CHIPREG MFC
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
- No drift, no recalibration required
- For bioreactors, analytical, medical devices and process control applications

CE

Technical features

Sensor:
Thermal MFC sensor

Flow ranges:
0-0,2 l_s/min
0-0,5 l_s/min
0-1 l_s/min
0-2 l_s/min
0-5 l_s/min
0-10 l_s/min
0-20 l_s/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_2, O_2, CO_2, Ar, neutral gas*
Multigas, He/H_2 on request

Accuracy*:
± 0,2% of full scale (0-10% of max flow)
± 2,0% of reading (10%-100% of max flow)

Repeatability:
< 1% of reading

Operating voltage:
24 V d.c. ± 10%

Current supply:
< 100 mA

Electrical connection:
JST Connector BM06B-GHS-TBT

Analog input/output control:
0 ... 5 V d.c.

Pneumatic connections:
In line version (G1/8")
Manifold mount

Weight:
125g

Digital communication interfaces:
RS232
RS485
Other interfaces on request

Digital communication protocol:
IMI FAS proprietary protocol &
Modbus RTU

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

Response time:**
As fast as 100 ms
No warm-up time

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

* MFC are calibrated with air at 5 barg inlet, 0 barg outlet, 20 °C. Accuracy does not include reference error.
Conversion factors (k-factors) are applied for other gas.
See gas flow equivalency table for more information.

** From 0 to 90% of flow, at calibration condition.
Up to 500 ms depending on conditions.

File code: LS_DS_CHIPREG-MFC_en/07/24

Technical data – standard models

Flow range	Max. operating pressure	Port type	Digital Communication Interface	kv *1)	Model
(l_s/min)	(bar)				
0 ... 0,2	8	G 1/8	RS485	0,02	40M2002CJ2811 1110000
0 ... 0,5	8	G 1/8	RS485	0,02	40M5002CJ2811 1110000
0 ... 1	8	G 1/8	RS485	0,02	40M0011CJ2811 1110000
0 ... 2	5	G 1/8	RS485	0,12	40M0021CJ2811 1110000
0 ... 5	5	G 1/8	RS485	0,12	40M0051CJ2811 1110000
0 ... 10	5	G 1/8	RS485	0,12	40M0101CJ2811 1110000
0 ... 20	4	G 1/8	RS485	0,55	40M0201CJ2811 2110000

*1) Cv = 0,07 kv

Starter kit (optional)

– USB hub connector, with possibility to plug up to 3 devices in RS485
– 3x electrical cables with JST connections
– Power supply, universal input voltage range and interchangeable AC blades for global use

S401.0312A

Electrical connection (optional)

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

S401.0024

Codification and option selector

40M★★★★C★★★11 ★★★★000

Flow range	Substitute
0 ... 200 ml_s/min	2002
0 ... 500 ml_s/min	5002
0 ... 1 l_s/min	0011
0 ... 2 l_s/min	0021
0 ... 5 l_s/min	0051
0 ... 10 l_s/min	0101
0 ... 20 l_s/min	0201
Higher or lower flows on request	

Electric interface	Substitute
RS232 + IN 0 ... 5V + OUT 0 ... 5V	G
RS485 + IN 0 ... 5V + OUT 0 ... 5V	J

Mounting	Substitute
Manifold mount	1
Inline G1/8"	2

Media*	Substitute
Nitrogen (N_2)	1
Oxygen (O_2)	2
Carbon Dioxide (CO_2)	3
Helium**	4
Argon (Ar)	5
Air	8

Calibration gas	Substitute
Calibrated with air, k-factor for other gas	0
Calibrated with specific gas	1

