

# FAS CHIPREG

## Mass Flow Controller

- > Ultra compact size <22mm
- > High turndown ratio
- > Best performance-to-cost ratio
- > Fast time-to-market through complete sub-assemblies
- > Analytical clean version available
- > For bioreactors, analytical, medical devices and process control applications



### Technical features

#### Sensor:

Thermal MFC sensor

#### Flow ranges:

0-0,2 l<sub>s</sub>/min

0-0,5 l<sub>s</sub>/min

0-1 l<sub>s</sub>/min

0-2 l<sub>s</sub>/min

0-5 l<sub>s</sub>/min

0-10 l<sub>s</sub>/min

0-20 l<sub>s</sub>/min

On request:

Lower flows (down to 0-1 ml/min)

Higher flows (up to 0-150 l/min)

#### Standard conditions:

P=1013 mbar (1 atm), T=20°C

#### Operating gas:

Air, N<sub>2</sub>, O<sub>2</sub>, CO<sub>2</sub>, Ar, neutral gas (\*1)

Multigas, He/H<sub>2</sub> on request

#### Accuracy (\*1)

± 0,2% of full scale (0-10% of max flow)

± 2,0% of reading (10%-100% of max flow)

#### Repeatability:

&lt;1% of reading

#### Operating voltage:

24 VDC ±10%

#### Current supply:

&lt; 100 mA

#### Electrical connection:

JST Connector BM06B-GHS-TBT

#### Analog input/output control:

0 ... 5 VDC

#### Pneumatic connections:

In line version (G1/8")

In line version (M5)

Manifold mount

#### Weight:

125g

#### Digital communication interfaces:

RS232

RS485

Modbus RTU, other interfaces on request

#### Digital communication protocol:

Proprietary protocol

#### Seal material:

FPM

USP class VI seals on request

#### Gas temperature:

+10 ... +50°C (°50 ... +122°F)

#### Ambient temperature:

+10 ... +50°C (°50 ... +122°F)

#### Dynamic range:

Standard: 500:1

Premium: 1000:1

#### Setting time:

&lt;500 ms

#### Response time:

100-500 ms, depending on conditions (\*2)

#### Thermal drift:

±0,004% of full scale per °C (0-10% of max flow)

±0,04% of reading per °C (10-100% of max flow)

#### Additional options:

USP class VI seals, stainless steel manifold for bioreactors

(\*1) MFC are calibrated with Air at 5 barg inlet, 0 barg outlet, 20°C. Conversion factors (K-factors) are applied for other gases:

For N<sub>2</sub> and O<sub>2</sub>, accuracy and repeatability unchanged.

For Ar and CO<sub>2</sub>, repeatability <1%, accuracy +/-10%. For better accuracy, needs to be calibrated with specific gas on request. When switching from one gas to another, it is common practice to flush before use with new gas.

(\*2) From 0 to 90% of flow, at calibration pressure

### Technical data - standard models

Flow range (l <sub>s</sub> /min)	Max. operating pressure (bar)	Port type	Digital Communication Interface	kv *3)	Model
0 ... 0,2	8	G 1/8	RS232	0,02	40M2002CG2811 1110000
0 ... 0,5	8	G 1/8	RS232	0,02	40M5002CG2811 1110000
0 ... 1	8	G 1/8	RS232	0,02	40M0011CG2811 1110000
0 ... 2	5	G 1/8	RS232	0,12	40M0021CG2811 1110000
0 ... 5	5	G 1/8	RS232	0,12	40M0051CG2811 1110000
0 ... 10	5	G 1/8	RS232	0,12	40M0101CG2811 1110000
0 ... 20	4	G 1/8	RS232	0,55	40M0201CG2811 1110000

