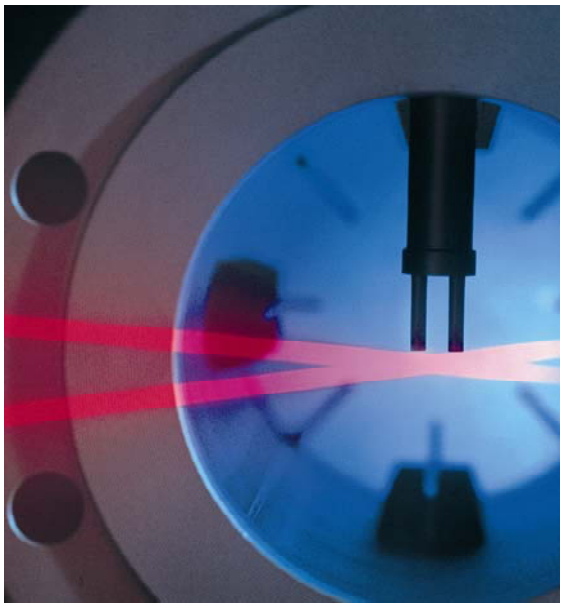
COMBIMASS®

Technical Data

COMBIMASS® eco-bio +

Version 2009-12



BINDER
BINDERGROUP

THE SYSTEM COMBIMASS®

The field transmitters of the COMBIMASS® eco series are suitable for gas flow measurement and cover a wide range of different applications. The instruments can be employed for process temperatures up to 130°C and are available in different explosion proof versions. The flow transmitters apply thermal dispersion technology in order to measure directly the normal volumetric or gas mass flow, regardless of the operating pressure and temperature of the medium.

All units of the COMBIMASS® series are characterized by high-performance digital signal processing. Important features of the transmitter electronics for the purposes of practical operation are the temperature compensation and the opportunity to select different measuring modes (choice between constant current or constant temperature principle). The flow transmitter can be combined with a wide range of different sensors of the COMBIMASS® family and assembled individually according to the specific application.

The COMBIMASS® eco bio+ flowmeter is developed particularly for the fermentation gas market, which is available in two different ex-versions: for the installation in ex-zone 1 with a compact and compression-proof stainless steel housing as well as for zone 2 with a cheaper aluminum housing. The electronics of the COMBIMASS® eco-bio + zone 1 is located in a dual compartment stainless steel enclosure. For transmission of the flow signal there are an isolated 4-20 mA analog output as well as a field selectable pulse output are available. Optionally a 10 digits LED display with control panel is available for both housings for the indication of actual flow rate or totalized flow as well as for field programming of the flow meter.

The COMBIMASS® eco bio+ flowmeter for the installation in biogas uses a 2-Pin-Sensor with 12 mm in diameter, which also supplies in this damp and dirty gas a stable signal. The sensor head is completely in high-grade steel manufactured and thus insensitive from a part to corrosion.

Each flow meter will be tested prior to shipment and calibrated at our CAMASS® calibration centre under actual operating conditions (piping layout, gas composition, pipe diameter, flow direction,...).

SMART FEATURES

- Thermal flow meter for direct measurement of normal volumetric or gas mass flows
- Flow rate measurement unaffected by pressure and temperature fluctuations
- Pressure-proof dual compartment stainless steel enclosure or cheap housing from aluminum
- Compact and rugged design for exceptional reliability
- Easy to install and service
- Unmatched accuracy due to digital signal processing
- Temperature compensated flow rate measurement
- Expandable due to modular design
- Wide range of different sensors for each specific application
- EEx [ed] Zone 1 or Zone 2 optionally available

APPLICATIONS VERSATILITY

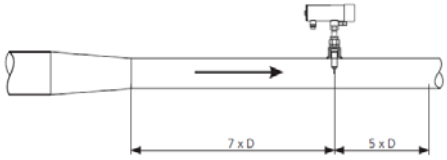
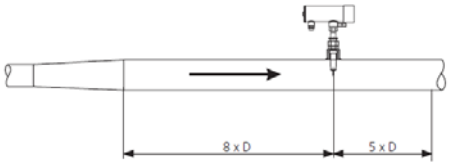
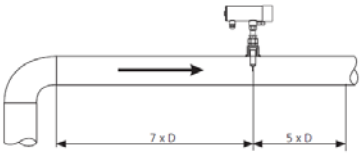
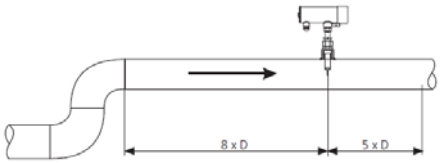
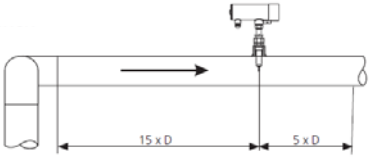
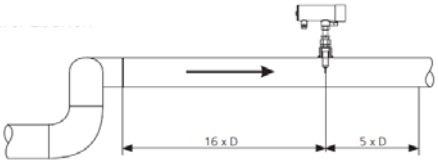
- Gases with methane from fermentation plants using different technologies
- Foulgases from wastewater treatment plants
- Gas and gas mixtures of known composition (f.e. exhaust air, process gas, combustion gases such as methane, propane, natural gas or landfill gas) with other flowmeter from COMBIMASS® family

