICK**  
Sensor Intelligence.



## Document Information

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### Described Product

Product name: Analyzer Unit Type "Industrial Enclosure Ex1"

### Document ID

Title: Supplementary Operating Instructions Analyzer Unit Type "Industrial Enclosure Ex1"

Part No.: 8013666

Version: 2-3

Release: 2018-04

### Manufacturer

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### Validity

These Operating Instructions are valid as Annex to the Operating Instructions for "EuroFID" series gas analyzers.

### Trademarks

Other product names used in this document may also be trademarks and are only used for identification purposes.

### Warranty Information

Specified product characteristics and technical data do not serve as guarantee declarations.

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## Glossary

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**AC** Alternating Current

**ATEX** ATEX: Atmosphères Explosifs: Abbreviation for European directives related to safety in potentially explosive atmospheres

**DC** Direct Current

**LEL** Lower explosion limit (Minimum concentration in a combustible gas or steam above which the gas mixture can be ignited)



## Warning Symbols

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Hazard (general)



Hazard by voltage



Hazard in potentially explosive atmospheres



Hazard by explosive substances/mixtures



Hazard by high temperature or hot surfaces

## Warning levels / Signal words

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### **WARNING**

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

### **CAUTION**

Hazard or unsafe practice which *could* result in less severe or minor injuries *and/or* property damage.

## Information Symbols

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Information for use according to ATEX Approval



Important technical information for this device



Important information on electrical or electronic functions



Supplementary information



Link to information at another place



Nice to know

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# Analyzer Unit Type “Industrial Enclosure Ex1”

## 1 Important information

Main hazards

Main instructions for operation

Intended use

Own responsibility

## 1.1 Validity as supplement

These Operating Instructions are valid as supplement to the “Operating Instructions EuroFID – Gas Analyzers for Measurement of the Total Hydrocarbon Content”.

- ▶ Also observe:
  - Operating Instructions of the EuroFID gas analyzer
  - Manual for the Gönzheimer F 850S Pressurized Enclosure System

## 1.2 Main installation information

### Fragile sampling probe



- ▶ Observe the permissible lifting points (→ p. 18, §3.1).
  - ▶ Do not use the sampling probe as a lifting point.
  - ▶ Do not subject the sampling probe to mechanical loads.
- Otherwise the built-in glass vacuum tube can break.

### Automatic power cutoff

- ▶ Do not connect the EuroFID directly to the main power supply.
- ▶ Switch the power voltage and external signal voltages from the control device of the pressurized enclosure system so that the EuroFID is automatically and completely switched free from current should the pressurized enclosure system not function correctly (e.g. if a leak causes the enclosure purging to fail).

### Throughflow limit for hydrogen

- ▶ Install a throughflow limiter in the H<sub>2</sub> gas feed to the device that limits the H<sub>2</sub> volume flow to the device to 200 ml/min (12 l/h).



A throughflow limiter is not included in the scope of delivery of the device.



1.3

## Main instructions for operation

### Commissioning

- ▶ Check the requirements for commissioning before the actual commissioning:
  - Industrial enclosure is shut tight
  - Instrument air and fuel gas supply both available
  - *If the industrial enclosure was opened or the pressurized enclosure system was not continually in operation:* The atmosphere in the industrial enclosure is not ignitable
  - Main power switch of the EuroFID operating unit is switched on

### Operation



*During operation in potentially explosive atmospheres:*

- ▶ *During operation (when switched on):* Do not open the enclosure.
- ▶ Wait at least one minute after switching off before opening the enclosure.

- ▶ The EuroFID is switched off automatically should the instrument air feed fail.

### Measures during maintenance work on the sample gas filter

*Only applies to devices with the "Process gas flow barrier" option.*

- ▶ *Before starting maintenance work on the sample gas filter:* Open the manual valve of the process gas flow barrier (lever points downwards → p. 32, Fig. 9).
- ▶ *During operation:* Keep the manual valve of the process gas flow barrier closed (lever horizontal).

## 1.4 Intended use

### 1.4.1 Purpose of the device

- EuroFID gas analyzers measure the concentration of gaseous hydrocarbons and hydrocarbon compounds in a gas mixture.
- The Analyzer Unit Type “Industrial Enclosure Ex1” is a variant for use in potentially explosive atmospheres in zones 1 and 2.
- The Analyzer Unit Type “Industrial Enclosure Ex1” serves to measure corrosive and condensing gases with gas temperatures up to 350 °C.



Function description → p. 14, §2.1 and § 2.2

### 1.4.2 Installation location

#### Ambient conditions

The Analyzer Unit Type “Industrial enclosure Ex1” can be used both indoors and outdoors. The installation location should be at least “partially protected against the weather” (DIN EN 60721-3-3). Allowable ambient temperature → p. 37, §6.3.



Unallowed ambient conditions can impair the device function and measuring precision.

#### Usage in potentially explosive atmospheres

- The Analyzer Unit Type “Industrial Enclosure Ex1” may only be used in potentially explosive atmospheres in those explosion groups and temperature classes specified on the type plate (→ p. 39, §6.6).
- The associated operating unit must be installed outside the potentially explosive atmospheres (zone-free area).



Marking, see Type Examination Certificate (separate document).

### 1.4.3 Restrictions of use

- The process gas pressure measured internally must not deviate from the ambient pressure (atmospheric air pressure) by more than  $\pm 50$  hPa ( $\pm 50$  mbar).
- The Analyzer Unit Type “Industrial enclosure Ex1” must be installed at a location virtually free from vibration.



Allowable vibration load → p. 37, §6.3

## 1.5

**Responsibility of user****Designated users**

These Operating Instructions are written for skilled persons entrusted with the following tasks:

- Installation (assembly)
- Commissioning
- Operating and monitoring during operation
- Maintenance/Service



*In potentially explosive atmospheres:*

- Installation, commissioning, maintenance and test must be carried out by skilled persons with knowledge on ignition protection types and installation procedures, relevant rules and regulations as well as the fundamentals of range specification.
- The device may only be operated by persons properly instructed on the tasks assigned, possible risks and protective measures.
- Repairs may only be carried out by skilled persons trained by the manufacturer for this purpose.
- Only original spare parts from the manufacturer may be used for such repairs.

**Correct use**

- ▶ Use the device only as specified in these Operating Instructions. The manufacturer bears no responsibility for any other use.
- ▶ Carry out the specified maintenance work in the intervals specified.
- ▶ No components may be removed from, added to or changed on the device unless this is described and specified in the official manufacturer information. Otherwise:
  - The device could become dangerous
  - Any warranty by the manufacturer becomes void
  - The approval for use in potentially explosive atmospheres expires.

**Special local conditions**

- ▶ In addition to these Operating Instructions, follow all local laws, technical rules and company-internal operating directives applicable at the respective installation location of the device.

**Safeguarding of documents**

- ▶ Keep these Operating Instructions ready for reference at all times.
- ▶ Pass these Operating Instructions on to a new owner.

1.6

## Information on explosion protection

### General measures for safe operation

- ▶ Observe all information in these Operating Instructions.
- ▶ Only use the device as intended.
- ▶ Only allow trained skilled persons to work on the device.
- ▶ Transport and store the device in a proper manner.
- ▶ Carry out all installation work as carefully as possible to ensure safe operation.
- ▶ Operate and maintain the device with utmost care.
- ▶ Also observe relevant local laws, regulations and provisions during installation and operation.

### Safety measures for hydrogen

**WARNING: Explosion hazard**

- ▶ Fit a throughflow limiter in the H<sub>2</sub> gas feed to the device to limit the H<sub>2</sub> volume flow to the device to 200 ml/min (12 l/h).

### Safety during maintenance work

**WARNING: Explosion hazard in potentially explosive atmospheres**

- ▶ Switch the device off before opening the enclosure.
- ▶ Wait at least one minute after switching off before opening the enclosure.

**CAUTION: Risk for safe operation**

- The device must not be modified in an unauthorized manner.
- ▶ Have repairs on the device carried out by the manufacturer.
- Otherwise, operation may not be safe.

# Analyzer Unit Type “Industrial Enclosure Ex1”

## 2 Product description

Product identification  
Functional principle  
Characteristics  
Variants

## 2.1 EuroFID device components

A EuroFID gas analyzer contains three main device modules:

- a) *Analyzer unit*: Contains the physical measuring system and basic electronics
- b) *Operating unit*: Contains the electronic control unit, display and controls
- c) *Terminal box*: Connects the analyzer unit and operating unit.

The terminal box is integrated in the industrial enclosure on the Analyzer Unit Type “Industrial Enclosure Ex1”.

## 2.2 Analyzer Unit Type “Industrial Enclosure Ex1”

### Version

The Analyzer Unit Type “Industrial Enclosure Ex1” is a special version of a EuroFID analyzer unit with an enclosed enclosure protected against explosions. The analyzer unit is fitted with a sampling probe that protrudes directly into the process and is fitted directly on a flange.

