



Venture for  
**omorrow**

**INNOBIZ**  
기술혁신형중소기업

*CONTROL & PLUS*  
**GAS MIXERS**



# Company profile

SEHWA HIGH TECH CO.LTD. was established in 1995 as a manufacturer and developer of gas mixing system. We offers high-quality gas mixers and gas metering systems for two or more gases, for high flow rates and highly fluctuating gas withdrawals. You can choose between various options: According to your requirements SEHWA gas mixers are available for nearly all technical gases and flow rates: for the optimal gas mixture for welding applications, the required gas concentration for food packages or cover gas for molten magnesium applications. State-of the art mechanical or electronic systems provide accuracy and process safety. You can also control your gas mixing systems conveniently via Intranet, Internet or mobile devices such as PDA's or mobile phones. Combinations of SEHWA gas mixers with gas analysers are also possible. They can be manufactured as complete system solutions. Just contact us for customised solutions, according to your specific requirements. No matter which application, by choosing SEHWA gas mixers you opt for quality and safety on highest technological levels. Sehwa High Tech promises to become a company that is honest and contributes to social development at all times, and May the blessing and grace of God be upon all people who visited us.

## MAIN ITEMS

- ◆ GAS MIXER / GAS ANALYSER /GAS METERING SYSTEM
- ◆ FLOW METER / MASS FLOW CONTROLLER & READOUT SYSTEM
- ◆ GAS REGULATORS
- ◆ FUEL CELL TEST STATION

## APPROVAL

- ◆ Company certified according to ISO 9001:2008 and ISO 14001:2004
- ◆ CE -marked

# SHGM 1000 series

Cost effective flow meter gas mixers

## Our Technology

Based on well-established technology, our volumetric mixers are reliable and built to offer a long-life service. This cost effective series is ideal for harsh environments and difficult to handle and corrosive fluids. The SHGM 1000 direct readout construction is already standardized to your process conditions to simplify mix calculations. Set at your process conditions without having to worry about correction factors. This mixer provides superior precision compared to any fixed orifice gas mixers.



## Benefits

### SHGM 1000 series for increased productivity:

- ◆ Provides excellent quality-price ratio.
- ◆ Reduces costly gas consumption
- ◆ Provides greater flow adjustment compare to fixed orifice based mixers.
- ◆ Offers independent flow adjustment on all gas lines.
- ◆ Eliminates human error by providing direct flow compensation correction.
- ◆ Eliminates the need of additional controllers or flowmeters for process gas.

## Features

### Our SHGM 1000 series offers the following :

- ◆ Simple, rugged and reliable design
- ◆ Long term repeatability
- ◆ Fully customizable mixing ratio for up to 3 gases
- ◆ Wide range of metering tubes with high contrast background for easy reading
- ◆ Directly compensated flow readout
- ◆ Alarms to ensure that correct mixtures are being created(option)

## Features

- ◆ A surge tank can be added to improve immunity against process interferences and to allow flow rate changes from full flow to zero flow while maintaining a correct mixture
- ◆ Remote alarm module option available for better mixing process management
- ◆ All wetted parts can be cleaned for food or oxygen service

## Typical Applications

Application	Typical gases
Metal casting centres for magnesium, aluminum and steel	SF6/CO2/Air
Plasma, coating and laser gas mixture	H2/Ar/N2
Heat treatment, annealing and sintering operations	H2/CO, H2/N2, CO2/Ar, N2/Hydrocarbons
Metal powder production	O2/H2/C2H8/CH4/N2
Soldering, welding, shielding and cutting gases	H2/Ar, CO2/Ar, O2/Ar, Acetylene
Inert-atmosphere and protective atmosphere pa	N2/CO2/O2
Chemical blanking atmosphere	N2/O2, N2/Air
Process control	As requested
Semiconductor wire-bonding	H2/N2

※ Additional product lines are available for higher flows

# SHGM 2000 series

Small to midium flow gas mixers

## Our Technology

Equipped with our smart program 'SERO 2000D", the SHGM 2000 series offers all the advantages of the leading-edge technology without compromising reliability. Based on Mass flow controller, the SHGM 2000 series is insensitive to gas density, pressure and temperature variations. This fit-and-forget technology provides high accuracy, repeatability and immunity against process interferences. Moreover, this mixer provides a precision 10 times superior and greater turndown than all fixed orifice gas mixers.

## Advanced Control

The SHGM 2000 series is controlled by a high-speed processor coupled with an Ethernet interface. This flexible and upgradable platform allows advanced process control and data sharing with most major brands of PLC or Labview.



