PARKARN
INSTRUMENT CO.,LTD

THERMAL MASS FLOW METERS AND CONTROLLS

PS500 SERIES

Product Overview

S500 series mass flow controller (MFC) is a high-performance digital gas mass flow controller developed for photovoltaic, semiconductor, vacuum coating and other industries.

This product adopts the industrial-grade advanced flow sensor chip independently developed by the company, combined with the low-voltage loss gas circuit structure and high-precision digital control circuit and algorithm, to achieve high-precision, high-stability and wide-range ratio control over a wide temperature range.

This product is equipped with on-site commissioning screen and independent power supply interface, which is convenient for users.

The product is assembled, calibrated and packaged in a 1000-class purification room with a temperature of 24 ± 2 °C. In order to ensure the product quality, its accuracy, repeatability and other performance indicators must be inspected twice before delivery.

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Product Specifications : PS500 series gas mass flow controller

Parameters	
Requirements	Clean, dry and non-corrosive
Gas type	Air, N_2, O_2, CO_2, He, H_2, CH_4, Ar, etc.
Full scale ①	(0-10, 20, 50, 100, 200, 500) sccm (0-1, 2, 5, 10, 20) slm
Accuracy	0.3% F.S. ② (≤30%F.S.) 1.0% S.P. ③ (>30%F.S.)
Range ratio	100:1
Response time ④	≤0.5s
Repetition accuracy	±0.2% F.S.
Resolution ratio	≤20sccm, 0.001sccm ≤100sccm >20sccm, 0.01sccm ≤1000sccm>100sccm, 0.1sccm ≤50slm>1000sccm, 1sccm >50slm, 0.001slm
Leakage rate	$1x10^{-9}$ Pa m^3/s He
Max.withstand pressure	9.8bar
Environmental requirements	
Operating temp.	0-50°C
Operating humidity	10%-90%R.H. (No ice or frost)
Operating pressure ⑤	≥2slm, 0.5-4bar <2slm, 0.5-6bar(Specific range related)
Storage temp.	-20-85°C
Electric parameters	
Power voltage	DC24V
Power consumption	≤4.0W
Starting time	<1s
Communication interface	
Interface type	D-SUB9, RJ45
Analog control	0~5V or 4~20mA
Digital control	RS485

Digital signal (RS485)	
Interface type	D-SUB9, RJ45
Communication rate	9600, 38400, 115200 (Default) (can be modified through command or upper computer)
Protocol	Modbus-RTU (Private protocols can be customized)
Equipment Address	1 (Default) ~99 (can be modified through command or upper computer)
Mechanical parameters	
Connector type	Card sleeve: 1/4inch VCR: 1/4inch Others are optional.
Gas contact material	316L Stainless steel. FKM rubber, Si, SiO2, Silica gel
Main material	Foundation: 316L Stainless steel Shell: Aluminum alloy
Sealing material	FKM rubber
Weight	0.95kg

Remarks

- Unless otherwise stated, this product is calibrated under the following conditions: N2, temperature 25 °C, 2.5bar differential pressure (inlet 3.5bar absolute pressure, outlet 1bar absolute pressure), horizontally placed and installed.
- Recommend to install a straight pipe section with proper size at the inlet end, otherwise the accuracy may be deviated.
- Recommend to match the largest possible joint at the inlet and outlet ends to avoid causing additional pressure loss.

① The range shown is optional for N2.

② %F.S.is the percentage of error to full range.

③ %S.P.is the percentage of error to set value.

④ Response time refers to the time required to reach the set value within ± 2%.

⑤ Working pressure refers to the differential pressure between air inlet and air outlet (1 bar absolute pressure), for more details, pls contact us.

Product Dimensions : PS500 series gas mass flow controller

The external dimensions of PS500 series products are shown in the figure below, and the inlet and outlet of its flow channel are 1/4VCR connectors by default. If the user has other requirements, please explain when placing the order.