The Analyzer Unit Type “Industrial Enclosure Ex1” has an automatic pressurized enclosure system to provide protection against explosions. The “F850S” Pressurized Enclosure System from Gönzheimer Elektronik GmbH is used.

### Function of the pressurized enclosure system

The enclosure is continually purged with a protective gas (air) to prevent an explosive atmosphere being created inside the enclosure. Apart from that, it is ensured the gas pressure inside the enclosure is higher than the ambient air pressure. The control unit of the pressurized enclosure system

- controls, during commissioning, automatic enclosure purging before the main power supply to EuroFID is connected
- switches the main power supply to the EuroFID off automatically as soon as the pressurized enclosure system does not have the correct operating state (malfunction case).

Part of the instrument air is used as protective gas (→ p. 16, Fig. 1).



The following occurs during a malfunction of the pressurized enclosure system:

- The EuroFID is switched completely free from voltage.
- All internal valves are closed.
- The shut-off valve under pneumatic control for fuel gas feed (H<sub>2</sub>) is closed.



For further information on how the pressurized enclosure system functions, refer to “Manual for the Gönzheimer F850S Pressurized Enclosure System”.

### Main Analyzer Unit Type “Industrial Enclosure Ex1” components

- Terminal box
- EuroFID analyzer
- Sample gas filter (in EuroFID analyzer)
- Supply fitting for gas feed (gas connections, pressure regulator)
- Pressurized Enclosure System

## 2.3

**Product variants****Approvals**

BVS 05 ATEX G 005 X	<ul style="list-style-type: none"> <li>● For gas analyzer "EuroFID3010 UEG"</li> <li>● Ignition protection class: II 2G Ex pxb IIB + H<sub>2</sub> xxx °C (xxx: 170 ... 220 °C)</li> </ul>
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**Alternative versions**

Power voltage	230 V AC or 115 V AC
Flange	According to DIN standard (EU version) or ANSI standard (US version)
Screw connections of the gas connections	For tube diameter 6 mm (EU version) or ¼" (US version)

**Options**

Heating	Prevents frost inside (automatic frost-protection heater)
Process gas flow barrier (pPS)	Prevents process gas (sample gas) flowing out of the open filter during maintenance work on the sample gas filter (suitable for process gas pressures from 0 ... 50 mbar against ambient pressure)



See the type plate for the actual product version (→ p. 39, §6.6).

## 2.4

**Accessories****For mechanical installation**

- Mounting connections in various lengths (→ p. 41, §6.7.1)
- Shut-off fitting for gas supply - with 3 manual valves (→ p. 25, Fig. 8)

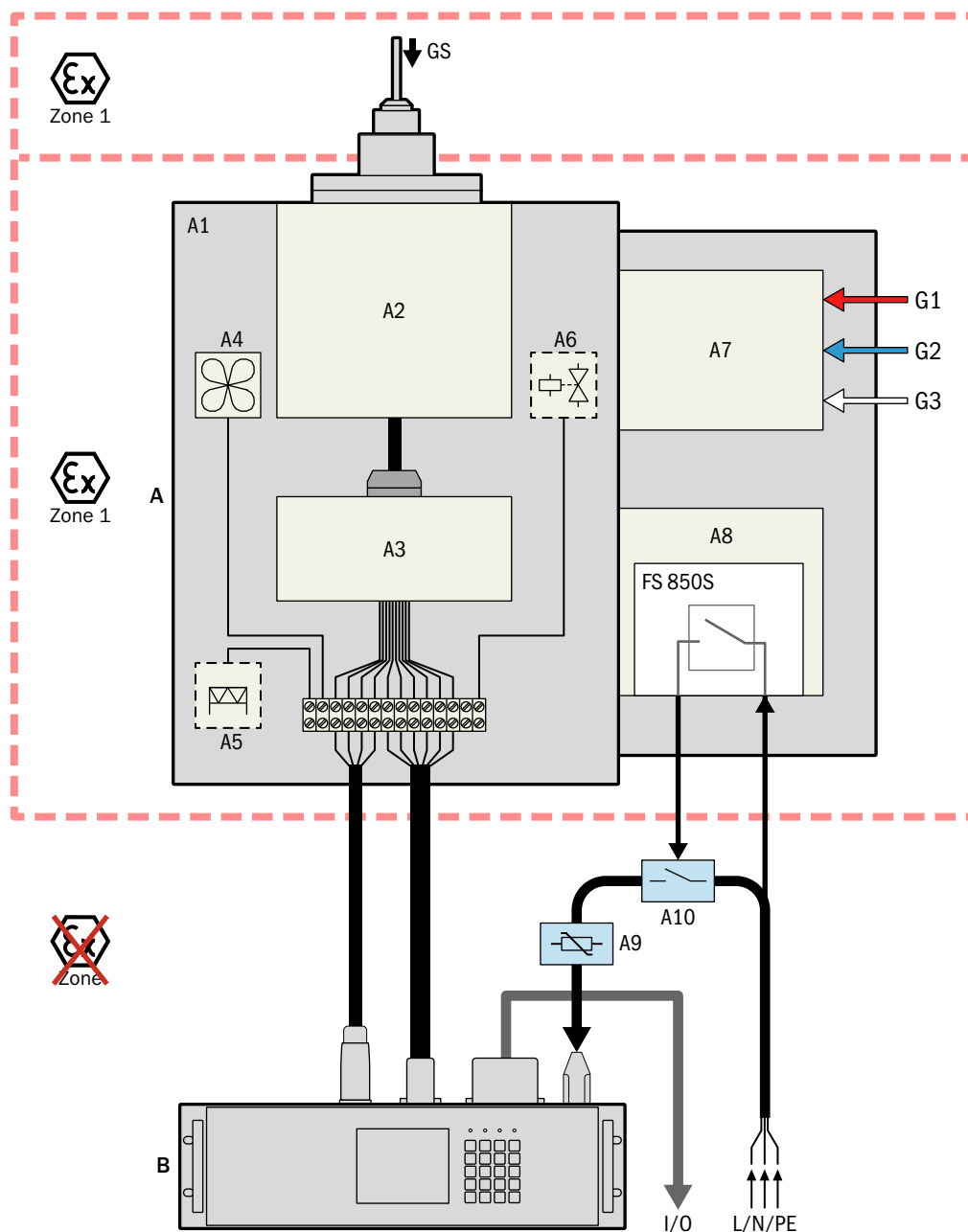
**For electrical installation**

- Power relay
- Switch-on current limiter
- Plug-in connector sets for the operating unit
- Terminal module Version 1.0
  - Leads the connections of the "Analog and Digital I/O" plug-in connector to screw terminals.
  - Passive module; does not require voltage supply.
  - No separation of signal lines.
- Terminal module Version 2.0
  - Active module with relay for electric isolation of the signal lines.
  - Requires an own (separate) 24 V DC voltage supply.
  - The relay contacts close should the voltage supply fail.
- Connection cable to connect a terminal module to the operating unit
- Cable material



- Installation example → p. 23, Fig. 6
- Part Nos. for accessories → p. 41, 6.7

Fig. 1 EuroFID with Analyzer Unit Type "Industrial Enclosure Ex1" (overview)



A Analyzer Unit Type "Industrial Enclosure Ex1"		B EuroFID operating unit	
A1	Industrial enclosure EF Ex	G1	Fuel gas
A2	Analyzer	G2	Instrument air
A3	Terminal box	G3	Calibration gas
A4	Ventilator	GS	Sample gas
A5	Heating (option 1)		
A6	Process gas flow barrier valve (option 2)		
A7	Supply fittings		
A8	Pressurized Enclosure System		
A9	Switch-on current limiter		
A10	Power relay		

Subject to change without notice



# Analyzer Unit Type “Industrial Enclosure Ex1”

## 3 Installation

Information on sample gas extraction

Assembly

Electrical installation

Gas supply

### 3.1 Lifting points on the EuroFID analyzer

- ▶ Always handle and store the analyzer and the complete Analyzer Unit Type “Industrial Enclosure Ex1” so that no forces act on the sampling probe.



**IMPORTANT:**

The sampling probe contains a glass vacuum tube.

