



# MANUAL

# DIRECT PURGE OPTION



UNION  
Instruments GmbH

**CWD2005 PLUS**

General information, safety standards and regulations  
for direct purge option

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# 1. General information about safety and warranty

## **Strictly follow the Instruction for Use**

Any use of the control unit requires full understanding and strict observation of this instruction. The installation must be performed in the way as described in the instruction and manual.

The warranty of the manufacturer does not cover failures or defects consequence of other or inappropriate use of the product.

## **Maintenance**

The analyzer must be inspected and serviced regularly by trained service personnel. Repair of the analyzer may only be carried out by trained service personnel. It is recommended to have a service contract obtained from the manufacturer for all repairs and maintenance.

When replacement parts are required ensure that you use only spare parts specified by the manufacturer. Unauthorized parts and procedures can affect the analyzer's performance, place the operation of your process at risk and VOID YOUR WARRANTY. Look-alike substitutions may result in fire, electrical/chemical hazards or improper operation.

## **Application in areas of explosion hazard**

The analyzer was tested and developed for application in the areas where combustible or explosive gas mixtures are lightly to occur.

Area classification: Class 1, Div. 2 according NEC 500

Pressurization type: Z

## **Liability for proper function or damage**

The liability for the proper function of the analyzer is irrevocable transferred to the owner or operator to extend that the analyzer has been service or repaired by personnel not employed or authorized by the manufacturer or when the analyzer was used in a manner not conforming to its intended use.

The manufacturer cannot be held responsible for damage caused by non-compliance with the recommendation above. Strictly follow the instructions for use. Any use of the analyzer requires full understanding and strict observation of these instructions for use.

**Work on electrical system may be accomplished only by trained and instructed personnel.**



**Danger!**

Mains voltage 120V, 60Hz

Contact with this voltage can cause serious burns or even death.

Work on electrical circuits may only be carried out by qualified electrician.

Disconnect the mains voltage before installation or work at the instrument.



**Warning!**

The VDE regulations, the low-voltage directive 2006/95/EG, the local accident- prevention regulations and these instructions for use must be observed at all times!

In this system no gas alarm system was contractually planned. Each person who works at the gas system must carry a gas warning device by him/herself.



**Danger!**

There is the possibility that toxic gas can be pass out.

Do not breathe gas!

After all work on the gas system, the whole system must be examined for gas tightness.

#### Safety rules and risks

S18	Handle and open container with care
S20/21	When using do not eat, drink or smoke.
S23	Do not breathe gas
S38	In case of insufficient ventilation, wear suitable respiratory equipment
R23	Toxic by inhalation
R39/23	Toxic: danger of very serious irreversible effects through inhalation.

## 2. Fundamental Safety Instructions

Before operating or maintaining the instrument it is of utmost importance to get familiar with all operating and maintenance instructions contained in this manual. The manuals contain important information on how to operate the system safely and properly.

The instructions have to be carefully observed in order to avoid danger, to prevent accidents and to increase the reliability of the system.

This Operating and Instruction Manual is to be supplemented by the respective national HSE (Health – Safety – Environment) rules and regulations.

It is strongly recommended to make a complete set of the Operating and Maintenance Instructions permanently available in the instrument container.

Any person in charge of carrying out any kind of operation or work with and on the instrument system such as:

- Operation, including setting-up,
- Calibration,
- Maintenance (servicing, inspection, repair),
- Fault tracing,
- System restoration,
- Transport,
- Erection,
- Cleaning

shall have read the instruction manuals.

In addition to product information and to the rules and regulations for accident prevention and to the environmental protection mandatory for such kind of installations in the country and place of use the generally recognized technical rules for safe and proper working must be strictly observed.

The instrument system as a whole as well as all individual equipment and apparatus has been manufactured and assembled in accordance with the state of the art standards and the relevant safety rules. Nevertheless, its use may constitute some risk to life and limb of users especially because the system is handling flammable toxic gases.

The instrument system shall only be used in technically perfect conditions in accordance with its designated use and the instructions set out in this Operating and Maintenance Instructions. Only safety-conscious, qualified, skilled and instructed personnel shall be involved in operation and maintenance of the system.

Any damage and/or abnormal observations must be directly reported to the operators. Repair, assembly and maintenance shall be carried out only with the instrument switched electrically off.

For damage resulting from inappropriate usage

For damage resulting from inappropriate usage or repair or maintenance work the manufacturer will not undertake any liability. In the case of doubt a service technician of the manufacturer should be contacted and/or ordered.



### 3. Information related to designated use

The analyzer should be placed as close as possible to the sampling location to avoid unnecessary time delays.

Install the analyzer in a climatically stable area; see the manual of the analyzer.

The analyzer is not suitable for outdoor installation.

The exhaust gas must be led to the outside of the room



**Danger!**

The exhaust gas shall be disposed at a safe location outside.  
It may be possible that the exhaust gas contains toxic parts.

