Line Tech

Ma lo olution

Reliable *Technology*
& ***Supreme*** *Service*

Always striving for Excellence

Welcome

With a vision to become a global leader in MFC / MFM business by producing and providing only the best.

We are excited to have you consider us to be a part of your journey. With Line Tech, you can rest assured that you will be provided with only the best.

From its inception in 1997, Line Tech continues a history of daring innovation and consistent progress. After years of collaboration with Korea Advanced Institute of Science and Technology (KAIST), Line Tech became the first in the nation to self-produce MFC and MFM in 2003. Since then, our catalogue has seen additions of different MFC / MFM series, LTI Read Out Unit, and more, and we continue to look for ways to add value through continued R&D, differentiated AS service, and catered consultation service.

Our ambition is to become a leading domestic and international supplier of MFM / MFC. With our commitment to conscientious business practice and strong technological expertise, we promise to provide the products and services that you need. We look forward to becoming a business partners with you in the future.

Thank you.

Michael wonho Jung

CEO-Overseas Business Division

Brief History

Journey of Value Creation

1997. 03	Line Tech Inc. founded
2000. 01	R&D in collaboration with KAIST
2003. 03	First MFC / MFM models developed
2006. 06	First international sales (Shanghai, China)
2015. 09	R&D Center established
2016. 01	Read Out Unit developed (LTI Model)
2016. 12	Upgraded range capacity to 150, 500, 1,000, 2,500 SLPMs
2017. 08	Certified by CE, ISO
2018. 03	Certified as INNOBIZ
2019. 03	Upgraded range capacity to 5,000 SLPM
2019. 11	First international licensed distributor in India
2020. 06	EX, LD, LM series developed

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Thermal Mass Flow Controller and Meter

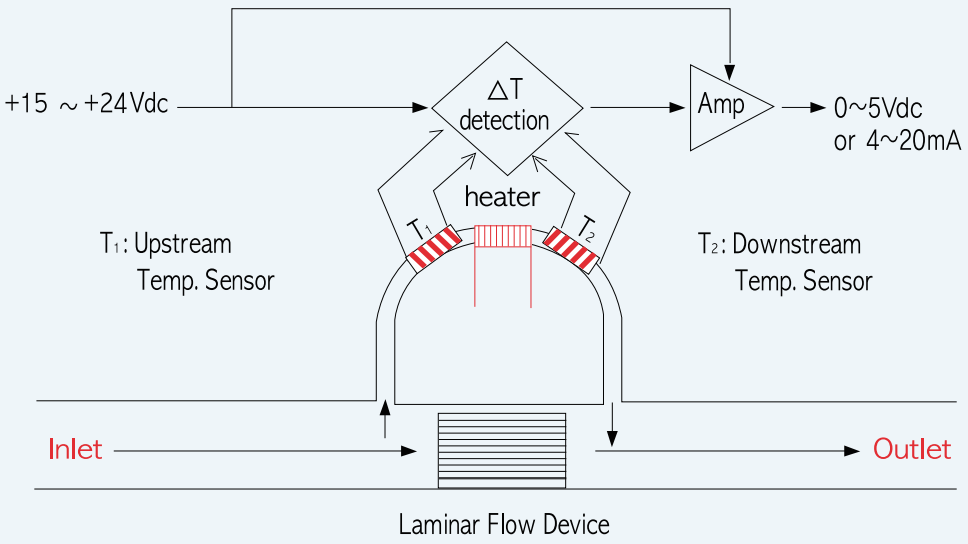
Thermal mass flow sensor allows for a direct measurement of the mass flow and provides a number of competitive advantages:

Advantages

- Mass Flow Measurement with High Precision
- Reliable Delivery of Flow Mass
- High Accuracy
- Fast Response Time
- Considerable Cost Efficiency
- Consistent Repeatability
- Compact Flow Control System
- Relative Immunity to Temperature and Pressure Fluctuations of the Incoming Flow

Measurement Technique

Two temperature sensors are placed in opposite ends of a bypass route and heated uniformly to be at the same temperature. When gas flows through a product, a part of it gets rerouted and travels through the bypass. The upstream temperature sensor, placed at the entering portion of the bypass, loses heat as the gas molecules carry heat away from this point. As these molecules reach the end of the bypass to exit, the downstream temperature sensor becomes heated up by the heat carried over. This results in a difference in temperature between the two temperature sensors that is proportional to the mass flow rate.