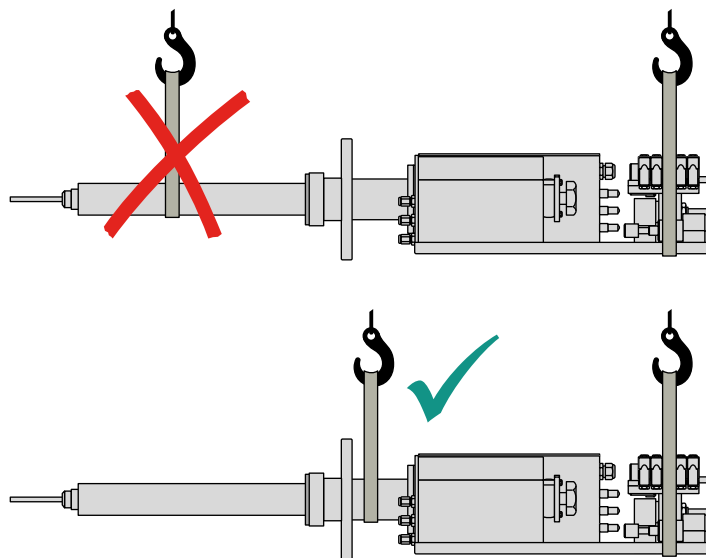
- ▶ Do not subject the sampling probe to mechanical loads.
- ▶ Do not use the sampling probe as a lifting point.

Otherwise the vacuum tube can break.

If the vacuum tube breaks, condensate can form in the sampling probe during operation. Condensate in the sample gas path can damage the measuring system or render it useless.

Fig. 2

Lifting points on the EuroFID analyzer



### 3.2

#### Sample gas sampling point

- ▶ Before feeding sample gas, check whether the sample gas can chemically attack the materials of parts carrying gas (materials, see “EuroFID Inline LEL” Operating Instructions).
- ▶ Ensure
  - the gas pressure at the sampling point (process gas pressure / pressure on sample input) does not deviate from the ambient pressure by more than  $\pm 50$  hPa;
  - the opening at the tip of the sampling probe cannot clog, e.g. through flue dust;
  - the sample gas sampling probe has no mechanical load (see safety information in § 3.3.1).
- ▶ Make sure the sample gas is mixed homogeneously at the sampling point. Make tests to determine the most suitable sampling point (examine the line cross-section) when strands can be expected in the gas flow,

### 3.3 Enclosure assembly

#### 3.3.1 Supplied condition

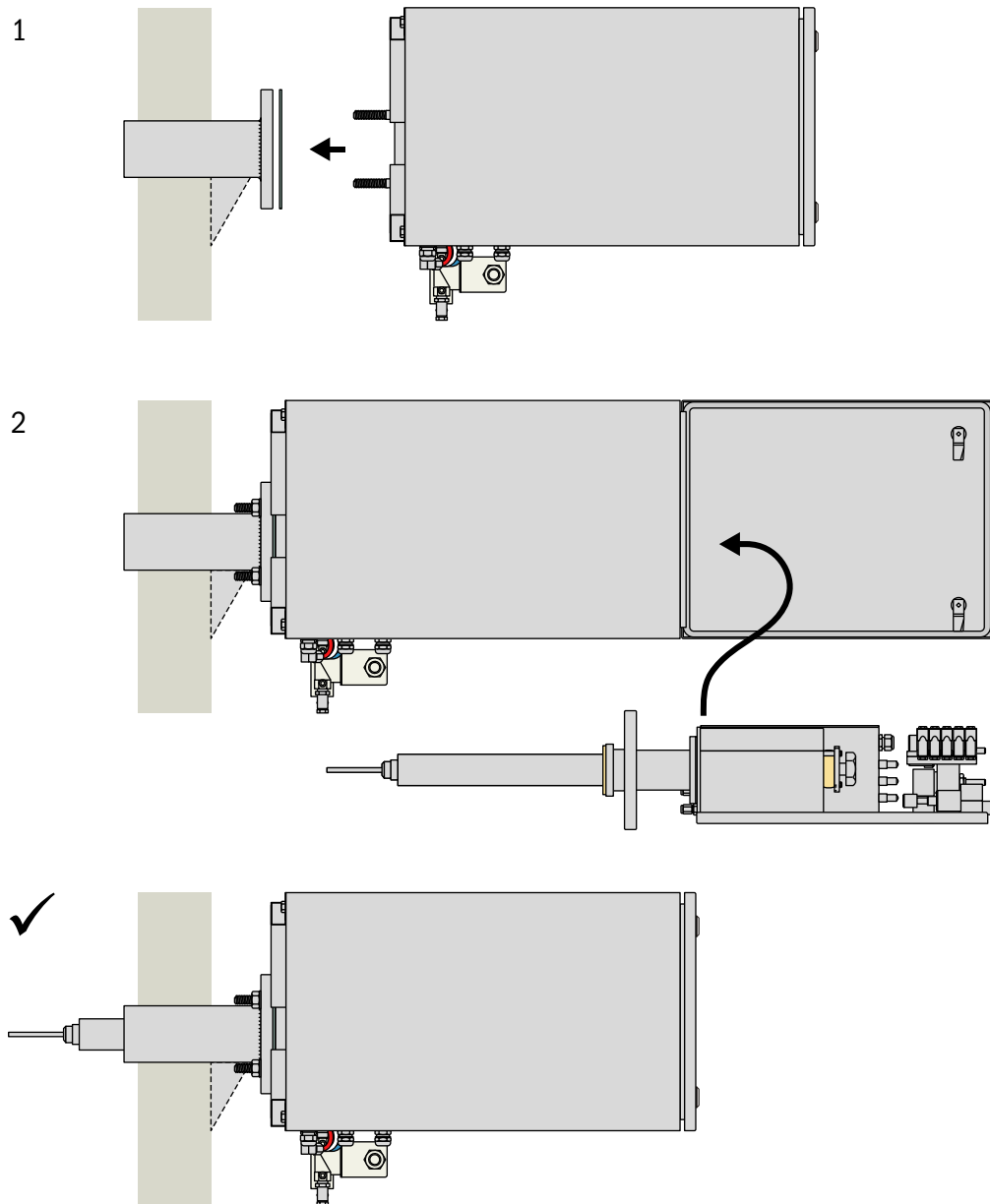
The industrial enclosure and the EuroFID analyzer are supplied as separate parts to facilitate assembly. The side cover may also be packed as a separate item.

Assembly sequence (→ Fig. 3):

- 1 First mount the industrial enclosure without an installed EuroFID analyzer (→ p. 20, §3.3.3).
- 2 Then install the EuroFID analyzer in the industrial enclosure (→ p. 20, §3.3.4).
  - ▶ First fit the cover when all connections have been made.

Fig. 3

Assembly sequence



### 3.3.2 Installing the mounting connection

- ▶ Install a suitable mounting connection at the planned installation site to which the Analyzer Unit Type “Industrial Enclosure Ex1” can be attached.



- Flange specification → p. 37, §6.1.3
- Suitable mounting connection (accessories) → p. 41, §6.7.1

- ▶ Take the space requirements of the enclosure into account (dimensions → p. 36, Fig. 10).
- ▶ Check whether the flange needs to be supported to carry the weight of the device (→ p. 37, §6.1.2). If necessary, provide mechanical support for the flange.

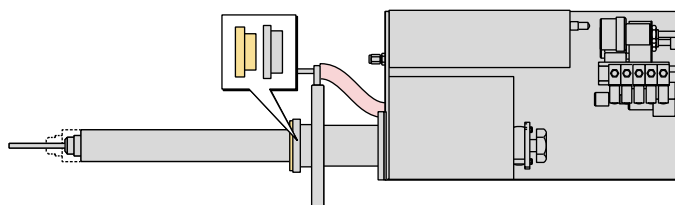
### 3.3.3 Installing the industrial enclosure

- ▶ Secure the industrial enclosure to the mounting connection (gas connections pointing downwards).
- ▶ Fit a flange seal between the industrial enclosure and the mounting connection.

### 3.3.4 Installing the EuroFID analyzer

- ▶ Check whether the sealing sleeve (silicone foam seal) is mounted on the sample gas probe (→ Fig. 4).