\*2)Cv = 0.07 kv

### Electrical connection (optional)

Electrical connector  
JST GHR-06V-S with 300mm  
flying leads



S401.0024

## Codification and option selector

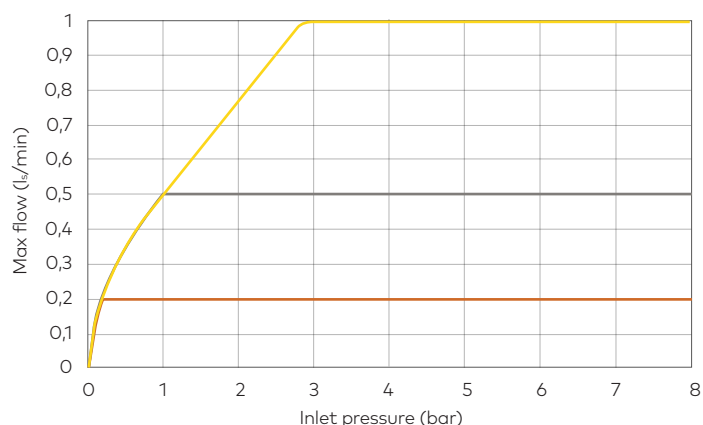
<b>Flow range:</b> 200 = 0 ... 200 500 = 0 ... 500 001 = 0 ... 1 002 = 0 ... 2 005 = 0 ... 5 010 = 0 ... 10 020 = 0 ... 20 Higher flows on request	40 M ★ ★ ★ ★ C ★ ★ ★ 1 1	★ ★ ★ 0 0 0
<b>Units:</b> 1 = l <sub>s</sub> / min 2 = ml <sub>s</sub> / min		Dynamic Range: 1 = Standard, 500:1 2 = Premium, 1000:1
<b>Electric interface:</b> G = RS232 + IN 0 ... 5V + OUT 0 ... 5V J = RS485 + IN 0 ... 5V + OUT 0 ... 5V		Cleanliness: 1 = Standard 2 = Analytical clean
<b>Mounting:</b> 1 = Manifold mount 2 = Inline G1/8" 3 = Inline M5		Valve: 1 = Standard 2 = High flow (only for 20 l <sub>s</sub> /min option)
<b>Media*:</b> 1 = Nitrogen (N <sub>2</sub> ) 2 = Oxygen (O <sub>2</sub> ) 3 = Carbon Dioxide (CO <sub>2</sub> ) 4 = Helium** 5 = Argon (Ar) 8 = Air		

\* Flow range will differ from air (standard), flow media correspondance available on request

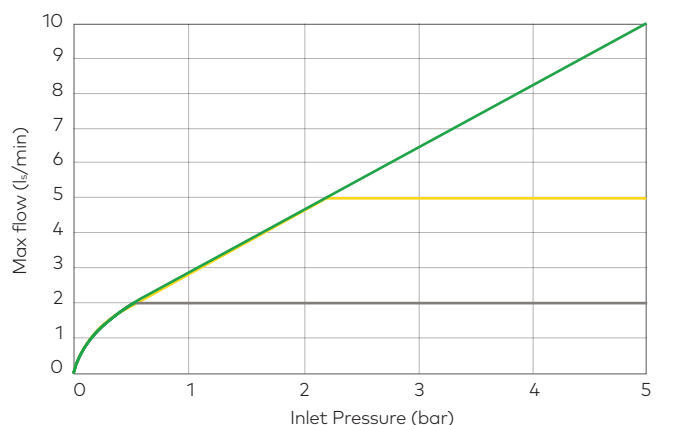
\*\* On demand

## Maximum Flow Rate

Flow rate may be limited by inlet pressure. Please ensure your inlet pressure is high enough to achieve your desired maximum flow rate as per below curves