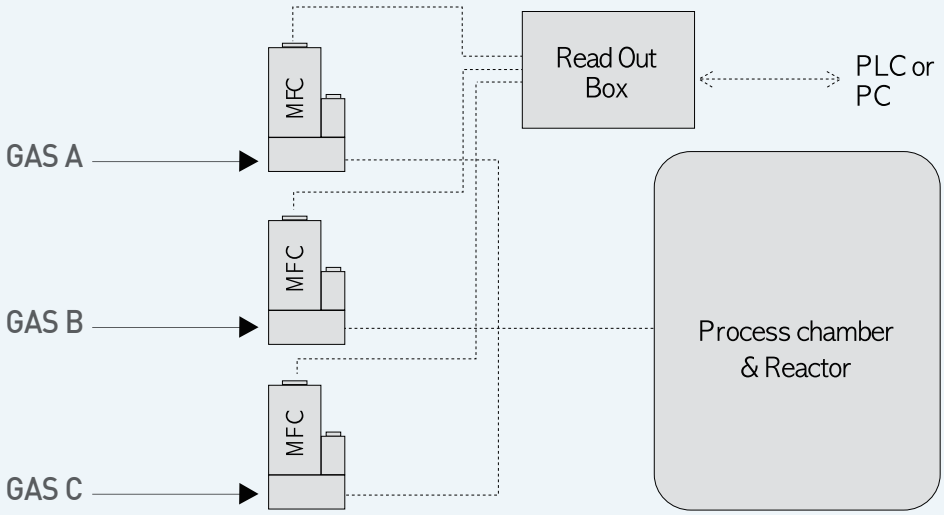
Thermal Mass Flow Controller and Meter

Line Tech's MFC / MFMs are sought by customers from various walks of life and currently enjoy a wide variety of applications. Common applications of MFC / MFM include:

Applications

- Biotech / Pharmaceutical Industry
- Component Leak Detection
- Chemical / Petrochemical Industry
- Fuel Cells
- Fiber Optics / Glass
- Gas Injection on Surface Treatment
- LED Lighting
- Metals Processing
- Precision Gas Blending & Analysis
- Research and Development & Laboratories
- Semiconductor Industry
- Solar / Photovoltaic Technology

▲ M3100VA



Analogue Product Features

The M-Series was the first line of MFC / MFM developed at Line Tech and has enjoyed a long track record of success and reliability. We have decided to evolve this series further and implement smaller PCBs, thus giving birth to the new MS-Series. MS-Series is smaller than M-Series, but does not sacrifice any of its performance. It is compatible with a wide range of pressure / temperature conditions and prides itself on its fast response and high repeatability. Our M and MS serieses are guaranteed to provide the reliable, accurate mass flow measurement and control that you need for your ideal gas flow solution.

- **Wide Range :** Flow rate range from 0.01 to 5,000 SLPM* available for all your application needs
- **Accurate :** Highly accurate measurements with ±1 % FS error rate with consistency
- **Dependable :** Reliable performance with repeatability at ± 0.25 % for long-term application
- **Responsive :** Selectable response time between 1 to 2 seconds for your ideal application
- **Flexible :** Compatible with wide range of temperature (0 ~ 50 Celcius) and pressure (< 90 bar) conditions
- **Durable :** High corrosion resistance and sturdy build for long-term handling and usage

Note ∗ Please contact us directly for range above 5,000 SLPM

MFC / MFM
at a Glance










Analogue

Analogue Mass Flow Controller Specifications

MODEL	Full Scale N2(slpm)	Accuracy (%FS)	Repeatability (%)	Response Time(sec)	In/Out Signal (Vdc/mA)	Supply Power (Vdc)	Max Operating Pressure	Max Operating Temp(℃)
M3030VA	0.01 ~ 30	± 1.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
M3100VA	30 ~ 100	± 1.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
M3200VA	30 ~ 100	± 1.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
MS3150VA	30 ~ 100	± 1.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
MS3400VA	100 ~ 300	± 2.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MS3500VA	300 ~ 1000	± 2.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MS3600VA	1000 ~ 1500	± 2.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MS3700VA	1500 ~ 2500	± 2.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MS3800VA	2500 ~ 5000	± 2.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50

* Please contact us directly for range above 5,000 SLPM

Analogue Mass Flow Meter Specifications

MODEL	Full Scale N2(slpm)	Accuracy (%FS)	Repeatability (%)	In/Out Signal (Vdc/mA)	Supply Power (Vdc)	Max Operating Pressure	Max Operating Temp(℃)
M2030VA	0.01 ~ 30	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
M2100VA	30 ~ 100	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
M2200VA	30 ~ 100	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
MS2150VA	30 ~ 100	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
MS2400VA	100 ~ 300	± 2.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MS2500VA	300 ~ 1000	± 2.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MS2600VA	1000 ~ 1500	± 2.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MS2700VA	1500 ~ 2500	± 2.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MS2800VA	2500 ~ 5000	± 2.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50