Fig. 4 Sealing sleeve of the sample gas probe



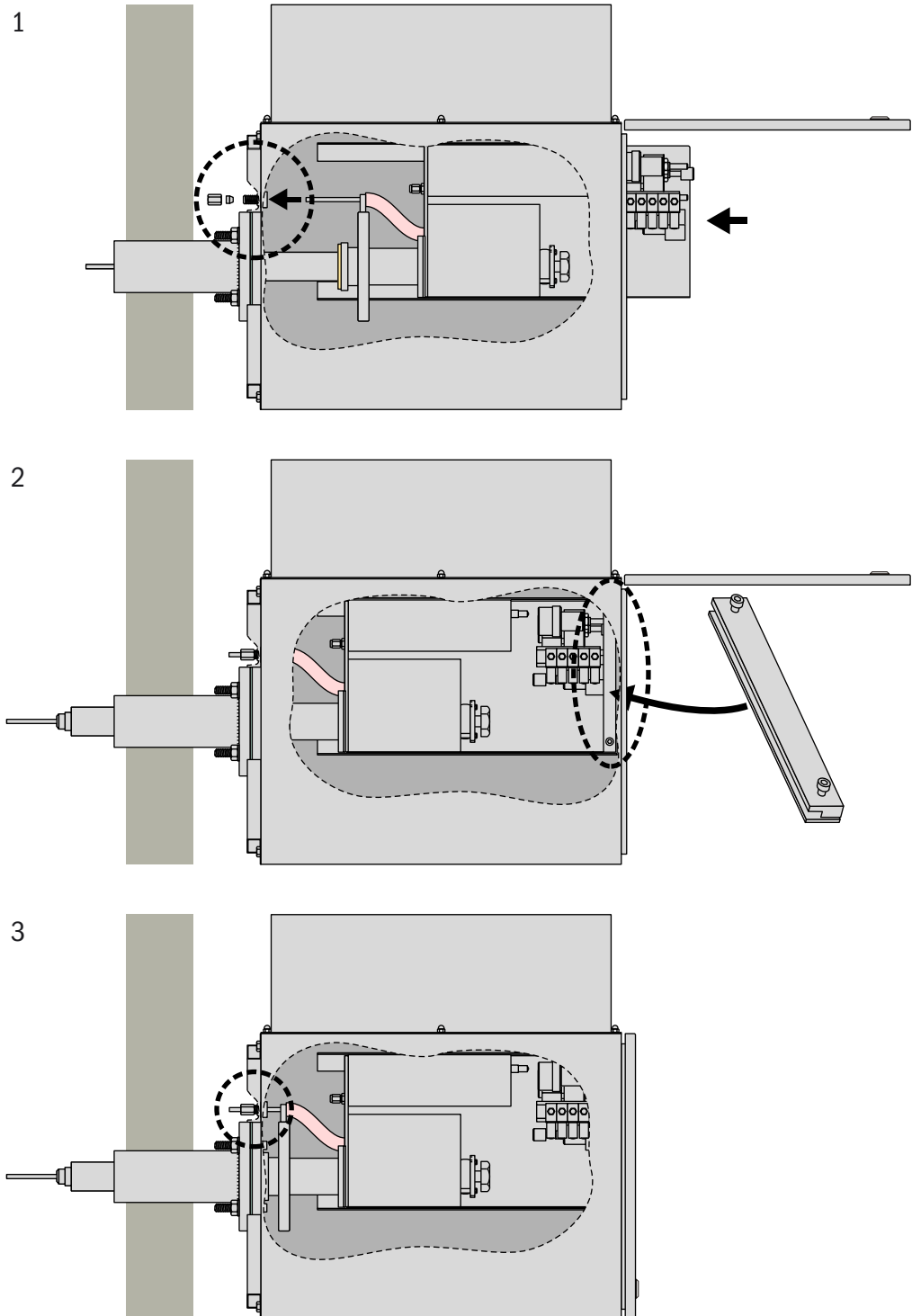
- ▶ *On the outside next to the flange:* Take the screw cap and its clamping ring off the plastic screw fitting (→ p. 21, Fig. 5).
- 1 Push the analyzer into the enclosure (position it on the rails).
    - a) Guide the sample gas probe carefully through the flange opening.
    - b) Guide the gas tube of the sample gas outlet (exhaust) through the plastic screw fitting.
    - c) Push the base frame in to the stop.
  - 2 Place the clamping bar onto the rails behind the base frame.
    - a) Press the clamping bar and base frame towards the flange with enough force so that the silicone foam seal is compressed.
    - b) Now secure the clamping bar in place (tighten the clamping screws).
  - 3 Close the plastic screw fitting:
    - a) Push the clamping ring onto the gas tube.
    - b) Put the screw cap on and tighten by hand.

### 3.3.5 Internal connections

- ▶ *Connect the three gas lines inside:* Join the gas line couplings according to the color marking of the gas lines (red/blue/white). Make sure connections are gas tight and locked properly.
- ▶ *Electrical connection:* Connect the analyzer connection cable to the counterpart inside the industrial enclosure.

Fig. 5

Installing the analyzer



Subject to change without notice

## 3.4 Electrical installation



- Installation example → p. 23, Fig. 6
- Example of a complete Wiring plan → p. 24, Fig. 7

### 3.4.1 Cable material

- ▶ Connect the Pressurized Enclosure System, Analyzer Unit Type “Industrial Enclosure Ex1” and operating unit using shielded cables approved for use in the respective potentially explosive atmosphere.

### 3.4.2 Power connection

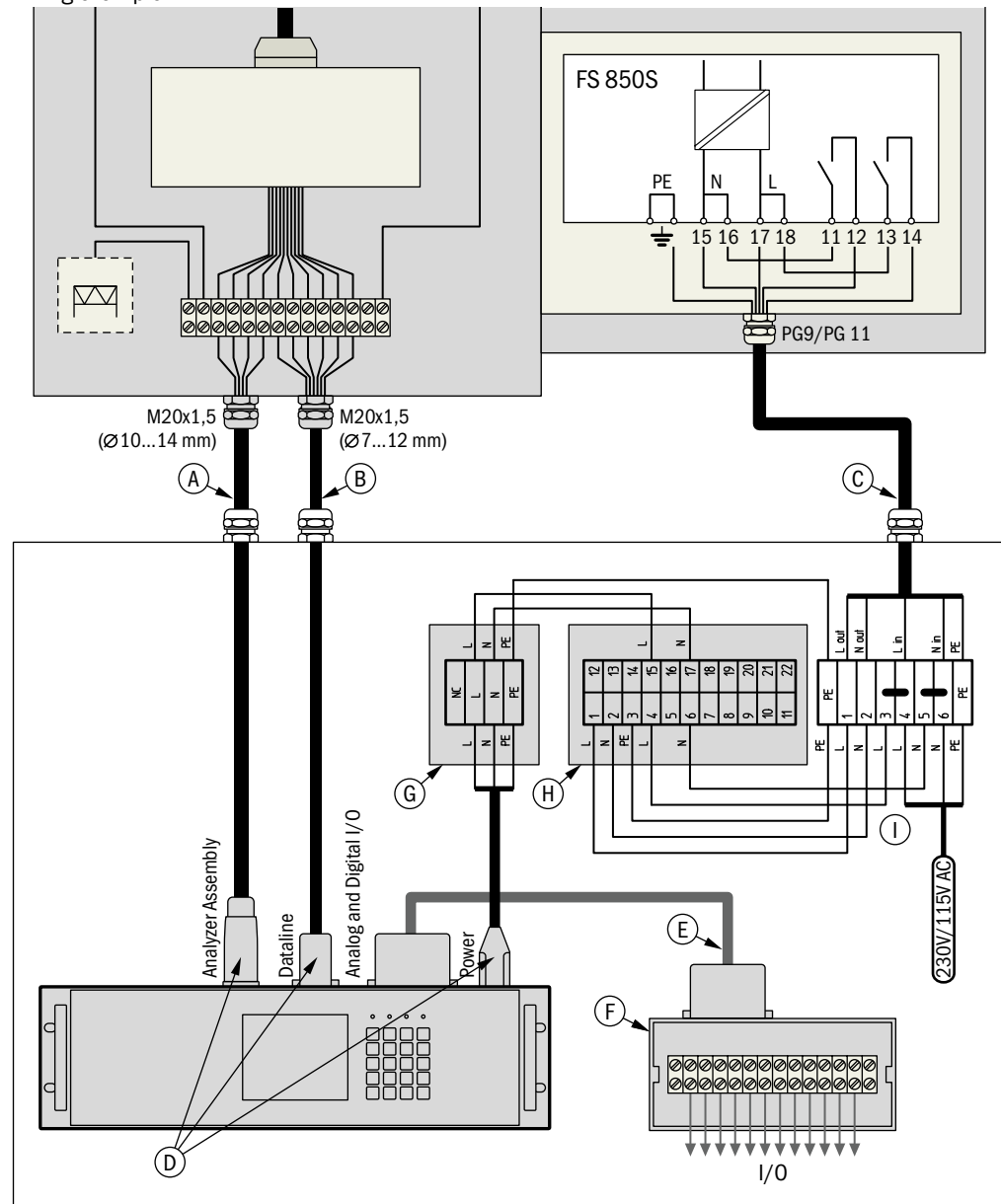
- ▶ Lead the main power supply via the control unit of the pressurized enclosure system (diagram → p. 16, Fig. 1; wiring example → p. 23, Fig. 6).
- ▶ Do not connect the EuroFID operating unit directly to the main power supply.

### 3.4.3 Potential equalization

- ▶ Install a potential equalization connection (PA) in addition to the protective conductor connection (PE).
- ▶ Use the connection terminal on the outside of the enclosure in this case (→ p. 25, Fig. 8).

