

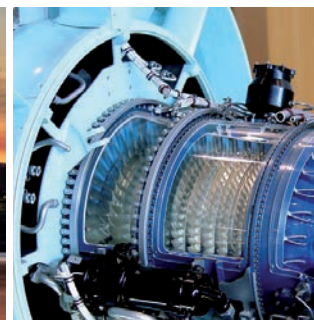


Measurement parameter

- Calorific value / heating value
- Wobbe-Index
- Specific density
- CARI, air requirement

Applications

- LNG-Terminals
- Offshore Process gas regulation
- Fuel regulation for gas turbines



CWD2005 PLUS



Calorimeter for direct and steady determination
of the gas quality with increased accuracy

The combustion calorimeters of the **CWD2005** (Calorimetry, Wobbe-Index, Specific Density) device series are used to determine the gas quality and the associated measured quantities:

- Calorific value / heating value
- Wobbe-Index
- Specific density
- CARI, air requirement.

The **CWD2005 PLUS** is a variant of the CWD2005 for the continuous determination of the Wobbe-Index with increased accuracy. In the application area of natural gas the accuracy of measurements is $\pm 1.0\%$ with regard to the full-scale range (see Table 1).

Due to the various measuring ranges the CWD2005 PLUS can be used in a very versatile way. It is typically used for natural gas, biomethan, liquid gas, refinery- and mixed gases.

Possible application areas are fuel regulation in refineries, the conversion of refinery gas or even the processes in the glass industry.



Figure 1: CWD2005 PLUS

Typical measuring ranges of CWD2005 PLUS

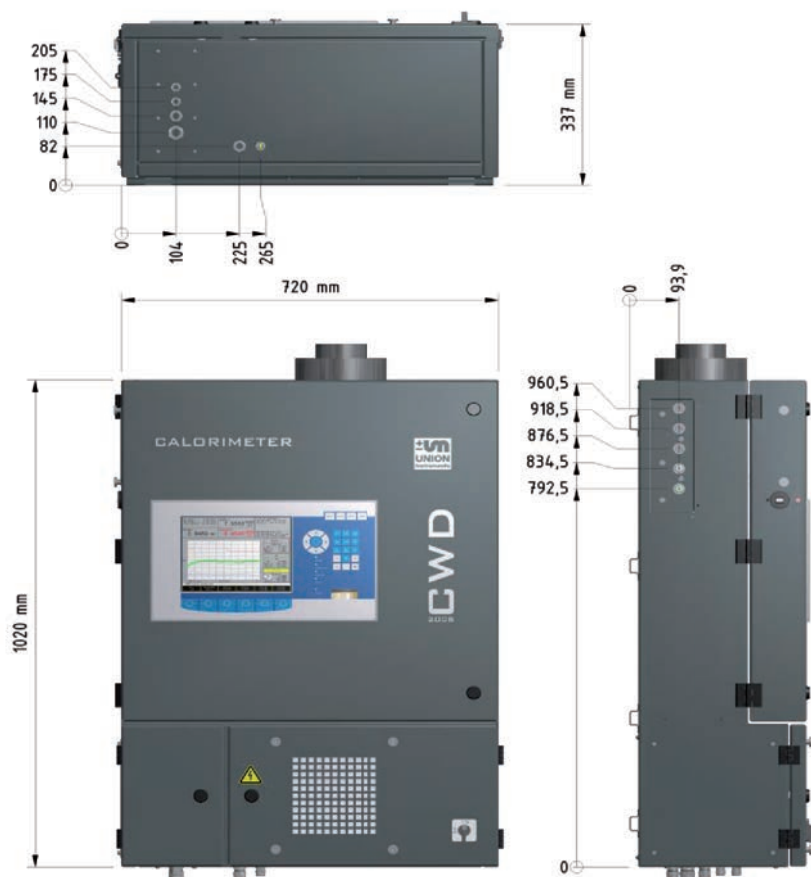
Gas type	Measuring range [MJ/m ³]	Upstream pressure [mbar]	Wobbe index accuracy [\pm % MBE]	Typical gas consumption [l/h]
Flare gas	–	–	–	–
Blast furnace gas	3.5 – 6	40	3.0	170
Converter gas	–	–	–	–
Mixed gas	5 – 10	40	2.0	140
Coke oven gas	15 – 30	40	1.5	60
Biogas	25 – 35	40	1.5	70
Natural gas	25 – 48	20	1.0	25
Refinery gas	25 – 50	40	1.5	25
LPG	40 – 90	20	1.5	15

