Calorimeter

CWD BASIC

Datasheet

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Calorimeter for direct and continuous determination of gas quality

The combustion calorimeters of the CWD (Calorimetry, Wobbe index, Specific Gravity) series are used to determine gas quality and the associated measured variables:

- Calorific value and heating value
- Wobbe index
- Specific density
- CARI, air requirement

The CWD BASIC offers various application and measurement ranges for this purpose. Typical areas of application are the steel industry, natural gas networks and refineries. Of course, there is the option of variable measurement ranges and also of covering several measurement ranges with one device. Furthermore, low-calorific gases can also be measured using an optional carrier gas supply.

Typical measuring ranges CWD BASIC (others on request)

Application	Wobbe measuring range [MJ/m³] start	Wobbe measuring range [MJ/m³] end	Accuracy [%]
Natural gas	30	60	1 FSR
Natural gas-liquid gas-air	30	60	2 FSR
Liquid gas air	30	60	2 FSR
Biogas	14,5	25	2 FSR
Blast furnace gas	2,5 2,5 3	4,7 6 5	2 FSR
Mixed gas	Various mixed gases – details available on request		
Coke oven gas	19	29	2 FSR
Carbide gas	8,3 12,5	12,5 19	2 FSR
LDG	3 5	8 8	2 FSR
Refinery gas	25	70	2 FSR
Syngas	0	10	2 FSR
Combustible gas	0 0	30 30	2 FSR
Corex	4,5	9	2 FSR

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The detection of unexpected or unknown gas components enables the CWD to be used particularly in cases where the gas composition changes rapidly, e.g. residual gases from chemical processes or substitute gases in the steel industry. In addition, the system offers a high level of safety when processes are shut down or the gas supply is interrupted by extinguishing the flame after a maximum of 10 seconds.

The direct and continuous determination of gas quality using combustion calorimeters is a measurement principle that has been proven for more than 60 years and offers a high degree of accuracy. When a defined volume of gas is combusted, all gas components are thermally converted. The energy released in this process is proportional to the Wobbe index. At the same time, the specific density of the gas is measured so that the calorific value can be calculated from these two variables.

The measuring principle is free of cross-sensitivity to individual gas components such as O_2, H_2 or CO.

Technical specifications CWD BASIC

Weight	ca. 54 kg
Dimensions H x W x D (mm)	1020 x 720 x 337
Protection class	IP50
Ambient temperature	5 °C–40 °C
Permitted temperature change	≤ 5 °C per hour
Ambient humidity	0–95 % relative
External pressure	800–1100 hPa (0.8–1.1 bar)
Gas inlet pressure	20–40 mbar
Process gas inlet	1, additional optional
Test gas inlet	1 per measurement range
Relative gas humidity	≤ 95 %, condensate-free
Voltage	240 VAC, 50/60 Hz; 110 VAC, 60 Hz
Max. power consumption	200 VA
Interfaces	8 SPDT relays 3× 4–20 mA, additional optional Buses optional
T90 display time	≤ 20 sec
Licence (optional)	NRTL certification by SGS, according to UL 61010-1 and CAN/CSA-C22.2 No. 61010-1 (customer reference 710162)

UNION Instruments GmbH
Zeppelinstrasse 42, D-76185 Karlsruhe

Tel. +49 721 6803810
Fax +49 721 68038133
info@union-instruments.com

www.union-instruments.com