Fig. 6

Wiring example



Pos.	Component
A	3-pole cable for power voltage (recommended: 3G1.5 Oelflex Classic 110 CY)
B	4-pole data cable (recommended: 4Px0.34mm <sup>2</sup> AWG22 twisted pair with shield)
C	5-pole cable for power voltage (recommended: 5G1.5 Oelflex Classic 110 CY)
D	Plug-in connector set (accessory)
E	Connection cable, Terminal module operating unit (accessory)
F	Terminal module (accessory)
G	Switch-on current limiter
H	Power relay SR 853
I	Terminal strip


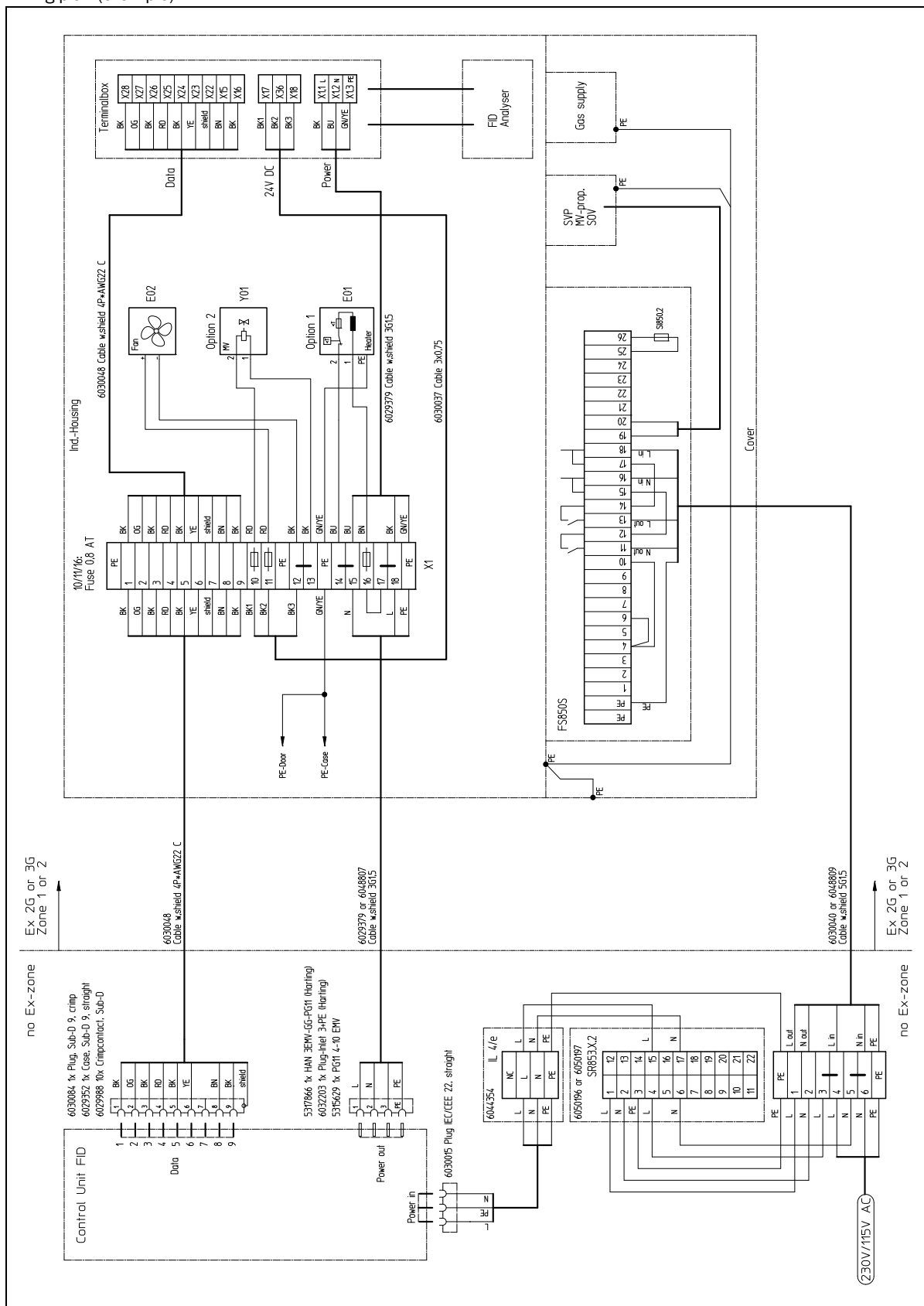
 Part Nos. for cable material and accessory parts → p. 41, § 6.7

Fig. 7 Wiring plan (example)



Subject to change without notice



3.5

### Gas connections

- ▶ Prepare the gas supply for fuel gas, instrument air and calibration gas as specified in the “EuroFID Inline LEL” Operating Instructions but, however, using the gas connections on the Analyzer Unit Type “Industrial Enclosure Ex1” (→ Fig. 8).
- ▶ Supply pressure for fuel gas and calibration gas: 300 kPa (3 bar) (± 10%)
- ▶ Supply pressure for instrument air: 600 kPa (6 bar)
- ▶ Install a device in the fuel gas supply that ensures the H<sub>2</sub> volume flow to the Analyzer Unit Type “Industrial Enclosure Ex1” cannot exceed 200 ml/min (12 l/h).



Gas connection details (technical data) → p. 37, 6.1.4

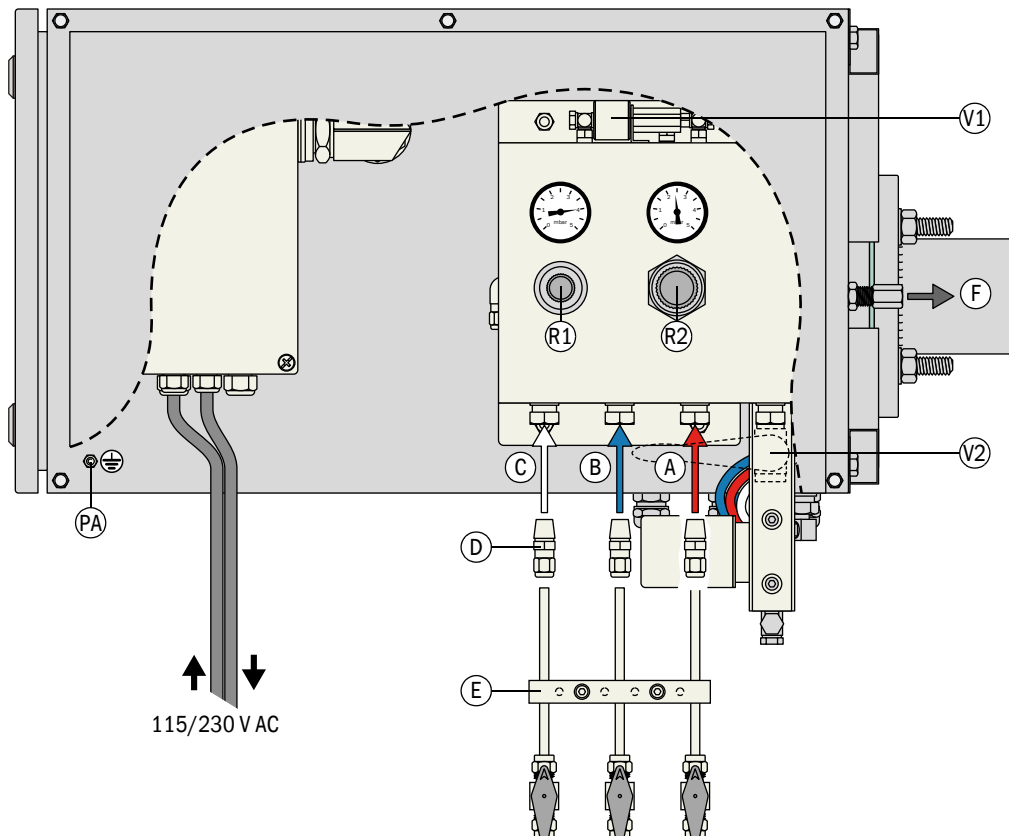


Realization options for limiting throughflow:

- Automatic throughflow limiter
- Combination of pressure regulator and control valve (throttle valve) with suitable settings
- Leak monitoring unit with automatic gas feed shut-off

Fig. 8

Connections



- A Fuel gas
- B Instrument air
- C Calibration gas
- D Tube screw fitting
- E Shut-off fitting (accessory)
- F Sample gas outlet (exhaust)

- PA Connection for potential equalization
- R1 Pressure regulator for instrument air (4.0 bar)
- R2 Pressure regulator for purge air (2.4 bar)
- V1 Shut-off valve for fuel gas (H<sub>2</sub> resp. H<sub>2</sub>/He)
- V2 Shut-off valve for process gas flow barrier (→ p. 32, § 5.1)



# Analyzer Unit Type “Industrial Enclosure Ex1”

## 4 Commissioning

Requirements  
Procedure  
Decommissioning

## 4.1

**Requirements for commissioning****WARNING: Risk of explosion – Potentially explosive atmosphere**

- ▶ Before each commissioning, first check whether the requirements for commissioning are satisfied.