* Please contact us directly for range above 5,000 SLPM

Digital Product Features

The MD-Series is the digital variant of the M-Series and has seen a strong improvement in its performance. It is compatible with a wide range of pressure / temperature conditions and prides itself on its fast response and high repeatability. Time and time again, our customers have sought this series for reliable mass flow measurement and control for a variety of application purposes.

- **Wide Range :** Flow rate range from 0.01 to 5,000 SLPM* available for all your application needs
- **Accurate :** 8-Point calibration to ensure high degree of accuracy and linearity (± 0.25 % FS error rate)
- **Dependable :** Reliable performance with repeatability at ± 0.25 % for long-term application
- **Responsive :** Selectable response time between 0.5 to 1 seconds for your ideal application
- **Flexible :** Compatible with wide range of temperature (0 ~ 50 Celcius) and pressure (< 90 bar) conditions
- **Durable :** High corrosion resistance and sturdy build for long-term handling and usage

Note * Please contact us directly for range above 5,000 SLPM

Digital

Digital Mass Flow Controller Specifications

MODEL	Full Scale N2(slpm)	Accuracy (%FS)	Repeatability (%)	Response Time(sec)	In/Out Signal (Vdc/mA)	Supply Power (Vdc)	Max Operating Pressure	Max Operating Temp(℃)
MD30C	0.01 ~ 30	± 0.25	± 0.25	〈 1	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
MD100C	30 ~ 100	± 0.25	± 0.25	〈 1	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
MD400C	100 ~ 300	± 1.0	± 0.25	〈 1	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MD500C	300 ~ 1000	± 1.0	± 0.25	〈 1	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MD600C	1000 ~ 1500	± 1.0	± 0.25	〈 1	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MD700C	1500 ~ 2500	± 1.0	± 0.25	〈 1	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MD800C	2500 ~ 5000	± 1.0	± 0.25	〈 1	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50

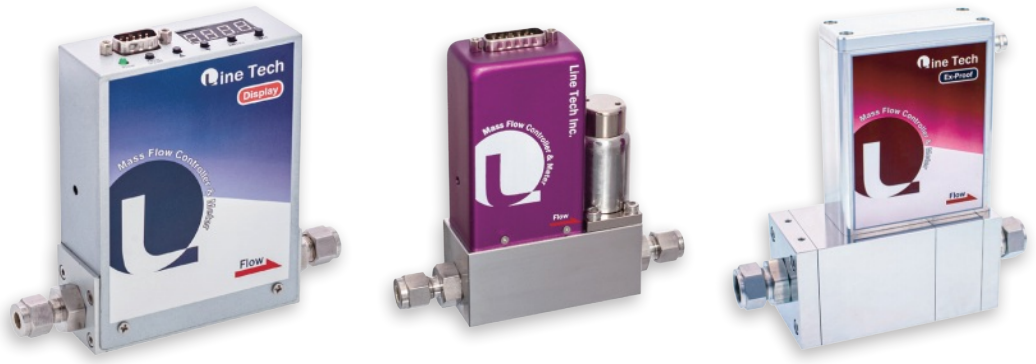
* Please contact us directly for range above 5,000 SLPM

Digital Mass Flow Meter Specifications

MODEL	Full Scale N2(slpm)	Accuracy (%FS)	Repeatability (%)	In/Out Signal (Vdc/mA)	Supply Power (Vdc)	Max Operating Pressure	Max Operating Temp(℃)
MD30M	0.01 ~ 30	± 0.25	± 0.25	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
MD100M	30 ~ 100	± 0.25	± 0.25	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
MD400M	100 ~ 300	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MD500M	300 ~ 1000	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MD600M	1000 ~ 1500	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MD700M	1500 ~ 2500	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MD800M	2500 ~ 5000	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50

* Please contact us directly for range above 5,000 SLPM

Specialized Series Product Features



Line Tech is proud to present three new additions to its product portfolio starting 2020 : LD, LM, and EX Series. The new display series LD sees an implementation of built-in display technology into our widely popular M3030 and M2030 models, allowing real-time flow measurement and control. The LM Series delivers superb performance while driving the cost down thanks to MEMS technology. Finally, our EX series answers to the calls for a MFC / MFM for applications in hazardous environment.