Follow exactly to the procedure described for handling the analyzer.

#### 3.1 Foreseeable misuse

Each unintended use (or misuse) of the analyzer can impair the function of the analyzer, thus establishing a direct threat to humans and the whole system.

Misuse will result in immediate loss of any liability claim.

Misuse occurs if:

- neglecting the warnings attached to the analyzer
- neglecting the procedure of commissioning and operation
- operating the analyzer without purge air
- operating the analyzer without a safety switch
- disregarding the error signal
- disregarding of the conditions of issue
- neglecting the classified area
- neglecting the voltage regulation of power supply on-site

The list above is not final. Please note the similar situations and conditions that deviate from the intended application.



**Warning!**

Ignoring the safety references and the instruction can possibly cause an escaping gas to a combustible mixture inside of the instrument.  
It may cause explosion!



## 4. Main System Configuration

The analyzer is developed and tested to directly operate in hazardous areas, the class1, Div.2, according to NEC500.

The enclosure is equipped with a compressed air purging and safety shutdown.

In order to reach the safety class described above, the analyzer was equipped with a compressed air purging system. Compressed air is needed to rinse the enclosure to assure no gas left in the system. This is important to distinguish whether or not a leak occurs during leak-testing.

Furthermore, the analyzer requires air for combustion which is fed in this way. In this design, instead of the air filter, a manometer will be placed which indicates the pressure in the enclosure.

Between the chambers of the enclosure a connection is built in, so that both chambers are all flushed with the compressed air.

The exhaust gas duct is built with a flame barrier.

## 5. Protection system

The enclosure of the analyzer is purged by compressed air with a min. consumption of 35 m<sup>3</sup>/h and a pre-pressure of 101.5 psi.

Within the container there's an overpressure of 1 InWc. The air flows through the enclosure and rinse the analyzer. It is ensured by the overpressure that possibly accumulated gas is led to the outside.

The overpressure is monitored by the pressure switch -Q2- in reference for environment. The reference to the outside is located at bottom of the case.

If the pressure in the enclosure drops the pressure switch will be tripped and the relay K1 goes dead and drops out. An error signal is triggered and can be transmitted to a PLC. The signal can be gripped at pins -x101/1-2-.

Ref.doc.: Wiring diagram

### 5.1 Gas flow restriction

A regulator with inner diameter of 0.5 mm is installed in the process gas and calibration gas input. This is relevant in the case of a gas leak to limit the gas flow. The regulator is installed by the manufacturer and may not be removed in any case.

### 5.2 Special feature of the safety system

In case of a system-fault occurs, it is possible to avoid a complete shutdown of the system and the analyzer produce an error signal instead. This signal can be gripped at pins -x101/1-2-.

To use this function, the pins -x100/S-S must be by-passed.

For safety reason, the manufacturer recommends the bypass is performed only during service or maintenance work. Afterwards it must be completely removed.



Warning!



Terminals marked with "S" are for service only!  
Remove jumper from both terminals after any local service work

## 6. Commissioning

The compressed air supply is connected via the connector on the right side of the analyzer. A flexible hose with nominal diameter of 1/2 " is required.



**Fig. 1**

A filter cartridge dryer unit must be installed. Pay attention: the maximum input pressure at the analyzer is 0.3 bar (4.351 psi).

Before switching on, the analyzer must be rinsed at least half an hour using compressed air.

After that, the analyzer can now be switched on.

### ● Warning pressurized enclosure ●

This enclosure shall not be opened unless the area is known to be free of flammable materials, or unless the device within have been de-energized.

Power shall not be restored after enclosure has been opened until enclosure has been purged for 30 minutes at a minimum pressure of 1 inch of water.

Before opening de-energize device and wait 30 minutes for cool off the system.

● Area classification, class I, Div. 2 ●

Pressurization Type Z ●

The analyzer ignites automatically and opens the solenoid valves.

## 6.1 Adjusting the manometer

The manometer has been pre-adjusted at the factory.

Should it still necessary be adjusted, the adjustment should be performed with the enclosure door opens.

**Manometer is pre-adjusted**

**Re-adjusting only  
with open door**



## 7. Power requirements

The system requires one power supply.

Power supply: 120, 1~, N, PE, 60Hz

Work on electrical system may be accomplished by trained and instructed personnel only.



**Danger!**  
Mains voltage 120V, 60Hz  
Contact with this voltage can cause serious burns or even death.  
Work on electrical circuits may only be carried out by qualified electrician.  
Disconnect the mains voltage before installation or maintenance.



**Warning!**  
The VDE regulations, the low-voltage directive 2006/95/EG, the local accident- prevention regulations and these instructions for use must be observed and followed at all times!

To disconnect the power supply, the main switch is located at the front of the analyzer in the right corner.

## 8. Manufacturer

The system has been designed, manufactured and tested by Union Instruments GmbH. For problem, technical questions, or ordering service or spare parts, please contact:

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