

# CMS

## Gas Mass Flowmeter (Resin, SUS and SUS316)

The CMS is a highly reliable gas mass flowmeter that uses the Yamatake  $\mu$ F (Micro Flow) sensor as its sensing element. The  $\mu$ F sensor is a MEMS thermal mass-flow sensor capable of measuring ultra-low flow rates. The integration of the  $\mu$ F sensor and advanced channel design technology has achieved high accuracy and high rangeability at a low cost.



### Specifications

Model No.	CMS9500	CMS0002	CMS0005	CMS0020	CMS0050	CMS0200	CMS0500
Compatible gases	SUS/SUS316 model: Air/nitrogen, argon, carbon dioxide (CO <sub>2</sub> ), oxygen (oxygen model only), city gas 13A (LNG base, 45/46MJ/m <sup>3</sup> ), methane 100%, propane 100%, butane 100%.			Resin model: Air/nitrogen, argon, carbon dioxide (CO <sub>2</sub> ). SUS/SUS316 model: Air/nitrogen, argon, carbon dioxide (CO <sub>2</sub> ), oxygen (oxygen model only), city gas 13A (LNG base, 45/46MJ/m <sup>3</sup> ), methane 100%, propane 100%, butane 100%.		SUS/SUS316 model: Air/nitrogen, argon, carbon dioxide (CO <sub>2</sub> ), oxygen (oxygen model only), city gas 13A (LNG base, 45/46MJ/m <sup>3</sup> ), methane 100%, propane 100%, butane 100%.	
	Gas must be dry and without corrosive components (chlorine, sulfur, acid, etc.). It must also be clean without dust or oil mist.						
Flow rate range	0 to 500mL/min (standard)	0 to 2L/min (standard)	0 to 5L/min (standard)	0 to 20L/min (standard)	0 to 50L/min (standard)	0 to 200L/min (standard)	0 to 500L/min (standard)
	*Standard* refers to the flow rate adjusted for 20°C, 101.325kPa (1 atmosphere).						
Measurement accuracy	SUS/SUS316 model: 1/5 to 1/1 of flow rate range: ±3% rdg. 1/100 to 1/5 of flow rate range: ±1% FS		—	Resin model: 1/5 to 1/1 of flow rate range: ±5% rdg. 1/100 to 1/5 of flow rate range: ±1% FS	Resin model: 1/10 to 1/1 of flow rate range: ±5% rdg. 1/100 to 1/10 of flow rate range: ±1% FS	—	
	SUS/SUS316 model: 1/10 to 1/1 of flow rate range: ±3% rdg. 1/100 to 1/10 of flow rate range: ±1% FS						
	% rdg.: percentage of indicated reading. % FS: percentage of full scale.						
Operating pressure	Resin model: 0 to 0.5MPa SUS/SUS316 model: -0.07 to +1.0MPa						
Sampling cycle	100ms ±20ms						
Power	12 to 24Vdc						
Current consumption	100mA max.						
Mass	Approx. 800g			Resin model: approx. 280g SUS/SUS316 model: approx. 800g		Approx. 1400g	Approx. 2000g

### ● Gas Type and Maximum Control Flow Rate

The maximum control flow rate varies according to the gas type.

Gas type	CMS9500	CMS0002	CMS0005	CMS0020	CMS0050	CMS0200	CMS0500
	mL/min	L/min					
Air/nitrogen	500	2	5	20	50	200	500
Argon	500	2	5	20	50	200	500
Carbon dioxide (CO <sub>2</sub> )	250	1	3.3	10	25	100	250
Oxygen	500	2	5	20	50	200	500
City gas 13A, 45/46MJ/m <sup>3</sup>	400	1.5	4.5	15	40	150	400
Methane	500	2	5	20	50	200	500
Propane	140	0.5	1.7	5	14	50	140
Butane	100	0.4	1.25	5	12	50	120