Dynamic range	Substitute
Standard, 500:1	1
Premium, 1000:1	2

Cleanliness	Substitute
Standard	1
Analytical clean	2

Valve	Substitute
Standard	1
High flow (only for 20 l_s/min option)	2

* See gas flow equivalency table below
** On demand

Gas flow equivalency table – flow range

Units	Air flow range	N_2 flow range	O_2 flow range	CO_2 flow range	Ar flow range
(ml_s/min)	200	200	200	100,00	187
(ml_s/min)	500	500	500	236,00	446
(l_s/min)	1	1	1	0,532	0,892
(l_s/min)	2	2	2	0,97	1,784
(l_s/min)	5	5	5	2,43	4,46
(l_s/min)	10	10	10	4,93	8,064
(l_s/min)	20	20	20	9,72	15,9
Additional accuracy error when calibrated with air		0	0	± 8% of reading	± 8% of reading

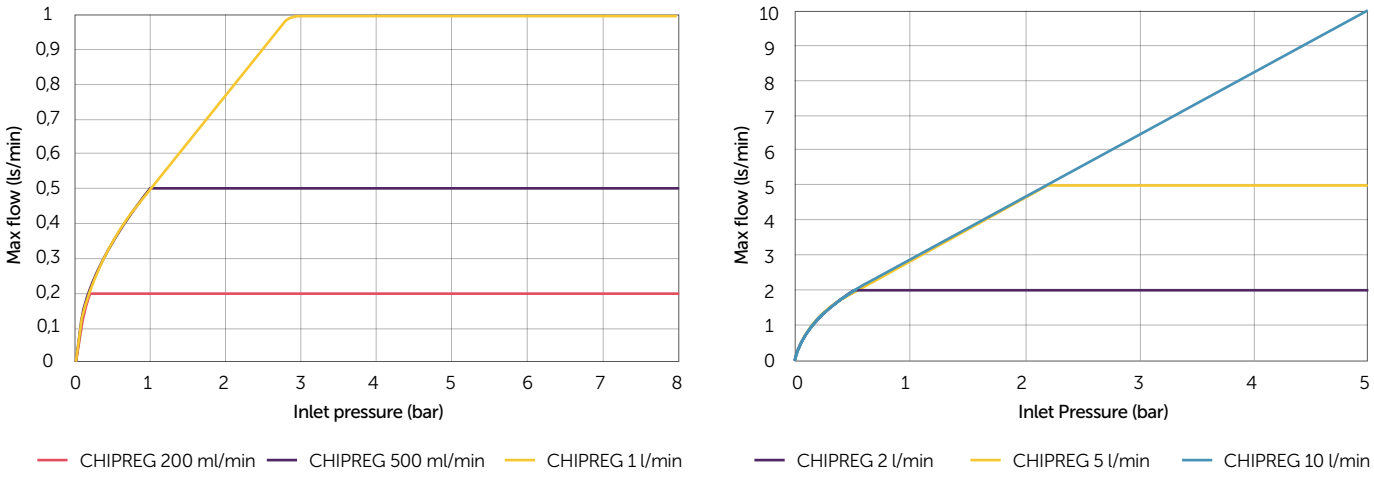
This table shows the flow range and accuracy of multiple gas when using a MFC calibrated with air. For more specific flow ranges, or for better accuracy, calibration with process gas can be performed, see product codification and option selector.

When switching from one gas to another in a single MFC, it is common practice to ensure the system is fully flushed with new gas before starting precise control.

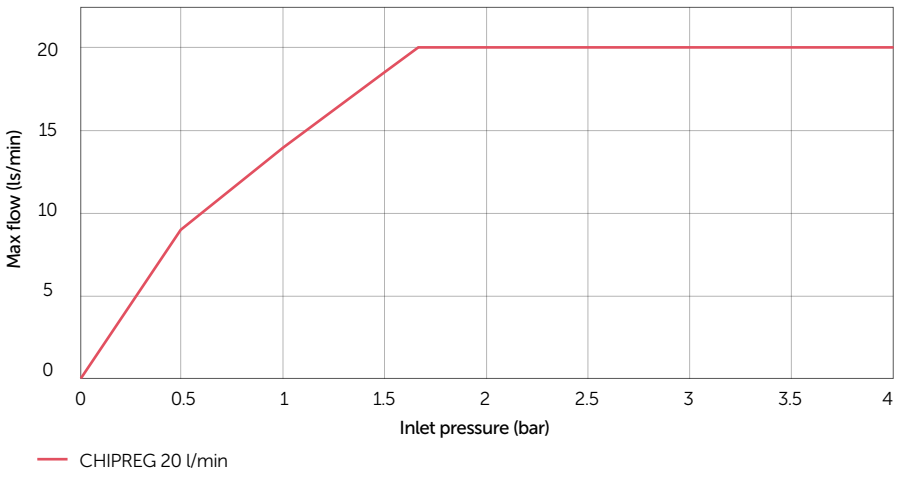
Maximum Flow Rate

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.

