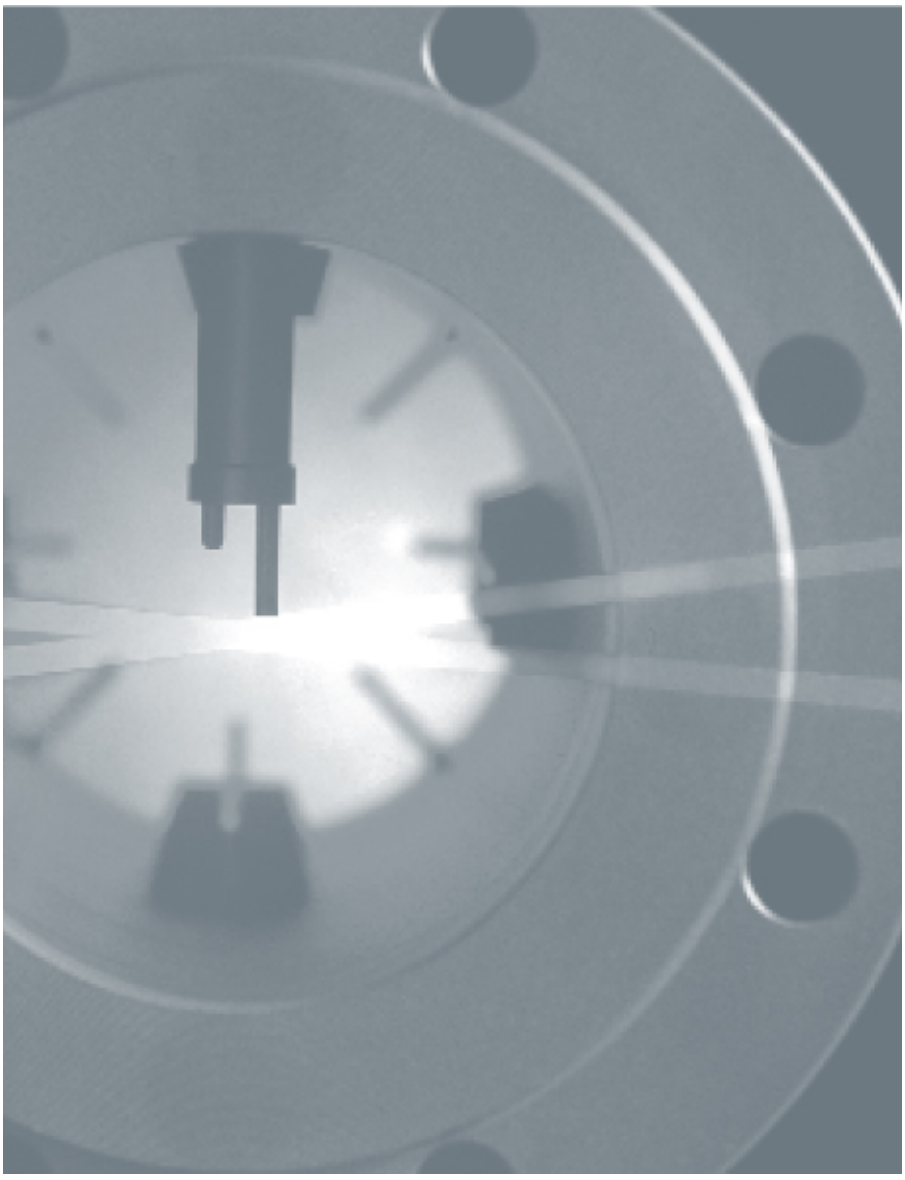
COMBIMASS®

Technical data
COMBIMASS®master



BINDER
BINDERGROUP

THE SYSTEM

The COMBIMASS®master electronic module can be combined with each field transmitter of the COMBIMASS® series for thermal gas flow measurement. This allows to upgrade any basic COMBIMASS® flow meter to a high performance measuring system for demanding and sophisticated applications.

The COMBIMASS®master electronic module features two analog outputs, which can be assigned individually. This allows to provide signals indicating the flow rate and the operating temperature of the gas at the same time.
Additionally COMBIMASS®master allows to monitor flow rate or temperature limits via three programable relay outputs. The switch points can be set individually in the field to alarm at high, low or windowed flow rates or process temperatures or to control external components, such as shut-off devices, valves, pumps, etc..

