

Calorimeter

CWD EXP





Datasheet

CWD EXP

Explosion-proof high-performance combustion calorimeter

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 EXP is a variant of the CWD for use in potentially explosive atmospheres.

Typical areas of application include flare gas combustion, gas turbine control, and fuel control in refineries or petrochemical plants.

Typical measuring ranges CWD EXP (others on request)

Application	Wobbe measuring range [MJ/m³] start	Wobbe measuring range [MJ/m³] end	Accuracy [%]
Natural gas	30	60	1 Measured value
Liquid gas air	60 30	85 60	1 FSR
Liquid gas air extended measuring range	30	80	1 FSR
Biogas	14,5	25	1 FSR
Mixed gas	Various mixed gases – details available on request		
Coke oven gas	19	29	1 FSR
Refinery gas	25	70	1 FSR
Combustible gas	0	75	2 FSR
	0	30	1 FSR
	5	60	1 FSR
	20	40	1 FSR
	0	30	1 FSR
Flare gas	10	40	1 FSR
	0	118	2 FSR
	0	90	
7,5	60		

The detection of unexpected or unknown gas components enables the CWD EXP to be used in applications with rapidly changing gas compositions, such as 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 (see Table 1). 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 O₂, H₂ or CO.

Technical specifications CWD EXP

Weight	140 kg
Dimensions H x W x D (mm)	935 x 1240 x 335
Protection class	IP65 in operation
Ex classification	ATEX licence: II 2G Ex pxb IIC T4 Gb IECEX licence: Ex pxb IIC T4 Gb
Ambient temperature	-10 °C–50 °C
Ambient humidity	0–95 ° rel. uncondensed
Gas inlet pressure	20–500 mbar
Process gas inlet	1, additional optional
Test gas inlet	1 per measuring range
Support Gas inlet	max. 1
Relative gas humidity	0–95 %, condensate-free
Instrument air consumption	25–30 m³/h (standard condition)
Instrument air pressure	3,5–10 bar
Voltage	115/230 VAC 50/60 Hz
Interfaces	4x analog (additional as option) 6x SPDT (additional as option), buses optional
T90 display time	< 10 s



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