LUMINOUZ

HP-100 FLOW

Mass Flow Meters and Controllers for Gases

New Generation
Thermal Gas Sensor Design

Super V Dynamic
Characteristics

Wide Flow Range
and High Pressure Adaptability

HP-100 FLOW

Description of

HP-100 FLOW Mass Flow -Meters/Controller

HP-100 Flow series is a new generation of Mass Flow-Meters/ Controller with compact designed. It can be multi gas detection over 40 gas in 1 Mass flow meter wide flow range and high pressure adjustable by customers it self. The substrate is made of 316L stainless steel, suitable for toxic and corrosive gases, the maximum working pressure can reach 1500 Psi, and the maximum flow rate can reach 1000 SLM. Newly designed digital measurement control circuit, multiple communication protocols for digital IO, compatible with analog communication.

General HP -100 FLOW

SERIES FEATURES

Full Scale Flow Range
(3sccm-1000slm)

Maximum working pressure
up to 1500 Psi

High precision measurement
and control

High pressure
differential adaptability

Unaffected by temperature
and pressure

Quick response,
high repeatability

Digital communication,
compatible with analog
communication

Optional real-time display
with LCD screen

Features of HP-100 FLOW

Mass Flow - Meters/Controller and Meters

New Generation Thermal Gas Sensor Design

The influence of temperature and pressure changes is small, accurate temperature and pressure correction, high linearity, can provide excellent signal-to-noise ratio performance to improve measurement and control accuracy long-term zero point stability.

Super V Dynamic / Characteristics

The new microelectronic chip energy-saving technology and innovative multi-level control loop bring super dynamic characteristics. Control performance is adaptive, allowing quick response to setpoint changes without overshoot. Welcome to inquiry in Luminouz.

Flexible and Changeable IO Selection

There are various input/output options of HP-100 Series Mass Flow Controller and Meters. In addition to various analog signals and standard RS485 communication standard, valve cleaning/closing and valve analog output.

Wide Flow Range and High Pressure Adaptability

The flow range can be from 3sccm all the way to 1000 SLM, the working pressure is up to 100 bar, and the flow measurement and control can be performed under the extremely high pressure difference between upstream and downstream from 6 bar to 70 bar.

Multi-gas over 39 gas Adjustment Function

Choose one device platform to meet the needs of different gases and flow ranges, store and pre-set multiple gas calibration information, so choose our HP-100 Series Mass Flow Controller, users can easily switch to different gases and ranges with just one device.

Technical specifications

Flow Accuracy	±0.8% R.D and±0.2% F.S; ±1% R.D and ±0.5% F.S (>100 SLM)
Repeatabtility	±0.2% F.S
Control Range	1~100% F.S
Response Time	<1s
Temperature Coefficient	Zero: <0.05% of F.S./°C Span: <0.1% of S.P. /°C
Pressure Coefficient	0.2% of S.P. / Bar
Operating Temperature	0~50°C
Leak Rate	1x10-9 atm. cc/sec He
Preheat Time	5 min accuracy to ±2% F.S (30 min to achieve the best accuracy)

Mechanical parts

Substrate Material	Substrate Material 316L stainless steel
Sealing Material	Fluorine rubber, EPDM rubber, nitrile rubber
Process connections	Tube/VCR Fittings
Ingress protection (housing)	IP 40

Electrical properties

Power Supply	+15~24 V DC
Maximum Power Consumption	10W (MFC); 3W (MFM)
Digital Communication	RS-485(Modbus Rtu protocol)
Analog Communication	0~5 V / 4~20mA
Electrical Interface	9-Pin D-connector (Male)
Valve Type	Normally closed (MFM meaningless)

Models and Flow range and maximum working pressure (based on N2)

Mass Flow Meters; PN100
(pressure rating 100 bar)

Model	min. flow	max. flow
HP-101	3 sccm	10 sccm
HP-103	10 sccm	30 slm
HP-110	30 slm	100 slm
HP-120	100 slm	200 slm
HP-140	200 slm	400 slm
HP-1000	400 slm	1000 slm

Mass Flow Controller; PN100
(pressure rating 100 bar)

Model	min. flow	max. flow
HP-101CV	3 sccm	10 sccm
HP-103CV	10 sccm	30 slm
HP-110CV	30 slm	100 slm
HP-120CV	100 slm	200 slm
HP-140CV	200 slm	400 slm
HP-1000CV	400 slm	1000 slm

Note: SCCM (standard milliliters per minute) SLM (standard liters per minute) standard conditions (20 C, 101.3Kpa)

HP-100 FLOW Mass Flow

Meters/Controller and Meters Principle

Figure 1.