One relay input and one analog input for processing of external control signals are available on the COMBIMASS®master module in order to run sophisticated applications.
The relay input can be used for remote selection of up to three independent calibration groups. This enables flow rate measurement of different gases or gas mixtures with one flow sensor installed only.
The analog input of the COMBIMASS®master allows external signals to be monitored in order to use this information for processing and correction of the flow signal. This functionality may be applied for flow rate measurement of gas mixtures with varying composition. In such case information on the gas composition will be provided by a gas analyzer in order to compensate deviations of the flow signal and thus allows for accurate flow rate measurement even in such demanding applications.

As an option each COMBIMASS®master module can be upgraded with two independent data loggers to a high performance flow analysis computer. This allows non-volatile recording of measured flow rates over free selectable time periods (eg. data logger 1 for a period of 4 years, data logger 2 for a period of 6 weeks).
Stored data can be analysed over certain time windows, which may be choosen individually. In this way totalized flow or maximum, minimum and average flow rate for each individual day, week, month or any other time period may be easily determined and indicated on the display. For further data archiving and evaluation all stored data may be transferred to any other computer via an integrated digital port.

SMART FEATURES

- Easy upgrade of any basic COMBIMASS® flow meter to a high performance measuring system
- May be combined with any field transmitter of the COMBIMASS® series
- Allows for simultaneous measurement of flow rate and process temperature of gases
- Free selectable switch points for easy monitoring of flow rate or temperature limits
- Flow rate measurement of different gases or gas mixtures with one transmitter only
- Up to three independant calibration groups to be remotely or operator selected
- Advanced signal processing capabilities, which allows eg. for accurate flow rate measurement even at changing gas compositions
- Easy upgrade with two independant, non-volatile data loggers to an advanced flow analysis computer
- Comfortable evaluation functionality for easy analysis of stored data at any time

APPLICATIONS VERSATILITY

- Flow rate measurement and balancing of gases for cost allocation
- Control of external components such as shut-off devices, valves and pumps depending on user selected flow rate or temperature limits
- Flow rate measurement of different gases or gas mixtures with one flow transmitter only (eg. alternative measurement of biogas and natural gas consumption upstream of a gas engine)
- Highly sophisticated applications, such as flow rate measurement of mixed gases with varying composition (combustion gases, flare gases, synthesis gases, ...)

SPECIFICATIONS

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Measuring principle	Gas flow measurement based on thermal dispersion technology
Applications	Flow rate measurement of air, compressed air, technical gases, inert gases, supply gases, combustion gases, waste gases, process gases, explosive and flammable gases, dirty and moist gases, gases at extreme process temperatures and pressures, gases and gas mixtures of known and changing composition, depending on configuration of connected flow sensor / transmitter. ▪ Flow rate measurement and balancing of gases, determination of totalized flow as well as maximum, minimum and average flow rates (depending on configuration) ▪ Control of plants and processes ▪ Flow rate measurement of different gases and gas mixtures with one flow transmitter only (eg. process gas and purge gas, ...) ▪ Demanding and sophisticated applications, such as flow rate measurement of mixed gases with changing composition
Measured parameter	▪ Gas mass flow [kg/h] ▪ Normal volumetric flow [Nm^3/h] ▪ Normal flow velocity [Nm/s] ▪ Totalized flow [kg] / [Nm^3] ▪ Temperature [°C]
Signal processing	Microprocessor based, fully digital signal processing
Calibration	Up to three different calibration groups with advanced temperature compensation for different gases, gas mixtures or process conditions