LD Series (0.01 slpm ~ 30 slpm)

Time-Tested MFC / MFM with Built in Displays allowing real-time flow monitoring

LM Series (0.01 slpm ~ 30 slpm)

Cost efficient MEMS technology series with improved performance

EX Series (30 slpm ~ 1000 slpm)

State of the art Explosion Proof Series for applications in hazardous environments

LD Series

LM Series

EX-Proof Series

Special Types

Specialized Mass Flow Controller Specifications

MODEL	Full Scale N2(slpm)	Accuracy (%FS)	Repeatability (%)	Response Time(sec)	In/Out Signal (Vdc/mA)	Supply Power (Vdc)	Max Operating Pressure	Max Operating Temp(℃)
LD030C	0.01 ~ 30	± 1.0	± 0.25	〈 2	0~5 Vdc	+15 ~ 24	〈 90 bar	0 ~ 50
LM030C	0.01 ~ 30	± 1.0	± 0.25	〈 1	0~5 or 4~20	+15 ~ 24	〈 10 bar	0 ~ 50
EX070C	0.01 ~ 100	± 1.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
EX1000C	100 ~ 1000	± 2.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50

Specialized Types Mass Flow Meter Specifications

MODEL	Full Scale N2(slpm)	Accuracy (%FS)	Repeatability (%)	In/Out Signal (Vdc/mA)	Supply Power (Vdc)	Max Operating Pressure	Max Operating Temp(℃)
LD030M	0.01 ~ 30	± 1.0	± 0.25	0~5 Vdc	+15 ~ 24	〈 90 bar	0 ~ 50
LM030M	0.01 ~ 30	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	〈 10 bar	0 ~ 50
EX070M	0.01 ~ 100	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
EX1000M	100 ~ 1000	± 2.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50

01

Analogue

MFC / MFM

Mass Flow Controller & Meter

01

Analogue

MFC / MFM

Mass Flow Controller & Meter

Analogue Mass Flow Controller Specifications

MODEL	Full Scale N2(slpm)	Accuracy (%FS)	Repeatability (%)	Response Time(sec)	In/Out Signal (Vdc/mA)	Supply Power (Vdc)	Max Operating Pressure	Max Operating Temp(℃)
M3030VA	0.01 ~ 30	± 1.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
M3100VA	30 ~ 100	± 1.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
M3200VA	30 ~ 100	± 1.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
MS3150VA	30 ~ 100	± 1.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
MS3400VA	100 ~ 300	± 2.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MS3500VA	300 ~ 1000	± 2.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MS3600VA	1000 ~ 1500	± 2.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MS3700VA	1500 ~ 2500	± 2.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MS3800VA	2500 ~ 5000	± 2.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50

* Please contact us directly for range above 5,000 SLPM

Analogue Mass Flow Meter Specifications

MODEL	Full Scale N2(slpm)	Accuracy (%FS)	Repeatability (%)	In/Out Signal (Vdc/mA)	Supply Power (Vdc)	Max Operating Pressure	Max Operating Temp(℃)
M2030VA	0.01 ~ 30	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
M2100VA	30 ~ 100	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
M2200VA	30 ~ 100	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
MS2150VA	30 ~ 100	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
MS2400VA	100 ~ 300	± 2.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MS2500VA	300 ~ 1000	± 2.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MS2600VA	1000 ~ 1500	± 2.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MS2700VA	1500 ~ 2500	± 2.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MS2800VA	2500 ~ 5000	± 2.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50

* Please contact us directly for range above 5,000 SLPM

M3030VA

Mass Flow Controller

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

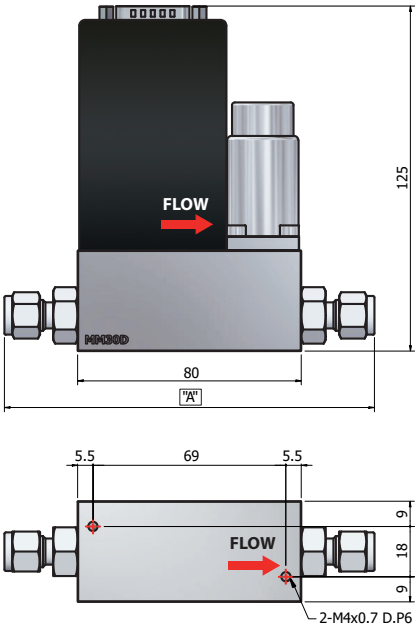
Highly Stable Removable Sensor

Compact Connection

Specifications

Model	M3030VA
Range(N2)	0.01slpm~30slpm
Response Time	〈 2 sec
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	〈 90 bar
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/8" SW	126.7
1/4" SW	128
3/8" SW	134.3
1/4" VCR	127.8