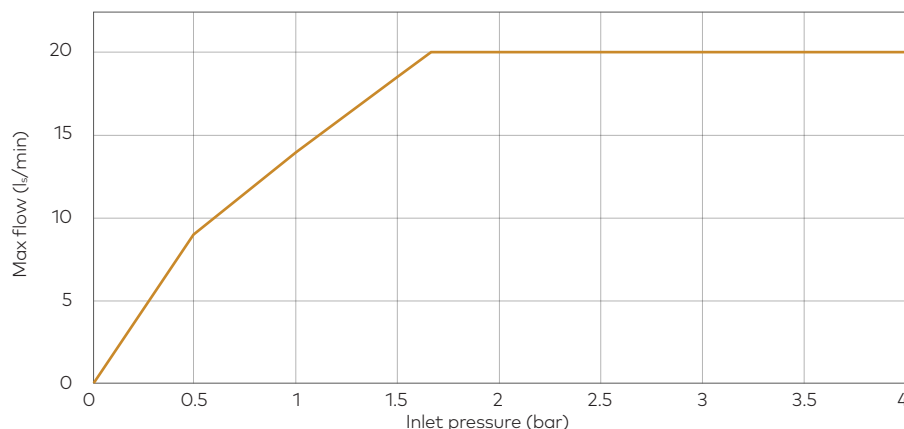


— CHIPREG 200ml/min — CHIPREG 500ml/min — CHIPREG 1l/min



— CHIPREG 2l/min — CHIPREG 5l/min — CHIPREG 10l/min

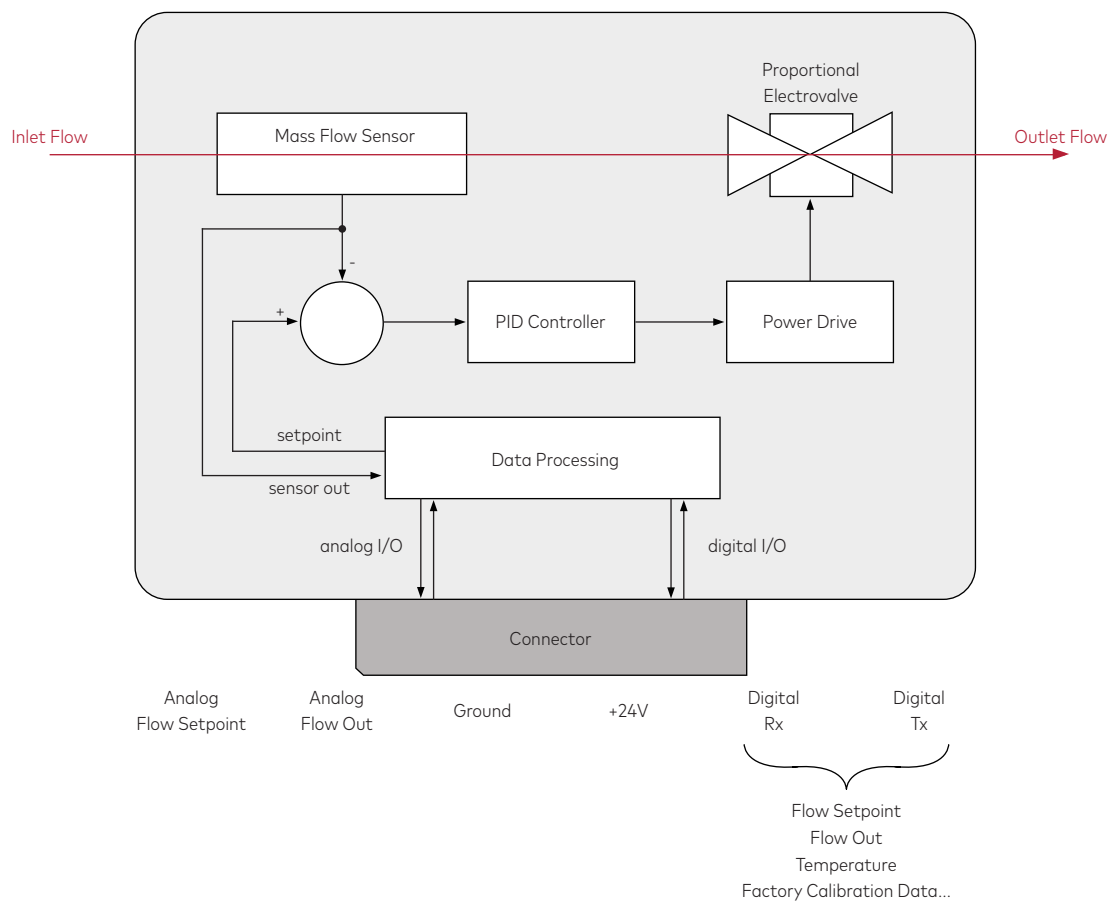
Typical data for air at 20°C



— CHIPREG 20l/min

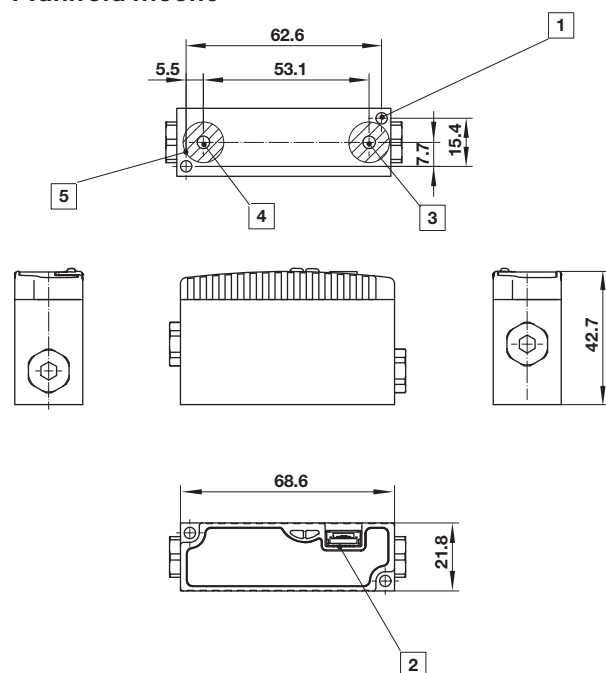
Typical data for air at 20°C

## Block diagram



## Dimensions Manifold mount

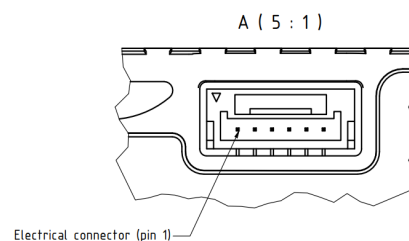
Dimensions shown in mm  
Projection/First angle