SPECIFICATIONS

Measuring principle	Gas flow measurement based on thermal dispersion technology
Applications	Biogas with known composition
Measured parameter	• Gas mass flow [kg/h] • Standard volumetric flow [Nm³/h] • Standard flow velocity [Nm/s]
Signal processing	Microprocessor based, fully digital signal processing
Measuring mode	constant-current principle
Calibration	Biogas-calibration (gas composition given by customer) with advanced temperature compensation
Enclosure	Zone 1-flowmeter: pressure-proof dual compartment housing, Ø 50 mm Zone 2-Gerät:housing made from aluminum
Protection class	IP68
Explosion protection	Zone 1: flowmeter with declaration EEX [ed] – approved acc. ATEX Zone 2: flowmeter with Manufacturer´s declaration of incorporation
Ambient conditions	Ambient temperature -40°C to 80°C, 80% Relative humidity
Power supply	18-36 VDC (power supply via standard supply units possible)
Power consumption	max. 1,1 Watt
Reproducibility (electronics)	0,125% of reading
System accuracy (electronics)	0,25% of reading + 0,025% of full scale
Measuring accuracy (depending on application and calibration)	2,5% of reading + 0,2% of full scale (1% of reading + 0,1% of full scale as an option only)

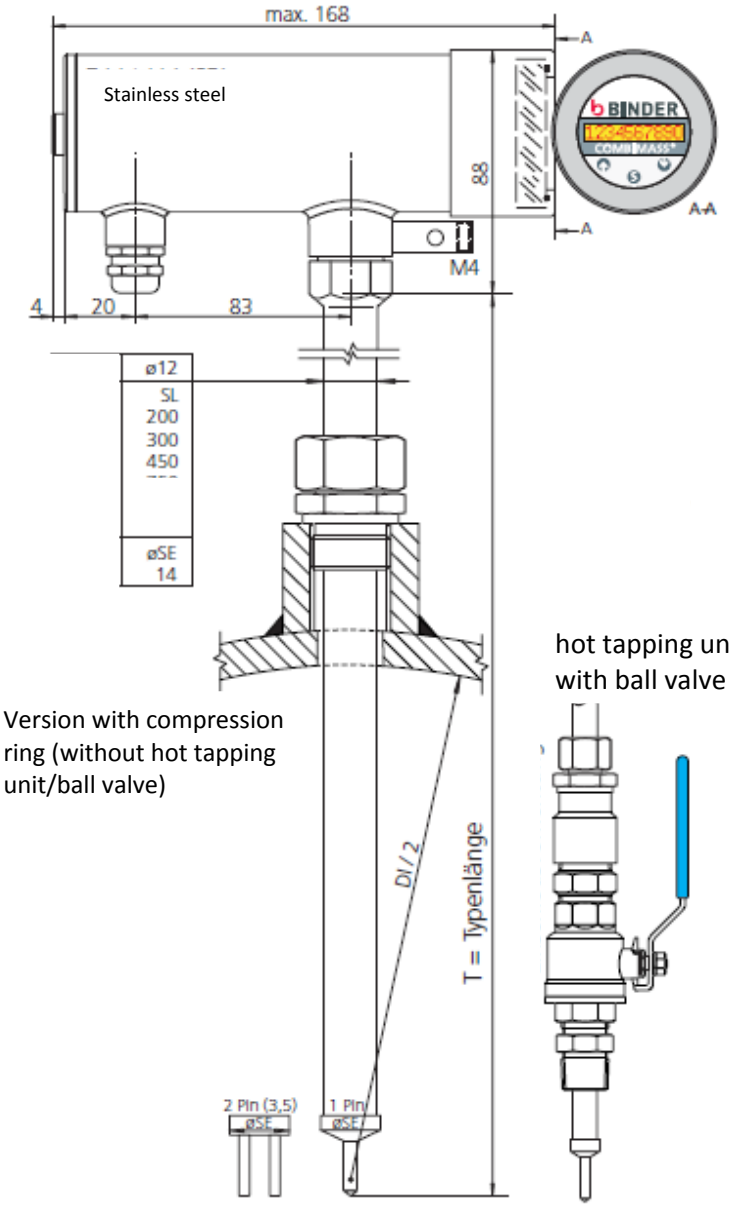
Flow range (1013 mbar, 0°C)	0,25 – 25 Nm/s (0,25 – 240 Nm/s as an option only)
Turndown ratio	Up to 100 : 1
Field display / control (option only)	• 10 digits, alphanumerical LED display for field indication of actual flow rate or totalized flow • Integrated totalizer • Control pad for field programming of the flowmeter using a magnetic pin • easy-to-use menu for transmitter set-up
Graphic display (optional)	• remote graphic display (wall or switch cabinet mounting) • simultaneous indication of flow rate and totalized flow • Integrated totalizer • touch pad for easy programming of the flowmeter • easy-to-use menu for transmitter set-up
Signal output (isolated)	1 x analog output: 4-20 mA, active load < 400 Ohm 10 Bit resolution 1 x impulse output: field selectable Zone 1-flowmeter: max. 2 Impulse/s Zone 2-flowmeter: max. 30 Impulse/s
Choice of sensors (option)	Transmitter can be combined with different sensors of the COMBIMASS® series: Sensor geometry: 2 Pin (Standard for damp gases) Process temperature: max. 130°C Standard (up to 200°C as an option) Operating pressure: 0,9 - 1,1 bara (Standard, up to 4 bara as an option) Diameter of sensor rod: 12 mm standard, 18 mm as an option Materials: 1.4571 (standard), other material available Certificates: 3.1B material certificate (as an option) Process connections: Compression fitting (standard), butt weld, screw, flange (DIN, ANSI) as an option Hot tapping: manually operated with ball valve