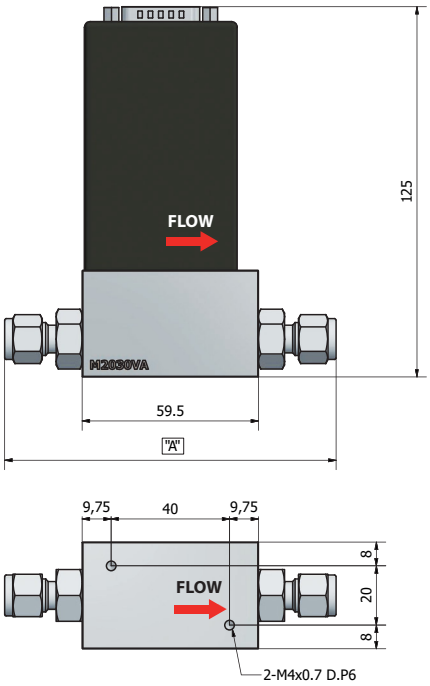
M2030VA

Mass Flow Meter

Specifications

Model	M2030VA
Range(N2)	0.01slpm~30slpm
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	〈 90 bar
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/8" SW	104.5
1/4" SW	111.9
3/8" SW	115.3
1/4" VCR	107.5



Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection

M3100VA

Mass Flow Controller

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

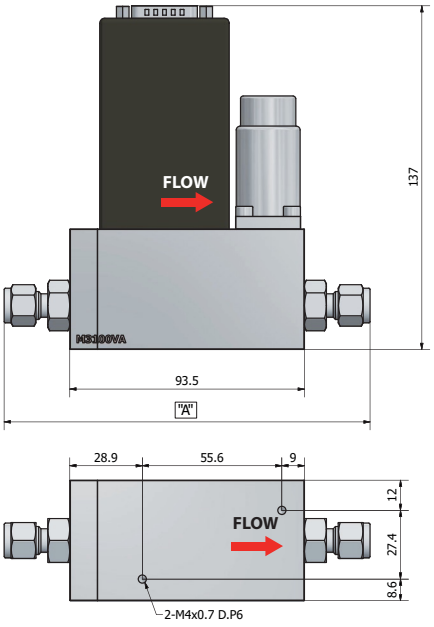
Highly Stable Removable Sensor

Compact Connection

Specifications

Model	M3100VA
Range(N2)	30slpm~100slpm
Response Time	〈 2 sec
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	〈 90 bar
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/4" SW	145.9
3/8" SW	149.3
1/2" SW	161.5
1/4" VCR	141.5
1/2" VCR	149



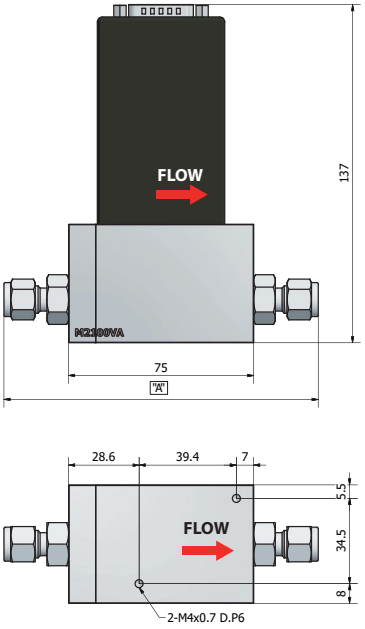
M2100VA

Mass Flow Meter

Specifications

Model	M2100VA
Range(N2)	30slpm~100slpm
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	〈 90 bar
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/4" SW	127.4
3/8" SW	130.8
1/2" SW	143
1/4" VCR	123
1/2" VCR	130.5



Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

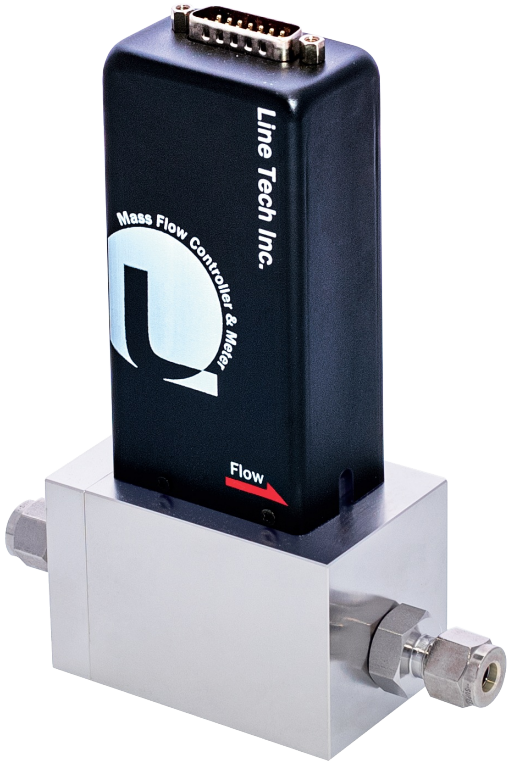
Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection



M3200VA

Mass Flow Controller

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

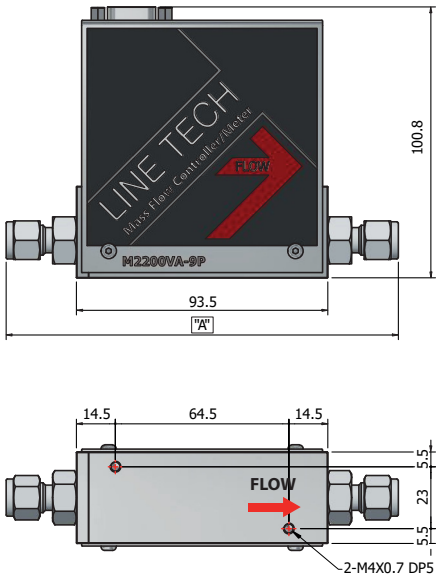
Highly Stable Removable Sensor

Compact Connection

Specifications

Model	M3200VA
Range(N2)	30slpm~100slpm
Response Time	〈 2 sec
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	〈 90 bar
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9} atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/4"SW	145.9
3/8"SW	149.3
1/4"VCR	141.5



M2200VA

Mass Flow Meter

Specifications

Model	M2200VA
Range(N2)	30slpm~100slpm
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	〈 90 bar
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9} atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/4"SW	145.9
3/8"SW	149.3
1/4"VCR	141.5

Features

Accurate at Low Flow

Fast Response

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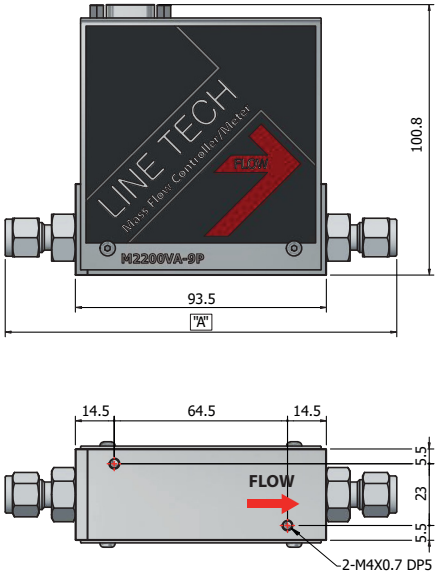
Compact Connection



MS3150VA

Mass Flow Controller

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

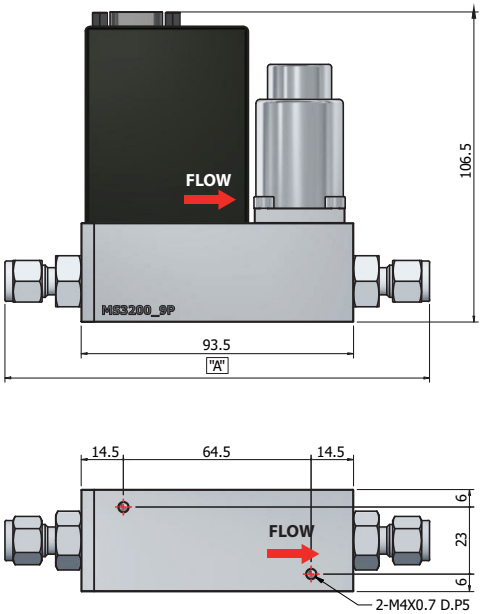
Highly Stable Removable Sensor

Compact Connection

Specifications

Model	MS3150VA
Range(N2)	30slpm~100slpm
Response Time	〈 2 sec
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	〈 90 bar
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9} atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/4"SW	145.9
3/8"SW	149.3
1/4"VCR	141.5