Before commissioning:

- ▶ Make sure the industrial enclosure is closed tight:
  - *Inside:* The silicone foam seal of the analyzer is pressed firmly against the inside wall.
  - *Outside:* The enclosure door is closed tight.
- ▶ Make sure the instrument air and fuel gas supply are guaranteed.
- ▶ Make sure the main power switch of the EuroFID operating unit is switched on.
- ▶ Observe the information on commissioning in the Operating Instructions of the Gönzheimer F850S pressurized enclosure system.
- ▶ Make sure the Pressurized Enclosure System configuration is correct (→ p. 39, § 6.5).



Activating the “Bypass” operation on the Gönzheimer F805S Pressurized Enclosure System allows putting the device into operation without the enclosure purging being in operation. The “Bypass-Code” (By-Code) protects the “Bypass” operation.

- ▶ *If “Bypass” operation is to be used:* Observe the safety information on “Bypass” operation (see “Manual for the Gönzheimer F805S Pressurized Enclosure System” delivered with the system).
- ▶ *Recommendation:* Change the standard setting for the “Bypass-Code” to an individual value.

## 4.2

**Measures during first commissioning**

- ▶ Follow the instructions for first commissioning in the Operating Instructions of the F805S pressurized enclosure system.
- ▶ Follow the instructions for first commissioning in the EuroFID Operating Instructions.
- ▶ *On devices with the “Process gas flow barrier” option:* Keep the manual shut-off valve closed during operation (Explanation → p. 32, § 5.1).



The pressure regulators of the supply fitting (R1, R2 → p. 25, Fig. 8) are set to the correct value by the manufacturer:

- Secondary pressure for instrument air: 4.0 bar
- Secondary pressure for purge air: 2.4 bar
- ▶ Do not change the pressure regulator settings.

## 4.3

**Commissioning procedure****Automatic sequences during commissioning**

During commissioning, the Pressurized Enclosure System first carries out an automatic procedure:

- 1 The industrial enclosure is purged with instrument air.
- 2 The power supply voltage for the EuroFID is activated after the purge time has elapsed. The EuroFID then carries out an own commissioning procedure.
- 3 Software start
- 4 Measuring system is heated up
- 5 Measuring operation is activated



- Specifications for enclosure purging → p. 39, 6.5
- Configuration Table of the Pressurized Enclosure System → p. 40

**Work steps during commissioning**

- 1 Activate the power voltage supply of the Analyzer Unit Type “Industrial Enclosure Ex1” at an external location (*Example:* Switch on the main switch of the control cabinet).
- 2 Wait until the EuroFID is ready for operation (observe status indicator of operating unit).

## 4.4 Decommissioning

### 4.4.1 Preparations for shutting down

#### Securing the connected systems

- ▶ Inform locations involved (e.g. process control points and apply for permit if required).
- ▶ Secure/deactivate connected devices (e.g. process control).
- ▶ Deactivate connected indicators (alarms, status indicators).

#### Protection against condensation



#### **IMPORTANT:**

The sensor block of the measuring system is heated to prevent condensation in the internal measuring system. When the EuroFID is taken out of operation, condensation could occur in the cooling sensor block. It is essential that this is prevented; liquids can render the measuring system unusable.

- ▶ Before the system is shut down, the internal sample gas path must be purged with a “dry” neutral gas.

- ▶ *The following applies for the analyzer unit type “Inline”:* If possible, feed zero gas through the sample gas probe.
- ▶ *Otherwise:* Use the “Zero check” function to supply instrument air (= zero gas) into the measuring system (see EuroFID Operating Instructions).

### 4.4.2 Switch-off procedure

- 1 Carry out preparations (→ §4.4.1).
- 2 Shut off the calibration gas supply (if installed).
- 3 Close the fuel gas supply (external valve).
- »» The FID flame goes out. The Analyzer Unit Type “Industrial Enclosure Ex1” measuring system is purged with instrument air (→ §4.4.1 „Protection against condensation“).
- 4 Deactivate the H<sub>2</sub> leakage monitoring device (if installed).
- 5 Wait for at least 10 minutes purging time.
- 6 Close off the instrument air supply.
- 7 Switch the EuroFID operating unit off:
  - ▶ *Either:* Interrupt the main power supply externally (e.g. main system switch).
  - ▶ *Or:* Switch off the main power switch at the rear of the operating unit.
- 8 Interrupt the main power supply to the Analyzer Unit Type “Industrial Enclosure Ex1” (*Example:* Switch the main switch of the control cabinet off).
- 9 *Before opening the industrial enclosure:* Wait at least 1 minute after switching off.



#### **CAUTION: Hot components inside the industrial enclosure**

The sensor block and sample gas filter are hot when in operation (≈ 200 °C).  
*Before maintenance work inside:*

- ▶ *Either:* Allow the components to cool down (recommended).
- ▶ *Or:* Wear protective gloves.

# **Analyzer Unit Type “Industrial Enclosure Ex1”**

## **5 Operating information**

Manual valve for process gas flow barrier  
Maintenance activities

5.1

### Manual shut-off valve for process gas flow barrier

Only applies to devices with the “Process gas flow barrier” option.

#### Function

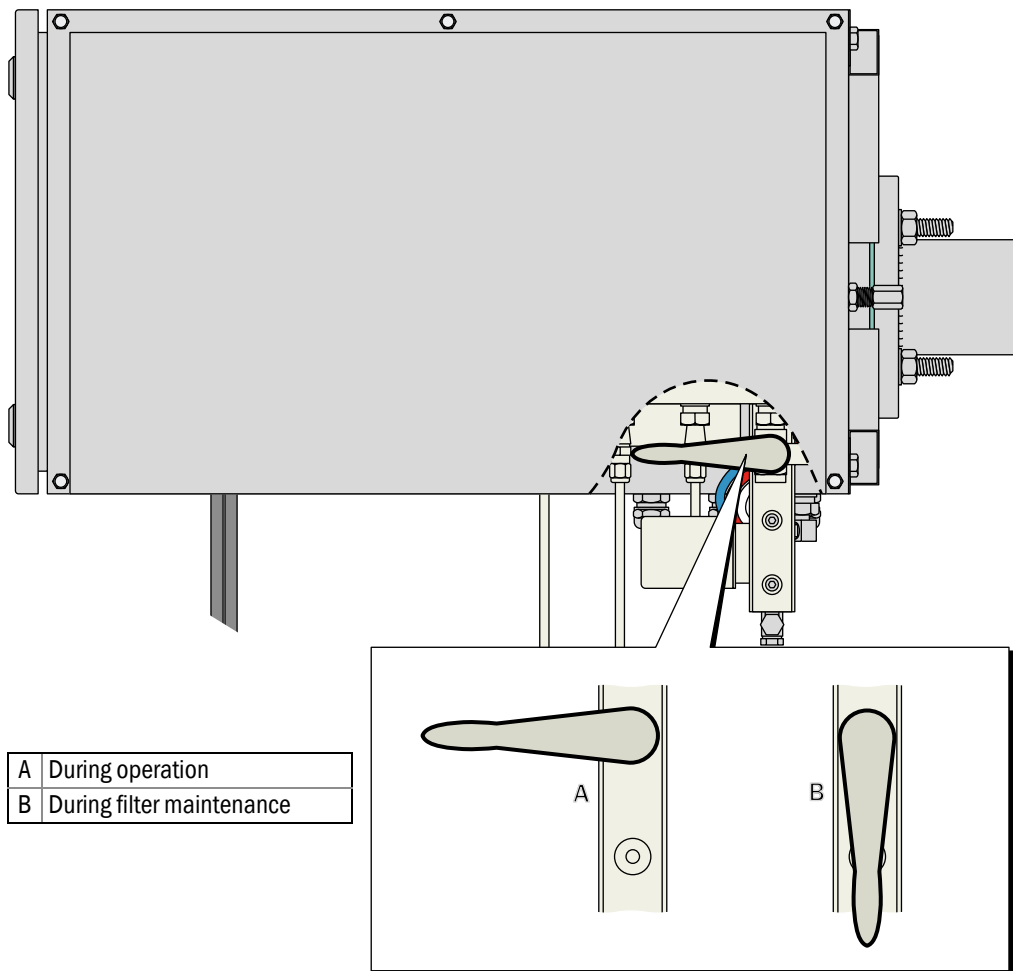
The process gas flow barrier prevents process gas (sample gas) flowing out of the filter housing during maintenance work on the sample gas filter. To do this, instrument air is fed against the sample gas inlet. On the Analyzer Unit Type “Industrial Enclosure Ex1”, a manual shut-off valve must stop the supply of instrument air during operation.