Table 1: Typical measuring ranges CWD2005 PLUS

Because it also measures unexpected and unknown gas components, the CWD2005 PLUS can be used with a rapidly changing gas composition, such as in the case of residual gases of chemical processes or synthetic gases in the steel industry. In addition, the system provides a high level of safety in the event of a process shutdown or interruption of the gas supply by extinguishing its flame after a maximum of 10 seconds.

Direct and continuous determination of gas quality by combustion calorimeter has been a proven, high-accuracy measurement principle for more than 60 years (see Table 1). During combustion of a defined gas volume, all gas components are thermally converted. The energy released in the process is proportional to the Wobbe-Index. The specific gravity of the gas is measured simultaneously so that the heating value can be calculated from these two values.

Technical Data



Technical data for CWD2005 PLUS

Weight	Up to approx. 54 kg
Dimensions	
W x H x D [mm]	1020 x 720 x 337
Protection class	IP 50
Ambient temperature	5 – 40 °C
Allowed temperature change	≤ 5 °C per hour
Ambient humidity	0 – 95% relative
External pressure	800 – 1100 hPa (0.8 – 1.1 bar)
Supply pressure of gas	20 – 40 mbar
Process gas supply	max. 2
Calibration gas supply	max. 2
Relative gas humidity	≤ 95%, condensate-free
Supply temperature of gas	max. 45 °C
Voltage	240 VAC, 50/60 Hz; 110 VAC, 60 Hz
Max. power consumption	200 VA
Interfaces	3 x relay; RS232; 4 – 20 mA; Fieldbus; Profibus DP; Profinet IO; Modbus RTU/TCP; Industrial Ethernet
T90 display time	15 s
Approval (optional)	NRTL approval by SGS, standards: UL61010-1, CAN/CSA-C22.2 No. 61010-1 (customer reference 710162)

Table 2: Technical data for CWD2005 PLUS



About UNION Instruments

UNION Instruments GmbH, founded in 1919, is a specialized supplier of measuring instruments in the areas of calorimetry and gas composition. Its user and customer base includes biogas producers, the chemical industry, and energy and water suppliers. The company has its headquarters in Karlsruhe and a subsidiary in Lübeck. With 30 international distributors, UNION Instruments operates worldwide. The company's core businesses include development and production as well as maintenance, service, and support.

Our service performance



Support

The **UNION-hotline** helps to solve all inquiries and urgent issues fast and easy. Device specific concerns can be solved worldwide within minutes by direct communication via **TEAMVIEWER**.



Original spare parts

Original spare parts for the majority of UNION's products are on stock directly at site and ready for dispatch within a few hours.



Software

For read-out of measurement and calibration data a device-specific software is available for our clients. In addition to the graphic display of measurement data its export in several database formats is possible.



Training

UNION offers individual in-house training or on-site seminars for installation, use and maintenance of our devices even at the customer's premises. Training is individually adapted to the client's requirements.



Repair service

A global service for inspection, maintenance and repair of our devices and systems is provided directly by UNION and via its distributors.



Certification

Since 20 years we have implemented the ISO9001 system. UNION's products are certified to ATEX and UL/CSA directives accordingly. Industrial safety **"Safety with System"** is part of UNION's company policy.



Engineering

In the last decades UNION compiled a very high level to the state of the art that covers many market segments. So a wide range of possible solution approaches is on hand.



Calibration

As part of maintenance and service UNION provides the validation and re-calibration of measuring devices in conformity with certified custody transfer instruments and / or traceable perpendicular.