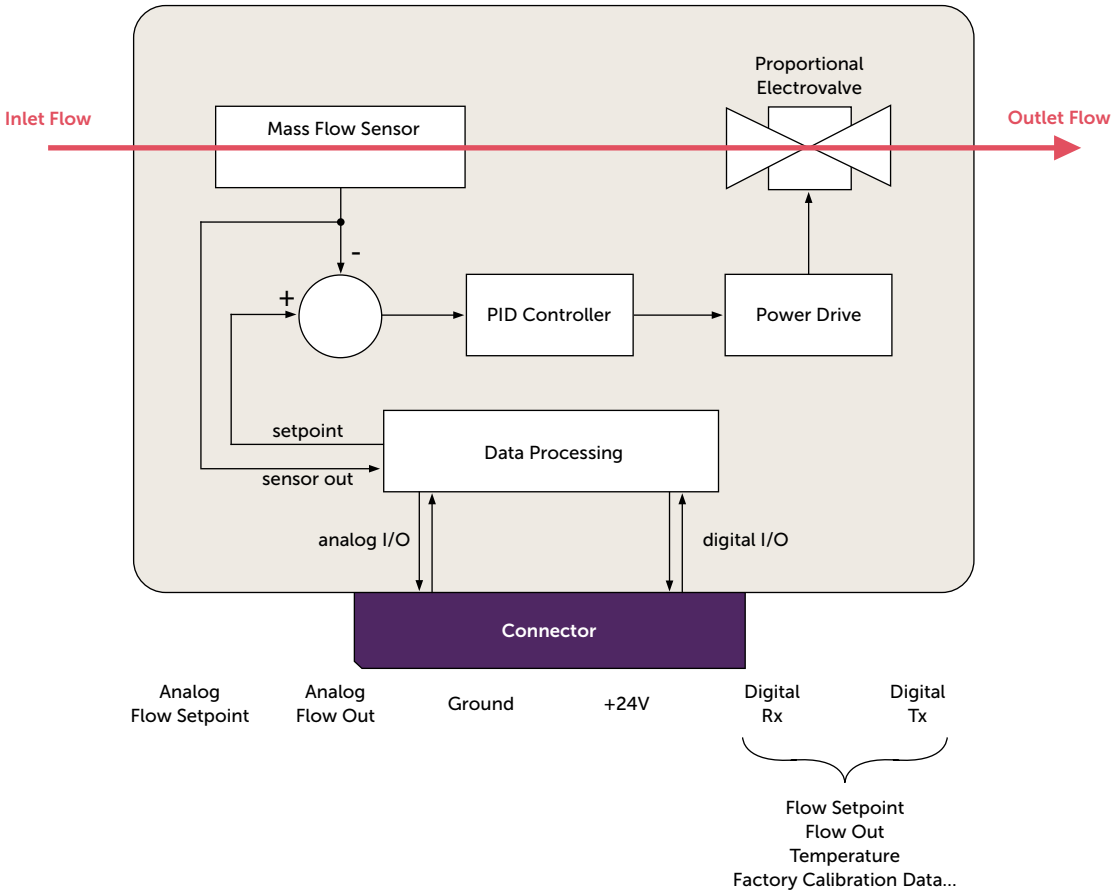
Typical data for air at 20°C



Typical data for air at 20°C



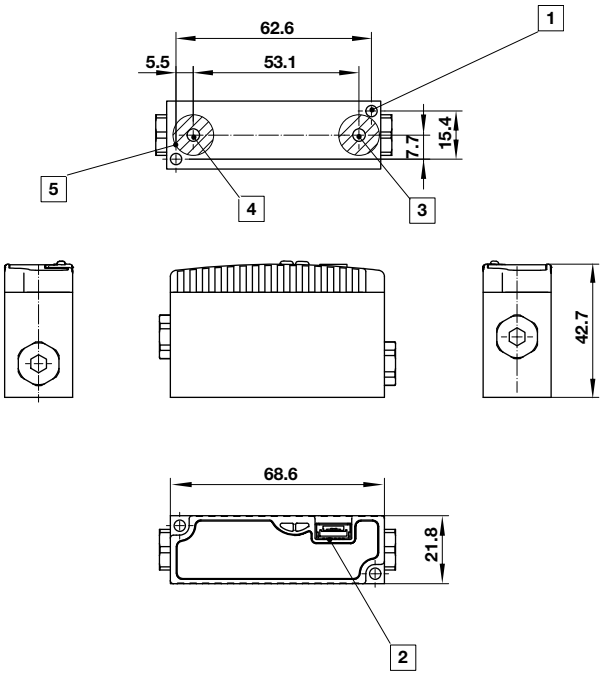
Block diagram



Dimensions

Manifold mount

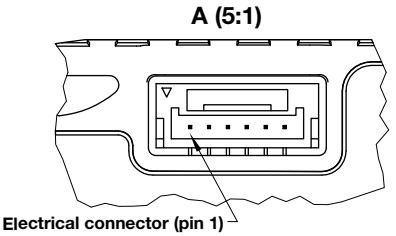
Dimensions in mm
Projection/first angle



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

Electrical connection

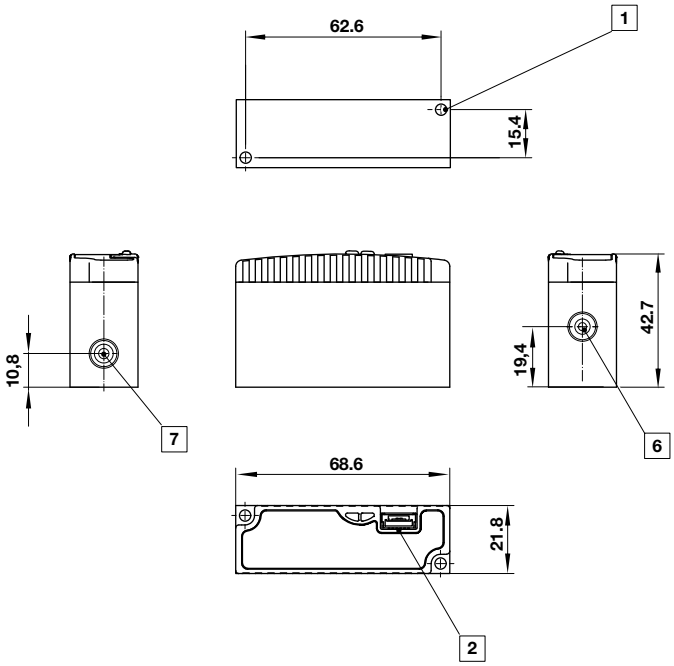
Pin#	Description (RS232)	Description (RS485)
1	+24V	+24V
2	Ground	Ground
3	Rx	A
4	Tx	B
5	Analog flow out	Analog flow out
6	Analog flow setpoint	Analog flow setpoint



Dimensions

Inline version (G1/8'')

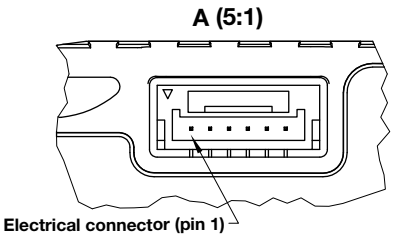
Dimensions in mm
Projection/first angle



1 ø 3,6 mm through hole (2x)
2 Connector JST BM06B-GHS-TBT (First pin on the left)
6 OUTLET G1/8'' Thread depth 9 mm
7 INLET G1/8'' Thread depth 9 mm

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.