#### Handling

- ▶ *During operation:* Keep the manual valve of the process gas flow barrier closed (lever horizontal → Fig. 9).
- ▶ *Before starting maintenance work on the sample gas filter:* Open the manual valve of the process gas flow barrier (lever points downwards).
- ▶ *After maintenance work on the sample gas filter:* Close the manual valve of the process gas flow barrier (lever horizontal).

Fig. 9

Manual valve for the process gas flow barrier



Description of maintenance work on the sample gas filter:  
See “EuroFID Inline LEL” Operating Instructions.



5.2 **Maintenance activities**

5.2.1 **Regular function test of the pressurized enclosure system**

**Maintenance interval (recommendation)**

- ▶ Check the protective function of the Pressurized Enclosure System in more or less half-yearly intervals.

**Procedure**

- 1 Keep the EuroFID in operation.
- 2 Secure connected locations and devices:
  - ▶ Inform any connected stations.
  - ▶ Secure or deactivate connected devices (e.g. measured value recording).
  - ▶ Passivate/deactivate connected signaling units (alarm signaling, status signaling).
- 3 Interrupt (or reduce strongly) instrument air supply to the Analyzer Unit Type “Industrial Enclosure Ex1”.
  - »» The Pressurized Enclosure System should now interrupt the main power supply to the EuroFID, i.e. the EuroFID is switched off.
- 4 Connect instrument air again.
  - »» The Pressurized Enclosure System and EuroFID should now start operation again (sequence → p. 29, §4.3).

5.2.2 **Regular check of the pressurized enclosure system**

*Valid for all FS850S as from 3rd supplement BVS 06 ATEX E 088*

**Maintenance interval**

- ▶ Check the technical condition of the pressurized enclosure system in intervals of max. 3 years.

**Maintenance work**

Maintenance work	Instructions
▶ Inspect the gas connection for instrument air. [1]	<i>If contamination or corrosion are visible:</i> Proceed according to the Maintenance Instructions for the pressurized enclosure system.
▶ Test the relay switching contacts of control unit FS850S.	See Maintenance Instructions of the pressurized enclosure system.
▶ Perform further maintenance work.	See Manual of the pressurized enclosure system.

[1] Part of the instrument air is used as protective gas.



**CAUTION: Potentially explosive atmosphere, risk of explosion due to improper handling**

- ▶ This maintenance work must be performed by trained skilled persons.
  - ▶ Observe information on explosion protection (→ p. 12, §1.6).
  - ▶ Check and ensure the functional safety of the pressurized enclosure system after maintenance.
- Otherwise it is possible that the explosion protection is no longer ensured.

## 5.3

**Cleaning the enclosure****CAUTION: Hazard through penetrating fluid**

*If liquids have penetrated the device:*

- ▶ Do not touch the equipment any more.
- ▶ Shut the device down immediately by disconnecting the main power voltage at an external station.
- ▶ Contact SICK Service to have the device repaired.

- 1 Use a soft cloth to clean the enclosure.
- 2 Slightly moisten the cloth with water and a mild detergent.
- 3 Do not use mechanically or chemically aggressive cleaning agents.
- 4 Ensure no fluid penetrates the enclosure.

# Analyzer Unit Type “Industrial Enclosure Ex1”

## 6 Technical data

Dimensions

Enclosure data

Electrical specifications

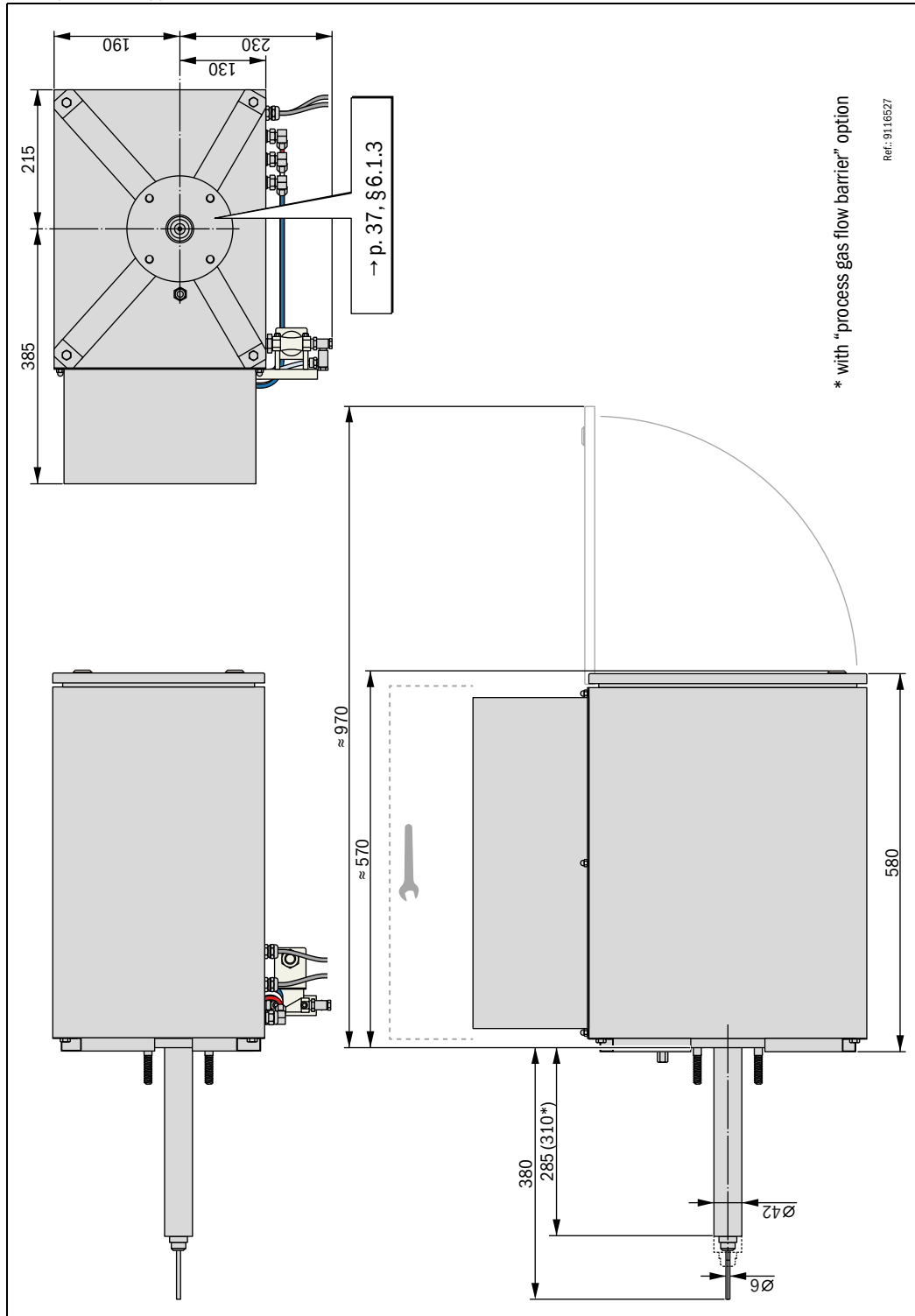
Specification for operating gases

Specifications on enclosure purging

6.1 Enclosure

6.1.1 Dimensions

Fig. 10 Analyzer Unit Type "Industrial Enclosure Ex1"



Subject to change without notice

6.1.2 **Weight**

Device version	Weight
All	56 kg (124 lbs)

6.1.3 **Flange specification**

Version	Flange	Material	Threaded bolt
EU	B65x76.1 (DIN 2573)	1.4571	M12
US	ANSI B16.5 150lb/sq.in. DN3"	1.4301	5/8" UNC

6.1.4 **Gas connection details**

Gas connections for instrument air, fuel gas, calibration gas		
Screw fitting		Thread <sup>[1]</sup>
EU version	US version	
Clamping ring screw fitting for tube with outer diameter 6 mm	Clamping ring screw fitting for tube with outer diameter ¼ " (¼ inch)	Inside thread ¼ " NPT

[1] After removing the screw fitting

6.2 **Main power supply**

Table 1 Performance characteristics for the power connection

Supply voltage	230 or <sup>[1]</sup> 115 V AC <sup>[2]</sup> , + 10%/- 15%
Power frequency:	50 ... 60 Hz
Power input in operation - Standard: - With option "Heating" <sup>[3]</sup> :	Approx. 250 W Approx. 330 W
Power input during run-up time - Standard: - With option "Heating" <sup>[3]</sup> :	Approx. 330 W Approx. 410 W

[1] See type plate

[2] Free from interference voltage

[3] Only active for temperatures close to freezing point (frost-protection heating)

6.3 **Ambient conditions**

Ambient temperature - With internal heating: - Without internal heating:	-20 °C ... +55 °C 0 °C ... +55 °C
Allowable vibration load:	max. 0.2 g (1.96 m/s <sup>2</sup> ) In frequency range 10 ... 150 Hz