## Benefits

### SHGM 2000 series for increased productivity:

- Avoids premixture cylinder replacement
- Increases product quality and consistency by eliminating process variability and providing high accuracy gas mixture
- Reduces handling and physical verifications
- Eliminates the need for additional controllers or flowmeters for process gas

## Features

### Our SHGM 2000 series offers the following :

- Simple, rugged and reliable design
- Long term repeatability
- Fully customizable programming for up to 5 gases
- Directly compensated flow readout
- Provides five-to-one rangeability
- Alarms to ensure that correct mixtures are being created



Smart Control program "SERO 2000D"

## Features

- A surge tank can be added to improve immunity against process interferences and to allow flow rate changes from full flow to zero flow while maintaining a correct mixture
- Remote alarm module option available for better mixing process management
- All wetted parts can be cleaned for food or oxygen service

## Typical Applications

Application	Typical gases
Metal casting centres for magnesium, aluminum and steel	SF6/CO2/Air
Plasma, coating and laser gas mixture	H2/Ar/N2
Heat treatment, annealing and sintering operations	H2/CO, H2/N2, CO2/Ar, N2/Hydrocarbons
Metal powder production	O2/H2/C2H8/CH4/N2
Soldering, welding, shielding and cutting gases	H2/Ar, CO2/Ar, O2/Ar, Acetylene
Inert-atmosphere and protective atmosphere pa	N2/CO2/O2
Chemical blanking atmosphere	N2/O2, N2/Air
Process control	As requested
Semiconductor wire-bonding	H2/N2

※Additional product lines are available for higher flows

# SHGM 3000 series

## Midium to high flow gas mixers

### Our Technology

Built on a dual loop regulation process, the SHGM 3000 series provides very accurate gas blend on a remarkable wide flow range. This patented process is specially designed for a broad variety of application such as plant wide network or multiple user applications that require improved stability. This series is based on mass flow measurement technology not affected by gas density, pressure or temperature variations. In constancy at a point of operation on any flow requirements. This fit-and-forget technology provides high accuracy, repeatability and immunity than all other types of fixed orifice mixer.

### Advanced Control

The SHGM 3000 series is controlled by a high-speed processor coupled with an Ethernet interface. This flexible and upgradable platform allows advanced process control and data sharing with most major brands of PLC or Labview.



### Benefits

#### SHGM 3000 series for increased productivity:

- ◆ Reduces production costs by optimizing gas usage
- ◆ Avoides premixture cylinder replacement
- ◆ Increases product quality and consistency by eliminating process variability and providing high accuracy gas mixture
- ◆ Reduces handling and physical verifications
- ◆ Eliminates the need for additional controllers or flowmeters for process gas

### Features

#### Our SHGM 3000 series offers the following :

- ◆ Simple, rugged and realiable design
- ◆ Long term repeatability
- ◆ Fully customizable programming for up to 5 gases
- ◆ Directly compensated flow readout
- ◆ Provides five-to-one rangeability
- ◆ Alarms to ensure that correct mixtures are being created



Smart Cntrl program "SERO 3000D"

### Features

- ◆ A surge tank can be added to improve immunity against process interferences and to allow flow rate changes from full flow to zero flow while maintaining a correct mixture
- ◆ Remote alarm module option available for better mixing process management
- ◆ All wetted parts can be cleaned for food or oxygen service

### Typical Applications

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Inert-atmosphere and protective atmosphere pa	N2/CO2/O2
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Process control	As requested
Semiconductor wire-bonding	H2/N2

※ Additional product lines are available for higher flows

# Standard Mass Flow Controller

MODEL 3660 series

## 3660 series

Model 3660 series Mass Flow Controller has been developed centering the focus on compactness and low cost and is being acclaimed by a wide range of users for diverse applications, including from laboratory research and development activities to the use as a standard mass flow control model for various types of analyzers and vacuum devices in the production line. Varieties of derived models and options are available.