INLET AND OUTLET STRAIGHT PIPE RUNS

General information	To achieve high accuracy in flow rate measurement as specified, consideration of sufficient inlet and outlet straight pipe runs according to DIN ISO 5167-1 is crucial during installation of the flow transmitter. Reasonable measuring results can also be achieved with shortened inlet and outlet straight pipe runs according to the below specifications. If sufficient inlet and outlet straight pipe runs are not available, please call factory. It might be possible to achieve the required measurement accuracy, if a special calibration can be carried out at our CAMASS® calibration centre by simulating the actual operating conditions, the range of flow rates and the piping. Alternatively, the installation of a COMBIMASS® flow conditioner may allow, to achieve accurate measuring results when space is restricted.
Reduction pieces	
Extension pieces	
One 90° elbow	
Two 90° elbows in one plane	
Two 90° elbows in two planes	
Three 90° elbows in three planes	

DIMENSIONS

Eco-bio+ with stainless steel housing for the installation in ex-zone 1

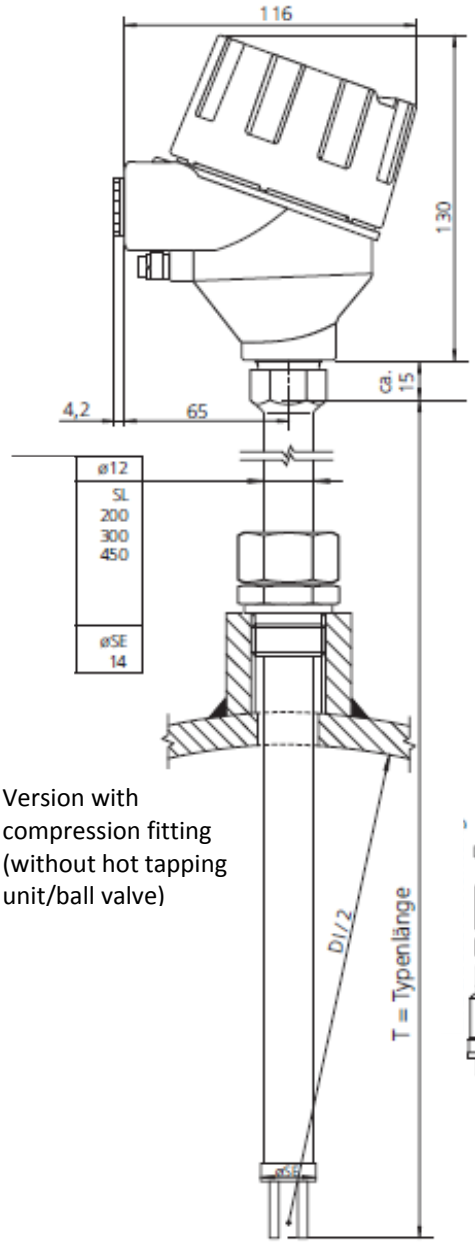


Version with compression ring (without hot tapping unit/ball valve)

hot tapping unit with ball valve

DIMENSIONS

Eco-bio+ with aluminum housing for the installation in ex-zone 2



Version with compression fitting (without hot tapping unit/ball valve)

IMPRESSUM

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Technical Data
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