- 1  $\varnothing$  3,6mm through hole (2x)
- 2 Connector JST BM06B-GHS-TBT (First pin on the left)
- 3 INLET  $\varnothing$  4 mm
- 4 OUTLET  $\varnothing$  4 mm
- 5  $\varnothing$  13 (2x) sealing area /Ra 0,8

## Electrical connection

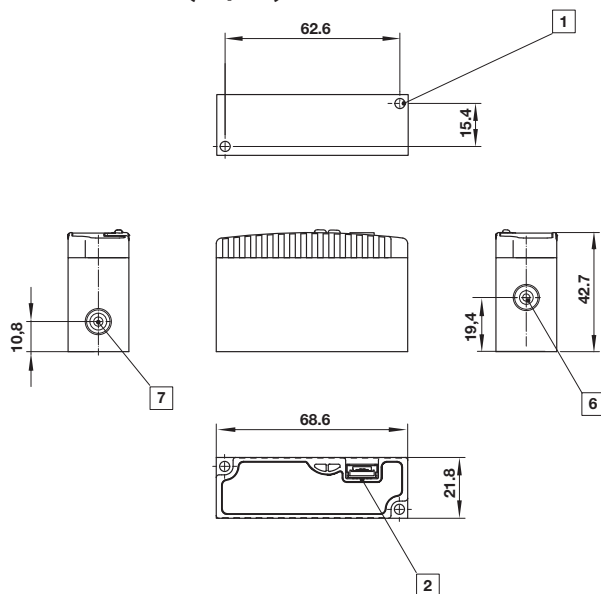
Pin#	Description - RS232	Description - RS485
1	+24V	+24V
2	Ground	Ground
3	Rx	A
4	Tx	B
5	Analog flow out	Analog flow out
6	Analog flow setpoint	Analog flow setpoint