SPECIFICATIONS

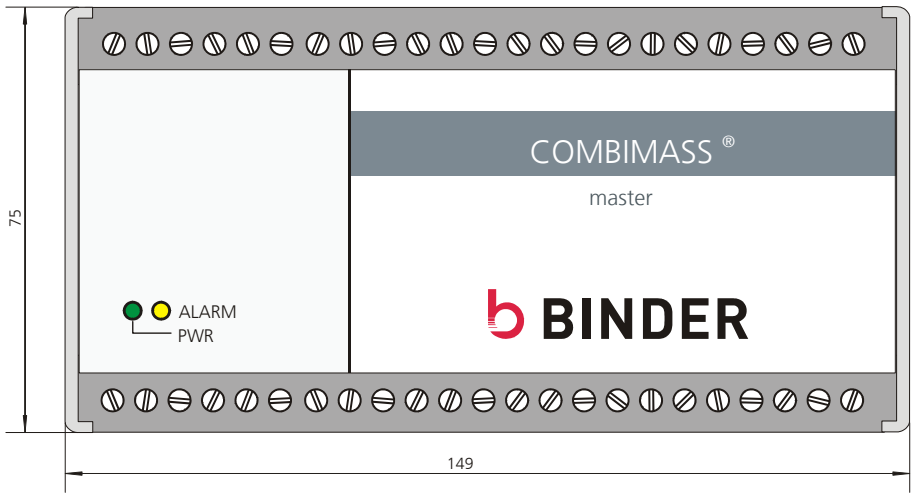
Housing	▪ DIN rail housing for switch cabinet installation ▪ Field housing (optional)
Protection class	IP 22 (DIN rail housing) IP 54 (field housing)
Ambient conditions	Ambient temperature –40° C to 70° C, Relative humidity 80%
Power supply	18 – 36 VDC Power supply via standard supply units possible
Power consumption	Max. 7 Watt for standard configurations Max. 9 Watt with process interface module for intrinsically safe operation
Turndown ratio	10 : 1 to 1000 : 1
Graphic display with control pad (optional)	▪ Large surface graphic display (wall or switch cabinet mounting) ▪ Indication of flow rate, totalized flow and medium temperature ▪ Integrated totalizer ▪ Touch pad for easy programming of the flow metering system ▪ Easy-to-use menu for system set-up Additional functions, if upgraded to a flow analysis computer (data loggers): ▪ Operation and programming of integrated flow computing analyzer via touch pad ▪ Easy calculation and indication of totalized flow, maximum, minimum or average flow rate for any selectable time period ▪ Recall and display of stored data
Data logger (optional)	▪ Upgrade to a high-performance flow analysis computer ▪ Two independant, integrated data loggers ▪ Non-volatile storage of up to 400.000 measured flow rates on each data logger ▪ Selectable storage intervals and periods ▪ Extensive data evaluation and analysis functionality ▪ Transfer of stored data via integrated RS 232 port for further archiving and evalutation Preselected storage intervals: Data logger 1: 1 measured value / 5 min Data storage over a period of appr. 4 years Data logger 2: 1 measured value / 10 sec Data storage over a period of appr. 6 weeks

SPECIFICATIONS

Signal output (isolated)	2 x analog output:	4-20 mA, active load < 400 Ohm 10 bit resolution
	1 x impulse output:	field selectable max. 30 impulse/s
	3 x relay output:	field selectable, for monitoring of high, low or windowed flow rates or temperatures and providing alarm and/or control signals
Signal input (isolated)	1 x analog input:	4-20 mA, passive 10 bit resolution
	1 x relay input:	for remote selection of different calibration groups
Digital port	RS 232C serial port	
Possible combinations	The COMBIMASS®master module may be combined with following flow transmitters of the COMBIMASS® series: ▪ COMBIMASS®basic (combination not possible with low-cost version) ▪ COMBIMASS®eco ▪ COMBIMASS®compact	

MASSANGABEN

Scale 1:1



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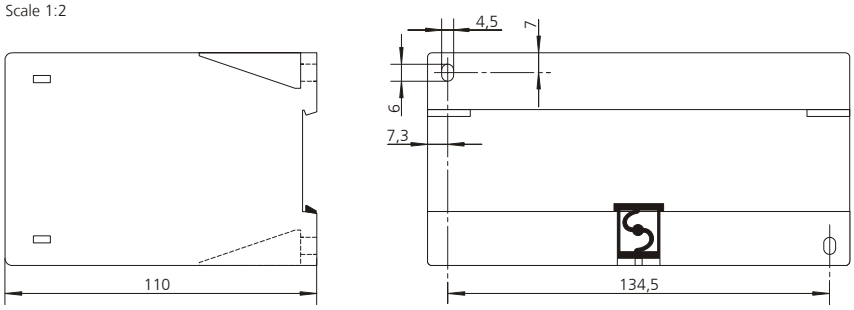

IMPRESSUM

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