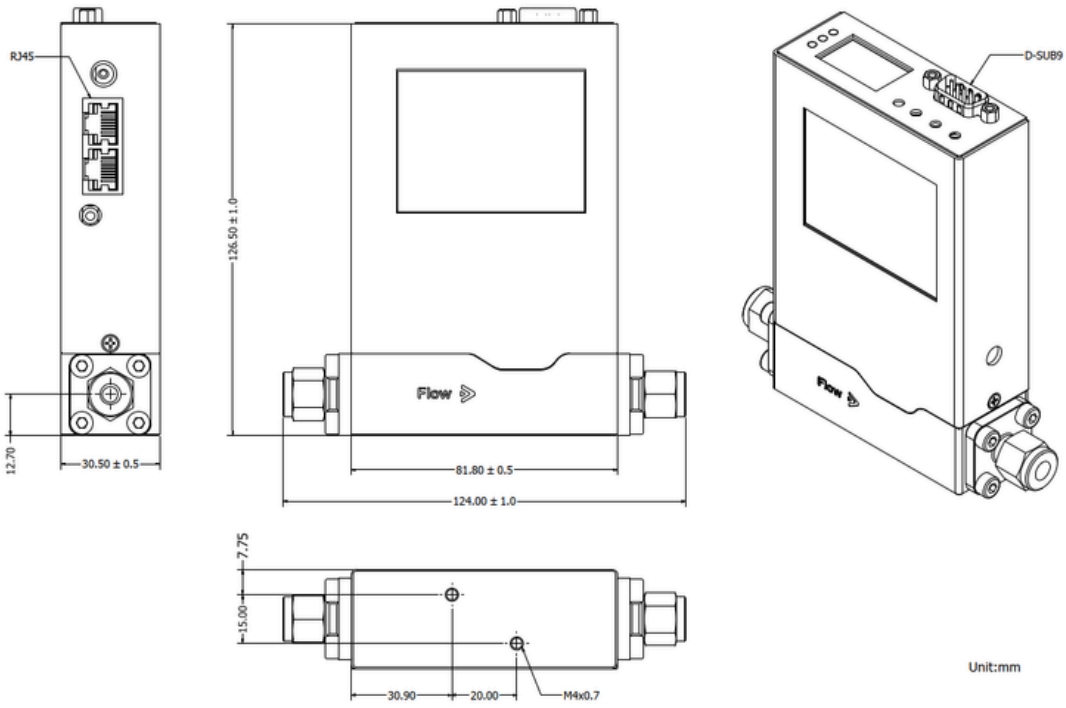

Figure S500 Series Product Appearance Dimensions

Electrical Installation

1. Power on

The power supply voltage of S500 series products is 24V. The power supply can be connected in the following two ways to start the machine:

Through independent power supply interface

The user can start the machine by connecting the independent power supply interface through the standard DC24V power adapter, as shown in the figure:

Via D-SUB9 connector users can also turn on the machine according to the power supply through D-SUB9 connector.

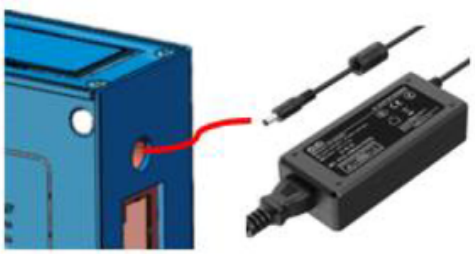

Figure Connecting the power supply through the independent power supply interface.

2. Communication Mode

The default communication mode of S500 series products includes RS-485 and 0~5V, which can be connected through the RJ45 interface or D-SUB9 interface configured by the product.

The line sequence is defined as follows:

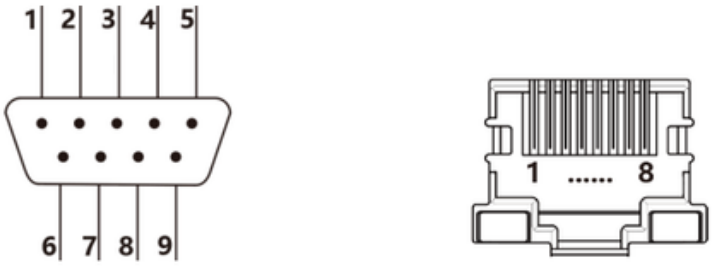

Figure D-SUB9 and RJ45 device end pin number

Table D-SUB9 Line sequence definition

D-SUB9 Equipment Side Pin No.	Line sequence definition
1	Please do not connect
2	Analog output
3	Power (DC24v)
4	Power supply ground
5	RS485-A
6	Analog Input
7	Analog ground
8	Analog ground
9	RS485-B

RJ45 Line Sequence definition

RJ45 Equipment Side Pin NO.	Line sequence definition
1	Power supply ground
2	Power supply ground
3	Please do not connect
4	RS485-B
5	RS485-A
6	Please do not connect
7	Please do not connect
8	Please do not connect

Model Code : PS500 series gas mass flow controller

Sample Standard Model Code

1	2	3	4	5	6	7	8	9	10
PS500	1	H_2	20sccm	R4	A	1C	F	NC	1

Code Description	Code Option	Option Description
1.Base Model Numbers	PS500	Advanced Mass Flow
2.Function	1	Mass Flow Controller
	2	Mass Flow Meter
3.Gas type		Air, N_2, O_2, CO_2, He, H_2, CH_4, Ar, etc.
4.Range	20sccm	0-20sccm
	200sccm	0-200sccm
	500sccm	0-500sccm
	1slm	0-1slm
	5slm	0-5slm
	10slm	0-10slm
	20slm	0-20slm
		Specify flow rate range. (Max. flow rate 20slm)
5.Digital I/O Communication	R4	RS485
6.Analog control	N	None - Digital Communications only
	A	4-20 mA
	V	0-5 Volt
7.Mechanical Connection	1C	1/4” tube compression
	1R	1/4” VCR
8.O-ring Material	F	Fluoroelastomer (FKM)
9.Valve Type	NC	Normally closed
10.Power Supply Inputs	1	24 Vdc