Electrical connector (pin 1)

## Dimensions In line version (G1/8")

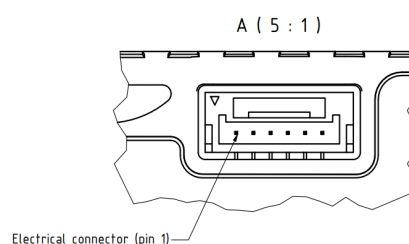
Dimensions shown in mm  
Projection/First angle



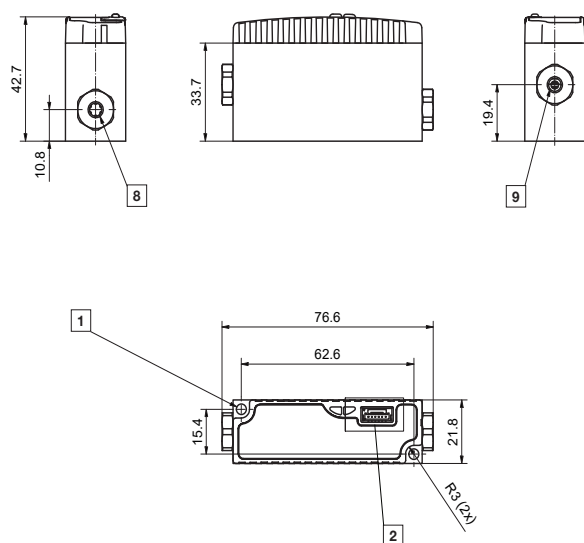
- 1  $\varnothing$  3,6mm through hole (2x)
- 2 Connector JST BMO6B-GHS-TBT (First pin on the left)
- 6 OUTLET G1/8" Thread depth 9mm
- 7 INLET G1/8" Thread depth 9mm

## Electrical connection

Pin#	Description - RS232	Description - RS485
1	+24V	+24V
2	Ground	Ground
3	Rx	A
4	Tx	B
5	Analog flow out	Analog flow out
6	Analog flow setpoint	Analog flow setpoint



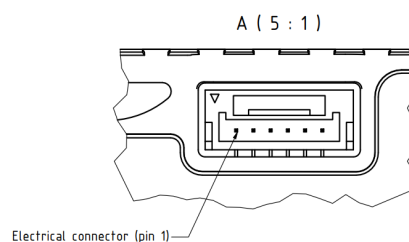
## Dimensions In line version (M5)



- 1  $\varnothing$  3,6mm through hole (2x)
- 2 Connector JST BMO6B-GHS-TBT (First pin on the left)
- 8 INLET M5 Thread depth 8mm
- 9 OUTLET M5 Thread depth 8mm

## Electrical connection

Pin#	Description - RS232	Description - RS485
1	+24V	+24V
2	Ground	Ground
3	Rx	A
4	Tx	B
5	Analog flow out	Analog flow out
6	Analog flow setpoint	Analog flow setpoint



## Warning

These products are intended for use with aggressive sensitive media, Please contact FAS Medic SA for more compatibility requests. Do not use these products where pressures and temperatures can exceed those listed under „Technical features/data“. Before using these products with fluids other than those specified, for non-industrial applications, life-support systems or other applications not within published specifications, consult FAS MEDIC SA. Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes.

The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure. System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided. System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.