

CODEL

A Forbes Marshall Company

Product Brochure

VCEM5100 Gas Velocity Monitor

m/s, m³/s



The VCEM 5000/5100 represents the latest generation of CODEL's unique flow monitors.



Monitoring Solutions

ISO 9001:2015

Quality Certification

ISO 14001:2015

Environmental Certification

SmartCem

www.codel.co.uk

The VCEM 5100 represents the latest generation of CODEL's unique flow monitors. These systems measure the velocity of stack gases using a highly accurate time of flight measurement that is derived from a cross-correlation analysis of the infra-red emissions of the turbulent gas.

Two robust infrared detectors are used for the prime sensing, mounted on the stack or duct typically 1m apart in the direction of flow. High efficiency air curtains are fitted to considerably extend the time between maintenance of periods and window cleaning (typically 1 year).

The VCEM 5100 is a standalone unit which can be easily integrated into an existing or proposed CEMS system. It includes a dedicated Data Display Unit for local data interrogation.

Features and Benefits

- ▶ Non-contact infra-red sensing.
- ▶ Continuous measurement.
- ▶ Suitable for hot and dirty gases.
- ▶ No limit on upper gas temperature.
- ▶ No moving components.
- ▶ High availability, low maintenance requirement.

Typical Applications

- ▶ Large Combustion Plants
- ▶ FGD Process
- ▶ Renewable Energy
- ▶ Small Combustion Plants
- ▶ SCR and SNCR Process
- ▶ Power Generation
- ▶ Cement Plants
- ▶ Energy From Waste
- ▶ Pharmaceutical
- ▶ Dust Collectors
- ▶ Incinerators
- ▶ Petrochemical



The VCEM 5100 has both TUV and MCERT certification which signifies the accuracy and reliability of its measuring capabilities.

Technical Specification

Receiver Unit

Operating Principle	Infrared correlation
Measuring units	m/s, m ³ /s
Detectors	Lithium tantalate pyroelectric
Receiver Separation	0.5 to 1m
For Duct Diameters	0.5 to 15m
Accuracy	+/- 2% of measurement Linearity : +/- 1% of measurement Response Time : Minimum 10 seconds
Measuring Range	Fully selectable from 2 - 50 m/s Certified Range: 3 - 50 m/s
Resolution	0.1 m/s Drift: 0.1 m/s per month
Averaging	4 rolling averages selectable from 10 seconds to 30 days
Calibration	Auto low and high span check (US EPA compliant)
Ambient Temperature	-20°C to +50°C (Certified) / -20°C to +60°C (Maximum)
Flue Gas Temperature	70°C minimum, No upper limit
Power Supply	48V DC from Signal Processor Unit (SPU)
Construction	Corrosion resistant epoxy coated aluminium housing sealed to IP66
	-20 to +50°C Certified
	-20 to +55°C On request
	up to 300°C (standard probe)
	up to 400°C (high-temperature probe)
	24V DC @ 15A
	dry & oil free, 20 litre/min @ 4bar for calibration and purging;
	2 litre/min @ 4bar normal operation

Signal Processor Unit (SPU)

Construction	Epoxy-coated aluminium to IP67
Ambient Temperature	-20°C to +50°C (Certified) / -20°C to +60°C (Maximum)
Power Supply	48V DC supplied from Power Supply Unit (PSU)

Data Display Unit (DDU)

Analogue Outputs	2 x 4-20mA current outputs as standard, isolated, 500Ω load max, fully configurable from keypad
Logic Outputs	2 x volt-free SPCO contacts, 50V, 1A max, configurable as alarm contacts 1 x volt-free SPCO contact, 50V, 1A max, for data valid signal
Serial Data	RS232/RS485 MODBUS protocol (Optional)
Display	32 Character alpha-numeric back-lit LCD Keypad: 4-key soft-touch entry
Construction	Epoxy-coated aluminium to IP67
Ambient Temperature	-20°C to +50°C (Certified) / -20°C to +60°C (Maximum)
Power Supply	48V DC supplied from Signal Processor Unit (SPU)

Power Supply Unit (PSU)

Construction	Epoxy-coated aluminium to IP67
Ambient Temperature	-20°C to +50°C (Certified) / -20°C to +60°C (Maximum)
Power Supply	Mains 88 - 264 VAC, single phase, 50/60Hz - 48V DC output to Signal Processor Unit (SPU)

Compliances

EMC	89/336/EEC directive compliant
Low Voltage	73/23/EEC directive compliant
TUV Certified (QAL1)	EN 14181 : 2004 QAL1, EN 15267-3 : 2007

Services

Power	0 - 300°C / 0 - 600°C / 0 - 900°C Options Availbale
Air Requirement	Clean and dry compressed air, 1 litre/sec @ 4bar

Optional Items

Fail-safe Shutter	Automatic shut-off valve in case of compressed air or power failure
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