Sensor schematic diagram

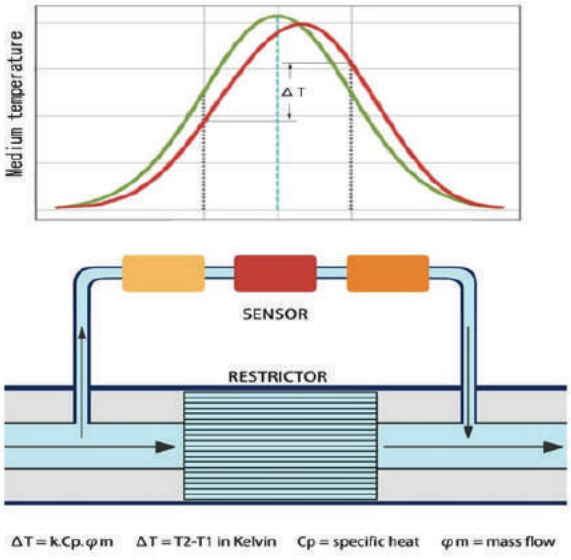
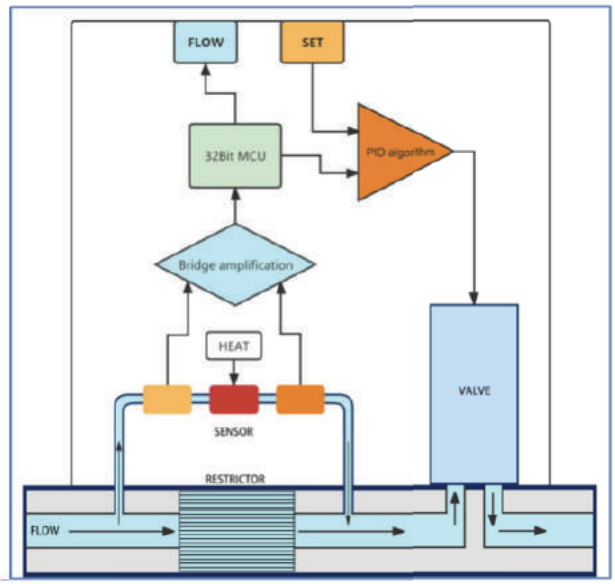


Figure 2.

Schematic diagram of MFC structure



The core sensor of the thermal mass flow meter (MFM) is the capillary thermal temperature difference principle, which is composed of a stainless steel capillary tube with a thermal sensor and a heating element. A part of the gas flows through the bypass sensor and is heated by the heating element. The gas flow causes an asymmetric temperature distribution so that the temperature difference between the two thermal elements can be measured. This temperature difference is proportional to the mass flow rate through the sensor. The main flow channel is perfectly diverted by the laminar flow element so that the output of the sensor is linearly related to the total mass flow rate.

The thermal mass flow controller (MFC) amplifies the output signal of the sensor compares it with the user-set signal, and controls the opening of the solenoid valve through the PID algorithm to adjust the flow rate to achieve closed-loop control of the mass flow rate.

Model Chart

Model HP-2-101CV-A-14-E-D

LP/HP	N	NNN	A	88	A	D

Pressure

LP	30 Bar
HP	100 Bar

Base

1	Meter
2	Controller

Ranges

for PN30 Flow Meter/Controller

31/31CV	3sccm...10sccm
33/33CV	10sccm...30slm
310/310CV	30slm...100slm
320/320CV	100slm...200slm
340/340CV	200slm...400slm
3000/3000CV	400slm...1000slm

for PN100 Flow Meter/Controller

101/101CV	3sccm...10sccm
103/103CV	10sccm...30slm
110/110CV	30slm...100slm
120/120CV	100slm...200slm
140/140CV	200slm...400slm
1000/1000CV	400slm...1000slm

Connections (in/out)

18	⅛" OD compression type
14	¼" OD compression type
66	6 mm OD compression type
22	12 mm OD compression type
12	½" OD compression type
20	20 mm OD compression type
99	other

Seals

F	Fluorine rubber
E	EPDM
N	Nitrile rubber

Display

D Display

Analog communication

A	0...5 Vdc
B	0...10 Vdc
C	4...20 Vdc