IPETRONIK

M-FLOW

Complete System for Highly Precise Flow Measurement

M-FLOW

→ High-precision flowmeter to optimise circuits throughout the vehicle and perform quality checks

With the newly developed M-FLOW measuring module and the highly precise flow meter turbine, IPETRONIK is presenting a complete system that provides valid data for flow rates in the entire vehicle. The system calculates the flow rate of water, oil, fuel, AdBlue and many other liquid media and provides accurate results at any temperature. It enables production-quality measurements with virtually no pressure loss and is used for the optimisation and quality assurance of vehicles in the development phase. The system is designed for test bench, road test, laboratory and production applications and meets the growing requirements of electromobility.

- Extremely compact and robust
- 360° rotating pick-off
- Wide spectrum of applications: Water, oils, fuels, AdBlue and many other liquid media
- Accurate results at any temperature
- Flow measurement in unit of choice, e.g. m3/hour, litre/minute, ml/minute
- Plug & Play in connection with IPEmotion DAQ software
- Direct digitalisation of values and reduced number of components for process reliability
- Direct integration in standardised CAN bus
- Data transmission and sensor power supply in one cable
- Less pressure loss thanks to innovative turbine design

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Do you have any questions about the M-FLOW or a specific application?
Our experts will be pleased to provide you with personal and non-binding advice.
Simply e-mail **sales@ipetronik.com** or call **+49 (0) 7221 9922 222.**

General properties of measurement input	
Channel sampling rates	Flow rate 1000 Hz; temperature 1000 Hz
Galvanic isolation	
Measuring input (module supply)	±100 V (continuous), ±500 V (surge voltage)
Measuring input (CAN)	±100 V (continuous), ±500 V (surge voltage)
Measuring input (housing)	±100 V (continuous), ±500 V (surge voltage)
Measuring input (measuring input)	±100 V (continuous), ±500 V (surge voltage)
Device	
Inputs	1
Power supply	6 ... 36 VDC
Power consumption, typical	< 0.5 W
Working temperature range	-40 ... 125 °C (-40 ... 257 °F)
Storage temperature range	-55 ... 150 °C (-67 ... 302 °F)
IP rating	IP 68
Relative humidity	0 ... 85 %
Dimensions	L 122 mm x W 55 mm x H 34 mm (4.8 in x 2.17 in x 1.34 in)
Weight	145 g (0.32 lb)
Configuration interface	High-speed CAN
Data transfer rate	Software adjustable up to 1 Mbit/s (ISO 11898-2)
Testing standards	IEC 61010-2-201
Casing material	Aluminium, black, powder-coated
Input sockets	ODU G81B0C-P05QJ00
	ODU G81F1C-P05QJ00
Output sockets	LEMO 0B.9-pol./P.30°
System cable	620-502 M-CAN cable SUBD/S term.
	620-561 M-PWR term. Cable bundle
	620-567 M-CAN/PWR term: Cable SubD/S, bundle

The image may differ from the original product.

M-FLOW and DAQ software IPEmotion

With the DAQ software IPEmotion, you will have a holistic solution for your flow measurement.

- Complete process integration between M-FLOW and IPEmotion for an all-in-one system
- Simple, intuitive configuration in one software
- Digitalised measurements for process reliability
- Less conversion loss
- No need for converter box (A/D converter)

Your booster for efficiency and quality – valid results in your choice of unit

Which unit will it be? m3/hour, litre/minute, ml/minute? The M-FLOW calculates the flow rate in your preferred unit of measure. Linearisation ensures results are valid and ultra-precise at any temperature.

- Production-quality measurements with virtually no pressure loss
- Variety of mechanical connections, e.g. hose, clamp and threaded connections
- Automatic temperature/viscosity compensation in real time
- Integrated media temperature reading from pick-off
- Individual external temperature measurement available upon customer request
- Up to 20 calibration points per viscosity

The turbine: Maximum linearity thanks to the new-generation rotor blade design

The turbine is the heart of the M-FLOW. Developed by our partner TrigasDM, the turbines with innovative impeller design and a turndown ratio of 100:1 offer significantly better linearity and up to 15% less pressure loss than a conventional rotor blade design.

Even suitable for corrosive media

There is a choice of specially corrosion-resistant casings, e.g. high-strength stainless steel 1.4460/ SS329, that are suitable for measuring corrosive media. **Get in touch!**

M-FLOW ENABLES INDIVIDUAL FLOW MEASUREMENTS

Maximum accuracy and valid results at any temperature

The M-FLOW **flowmeter** connected with the turbine facilitates full process integration in the measuring chain and delivers high precision and dynamism, both in terms of flow rate and temperature range, by means of freely adjustable sampling rates of up to 1000 Hz per channel. The compact and robust module presents a variety of adjustment options and thereby increases flexibility for measuring applications. The viscosities of a wide range of different media can be configured, the unit of measure of the flow rate calculation can be changed as required (e.g. m3/hour, litre/minute or ml/minute) and there is also the option of external temperature measurement.

The **flow meter turbine** developed by TrigasDM has a freely rotating 360° pick-off for highly precise measurements, even with changing flow rates or fluctuating operating temperatures. The robust flow rate system comprising turbine and M-FLOW can be used to perform an automatic temperature and viscosity compensation in real time. The media temperature is measured in a highly dynamic manner by the temperature sensor integrated in the pick-off. Up to 20 supporting points facilitate the best possible characteristic curve linearisation for the viscosity of the selected medium. The innovative rotor blade design reduces the pressure loss by 15% in comparison with a conventional rotor blade.

AREAS OF APPLICATION FOR THE M-FLOW

→ COOLING CIRCUITS

On all cooling circuit components (water, glycol): Engine cooling, HV storage cooling, HV performance electronics, HV three-phase drive, HV OnBoardCharger, HV ECU/control unit, HV PTC/heat exchanger, heat pump

→ HYDRAULIC CIRCUIT

Steering systems (power steering), braking systems, hydraulic control of units

→ ENGINE OIL CIRCUITS

Suction pump, pressure line

→ REFRIGERANT CIRCUIT

For air conditioning with wide ranging refrigerants, e.g. R1234yf, R134a

→ FUEL SYSTEMS

Diesel, petrol, LPG, kerosene

→ INJECTOR SYSTEMS

H2O, AdBlue