### Feature

1. Equipped with an advanced flow sensor of constant-current temperature difference detection type to ensure high-speed response.
2. Use of normally closed valve to ensure safety
3. High reliability ensure using a solenoid actuator
4. Low differential pressure type control available for combustible gases (LP option)



### Specification

Flow range (at N <sub>2</sub> calibration conditions)	4 digit - 7 Segment, adjustable decimal location
Valve type*	Normally closed solenoid poppet valve
Control range	2%~100% F.S. (5%~100% F.S.)
Response	2 sec. or less to within ±2% of full scale of final value typical for 0~100% response
Accuracy	Within ±1.0% F.S. (Within ±2.0% F.S.)
Repeatability*	Within ±0.5% F.S.
Operating differential pressure	F.S. ≤5SLM 49kPa~294kPa * Low differential pressure specification depends on types of gas and flow rate to be used. 5 < F.S. ≤20SLM 98kPa~294kPa (147kPa~294kPa)
Proof pressure*	980kPa
Leak rate*	1 × 10 <sup>-8</sup> Pa.m <sup>3</sup> /s or less
Working temperature range	5 to 45 °C (Accuracy guaranteed within 15 to 35 °C)
Materials of parts in contact w/gases	Body : SUS 316 Valve seat : Viton™ (Optional : Neoprene™ or NBR) Seals : Viton™ (Optional : Neoprene™ or NBR)
Joint*	Standard : 1/4SWL (3/8SWL) Optional : 1/8SWL, 1/4VCR™, 1/4RC, etc.
Electrical connections*	Dsub 9-pin male connector per KFC/SEMI standards
Flow rate input signals	0~5 VDC
Flow rate output signals	0~5 VDC
Required power supply*	+15VDC (±5%) 100mA~15VDC (±5%) 200mA

Items marked with an asterisk (\*) indicate common specifications.

### Harness Layout

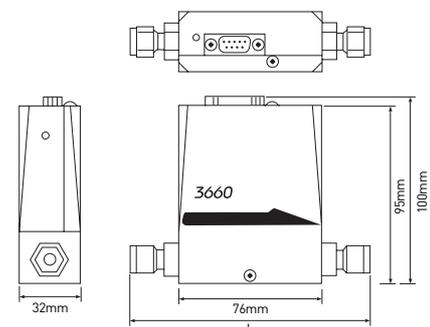
#### Pin Assignment of Dsub 9-pin Connector per KFC Standard

Pin NO.	Signal	Pin No.	Signal
1	Input valve operation	6	Flow input Hi
2	Flow output 0-5 V	7	Flow output COM
3	+15 VDC Power source	8	Flow input Lo
4	Power source COM	9	Output valve voltage
5	-15 VDC Power source		

\* Because a differential input system is used for product, pin 4 (Power source COM) and pin 7 (Flow output COM) are connected inside the mass flow controller while pin 8 (Flow input Lo) is isolated. In case of a single-ended connection, connect pin 8 to pin 4.

\* Value indicated in ( ) denote the specifications for Model 3885.

### Dimensions



\* Value indicated in ( ) denote the specifications for Model 3885.

# MFC/MFM readout system

with integrated power supply

## ● SERO 2000

Multi functional readout unit with integrated power supply model: SERO-2000 is designed to offers wide range of single and multi-channel systems, using both digital and analog operation via front panel control or external devices.

## ● Feature

1. Microprocessor based electronics unit.
2. RS-232, or Analogue, TTL Interface function.
3. Flow Totalization
4. Purge function
5. Alarm output
6. Max. 8-Channel



4-ch readout system

## Specification

DISPLAY	4 digit - 7 Segment, adjustable decimal location
ACCURACY	±0.1% of Full scale
INPUT SIGNAL	0 to 5 volts / 4 - 20mA
OUTPUT SIGNAL	0 to 5 volts into > 10 KΩ / 4 - 20mA
INPUT POWER	110 VAC (50/60Hz)
OUTPUT POWER	±15VDC, 500mA/CH or +24VDC
FUNTIONS	Flow totalization, Purge
UNIT OF DISPLAY	SCCM, SLM, %
DECIMAL POINT	User selectable range "0.000, 00.00, 000.0, 0000"
ACCUMULATION CONTROL	1/100 or 1/1000 of Full Scale
REMOTE CONTROL	Set-point control : 0 to 5 volts for full scale of Analog signal Flow on/off control : Digital Input - TTL Flow on/off reserved : Digital output - TTL (Open Collector) Flow out signal : 0 to 5 volts for full scale of MFC Trip Point : 1 relay per flow channel (Standard)
COMMUNICATION	RS-232C
DIMENSION(W xH xD)mm	1-ch:160 x130 x230, 2-ch:210 x130 x230, 4-ch:337 x130 x230

## Data logger software

- ◆ Operating system : WINDOWS 2000, XP, Vista
- ◆ Set up : channel(on/off), full scale adjust, relay(high/low), unit(SCCM, SLM) decimal point adjust, auto zero(on/off), purge mode(on/off)
- ◆ Control : Set point, Actual flow, flow totalization
- ◆ File save (.csv) - MS Excel readable format



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