6.4

## Operating gases

### Instrument air

Dew point:	At least 10 °C under lowest ambient temperature [1]
Allowable dust content:	≤ 1 mg/m <sup>3</sup> particle size: max. 1 µm
Allowable oil content:	≤ 0.1 mg/m <sup>3</sup>
Allowable hydrocarbons content:	≤ 4 ppm or < 1% of measuring range (used)
Supply pressure:	6 bar
Consumption, pressurized enclosure system:	Enclosure purging (operating state): Approx. 2.5 m <sup>3</sup> /h Pre-purging: Approx. 4.0 m <sup>3</sup> /h
Consumption, ejector pump:	Approx. 1.2 m <sup>3</sup> /h

[1] To prevent condensation in the lines

### Fuel gas

Material:	Pure hydrogen (H <sub>2</sub> from pressure container)
Purity class	5.0
Allowable hydrocarbons content:	≤ 0.5 ppm
Supply pressure:	3 bar (± 0.2 bar)
Consumption:	Approx. 1.8 l/h

### Calibration gas

Material:	Mixture of synthetic (or cleaned accordingly) air and gaseous hydrocarbons (e.g. propane)
CH concentration:	Approx. 80% <sup>[1]</sup> of end value of measuring range used
Supply pressure:	3 bar (± 0.3 bar)
Consumption:	2 ... 3 l/min (120 ... 180 l/h) <sup>[2]</sup>

[1] Relative to the propane equivalent

[2] Only during the calibration procedure

The calibration gas pressure must be 3.0 bar (allowable deviation 0.3 bar).




When determining the lower explosion limit (LEL), 8000 ppm propane in synthetic air is usually used as calibration gas.

### 6.5 Performance characteristics for the enclosure purging

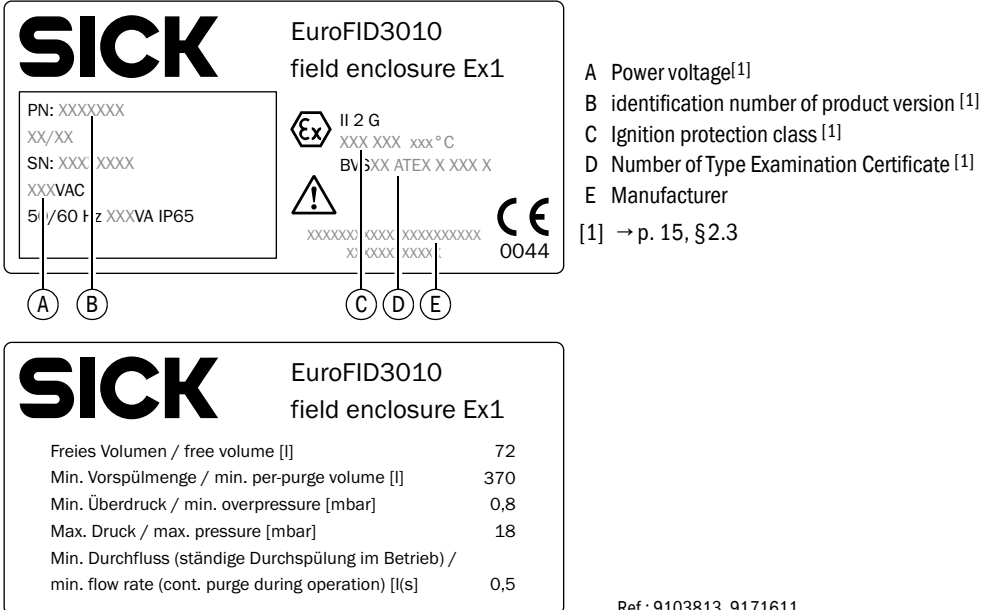
Free volume:	72 l
Minimum pre-purge amount:	370 l
Minimum overpressure:	0.8 mbar
Maximum pressure:	18 mbar
Minimum throughflow (continuous flushing in operation):	0.5 l/s
Purge time for pre-purging:	< 20 minutes [1]
Purge air:	Instrument air (e.g. from pneumatic line)
Purge air temperature:	Max. 40 °C
Purge air pressure:	Max. 4.0 bar
Purge air dew point:	At least 10 °C under lowest ambient temperature

[1] Pre-purging monitored automatically

 Configuration Table of the Pressurized Enclosure System → p. 40, Fig. 12

### 6.6 Type plates

Fig. 11 Type plates



**SICK** EuroFID3010 field enclosure Ex1

PN: XXXXXXXX  
 XX/XX  
 SN: XXXXXXXX  
 XXXVAC  
 5/60 Hz XXXVA IP65

II 2 G  
 XXX XXX °C  
 BV:XXX ATEX X XXX X

CE 0044

A B C D E

**SICK** EuroFID3010 field enclosure Ex1

Freies Volumen / free volume [l]	72
Min. Vorspülmenge / min. per-purge volume [l]	370
Min. Überdruck / min. overpressure [mbar]	0,8
Max. Druck / max. pressure [mbar]	18
Min. Durchfluss (ständige Durchspülung im Betrieb) / min. flow rate (cont. purge during operation) [l/s]	0,5

A Power voltage[1]  
 B identification number of product version [1]  
 C Ignition protection class [1]  
 D Number of Type Examination Certificate [1]  
 E Manufacturer  
 [1] → p. 15, §2.3

Ref.: 9103813, 9171611

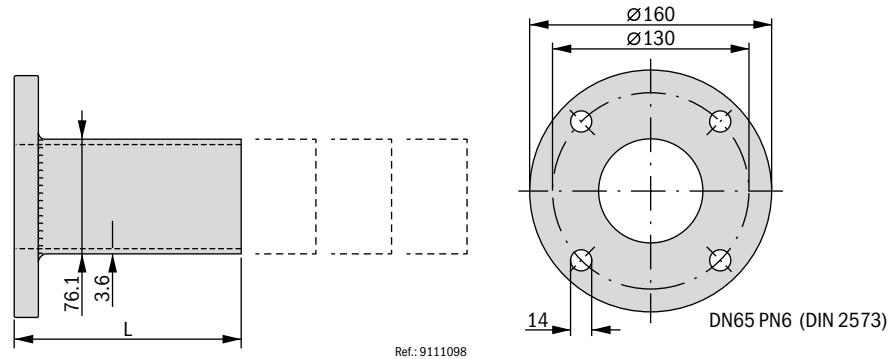




6.7 **Accessories**

6.7.1 **Mounting connections**

Fig. 13 Mounting connection, flange version "EU"



Flange version <sup>[1]</sup>	Component	Part No.
EU	Mounting connection L = 150 mm, 1.4571	2033623
	Mounting connection L = 200 mm, 1.4571	2033435
	Mounting connection L = 250 mm, 1.4571	2033436
	Mounting connection L = 300 mm, 1.4571	2033437
US	Mounting connection 3" L = 150 mm, 1.4571	2044037
	Mounting connection 3" L = 200 mm, 1.4571	2044039
	Mounting connection 3" L = 250 mm, 1.4571	2044040
	Mounting connection 3" L = 300 mm, 1.4571	2044041

[1] → p. 37, §6.1.3

6.7.2 **Cables**

Component	Part No.
3G1.5 Oelflex Classic 110 CY [1]	6029379
4P×0.34mm <sup>2</sup> AWG22 twisted in pairs with shield LYC2Y (TP) UL-style no. 2464/1061 [1]	6030048
5G1.5 Oelflex Classic 110 CY [1]	6030040
Connection cable terminal module operating unit [2], with plug-in connectors, 5 m long	2028680

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

[2] 37-pole D-SUB plug-in connector "Analog and digital I/O"

6.7.3 **Plug-in connectors for the operating unit**

Component	Part No.
Plug-in connector set 1 (connection material for EuroFID), comprising: - 9-pole SUB-D plug (for plug-in connector type "Dataline") - 4-pole special plug (for plug-in connector type "Analyzer Assembly") - Power cable socket CEE-22 (for the power connection of the operating unit)	2028690
Plug-in connector set 2 (connection material for EuroFID), comprising: - Content same as plug-in connector SET 2028690 + in addition: - 25-pin SUB-D plug (for Terminal module 2)	2032879

6.7.4 **Terminal modules for the operating unit**

Component	Part No.
Terminal module 1 (passive, no disconnection of signal lines)	2028677
Terminal module 2 (active, with relay disconnection, requires 24 V DC supply voltage)	2028818

6.7.5 **Electrical components**

Component	Part No.
Power relay SR853 for 120 V power voltage (SR853.2.2)	6050196
Power relay SR853 for 230 V power voltage (SR853.0.2)	6050197
Switch-on current limiter IL4/e (for 120/230 V power voltage)	6044354

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