MS2150VA

Mass Flow Meter

Specifications

Model	MS2150VA
Range(N2)	30slpm~100slpm
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	〈 90 bar
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9} atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/4"SW	145.9
3/8"SW	149.3
1/4"VCR	141.5

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

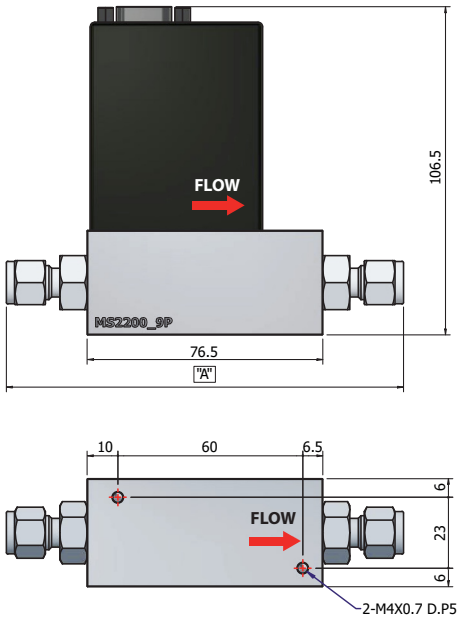
Excellent Linearity

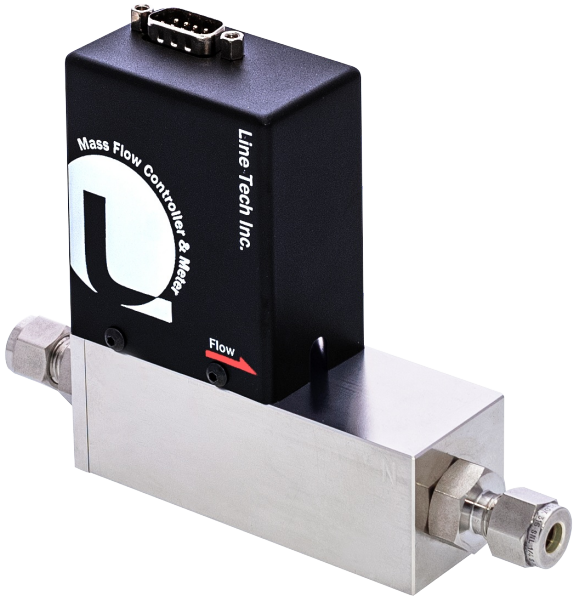
Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection





MS3400VA

Mass Flow Controller

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

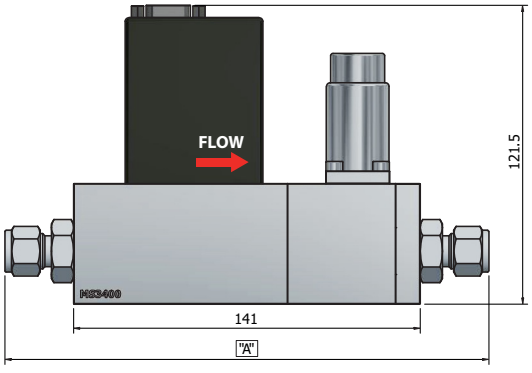
Highly Stable Removable Sensor

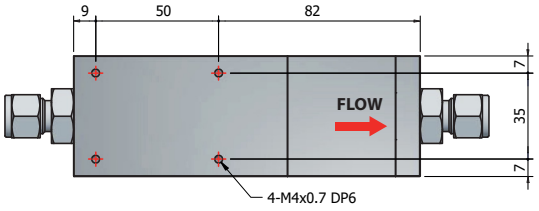
Compact Connection

Specifications

Model	MS3400VA
Range(N2)	100slpm~300slpm
Response Time	〈 2 sec
Accuracy	±2% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9} atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
3/8"SW	196.7
1/2"SW	209
3/4"SW	210.6
1/2"VCR	196.5





Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

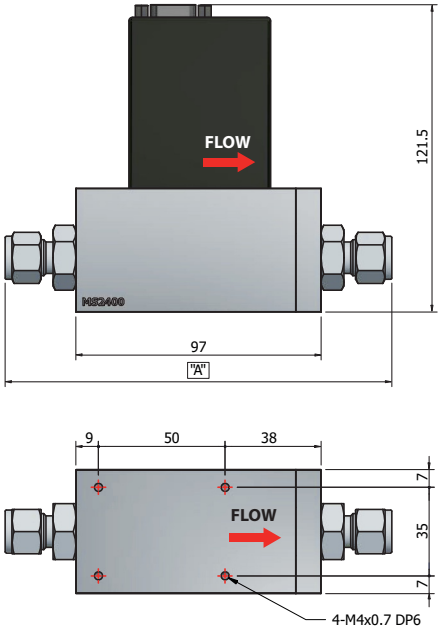
MS2400VA

Mass Flow Meter

Specifications

Model	MS2400VA
Range(N2)	100slpm~300slpm
Accuracy	±2% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
3/8"SW	152.8
1/2"SW	165
3/4"SW	166.6
1/2"VCR	152.5



Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

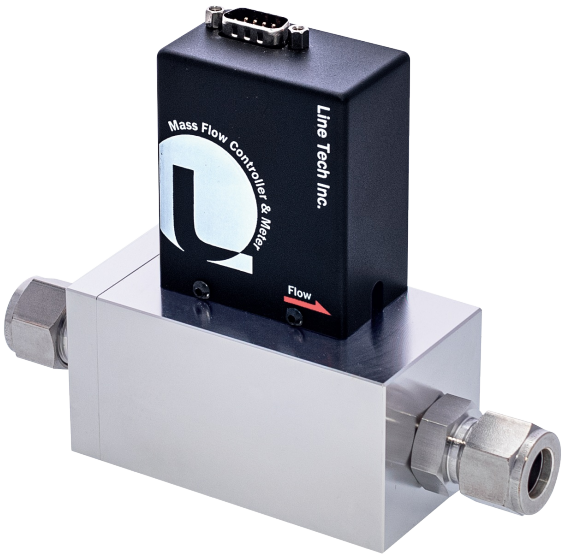
Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection



MS3500VA

Mass Flow Controller

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

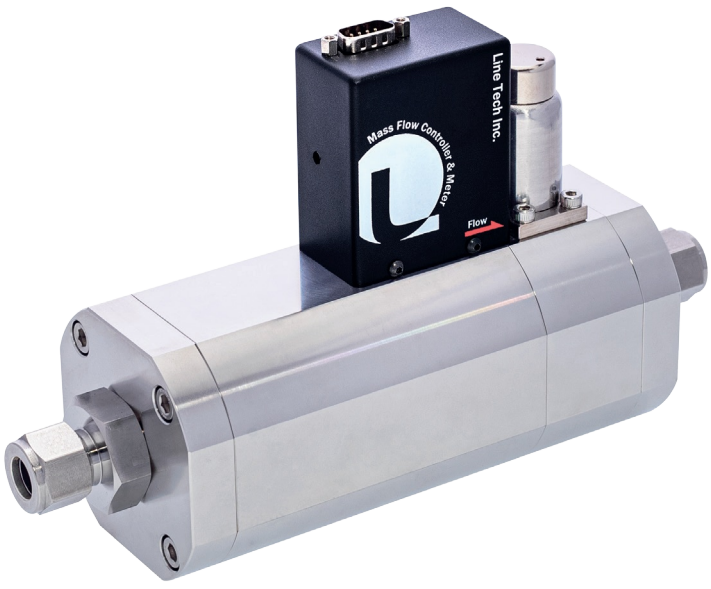
Highly Stable Removable Sensor

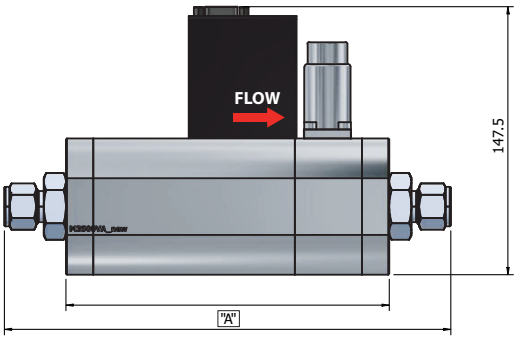
Compact Connection

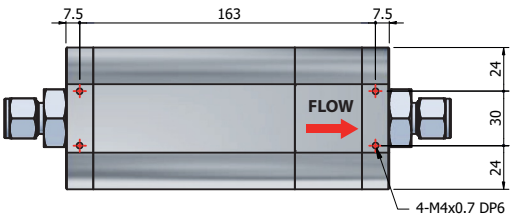
Specifications

Model	MS3500VA
Range(N2)	300slpm~1000slpm
Response Time	〈 2 sec
Accuracy	±2% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9} atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/2" SW	246
3/4" SW	247.6
1" SW	254.6







Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

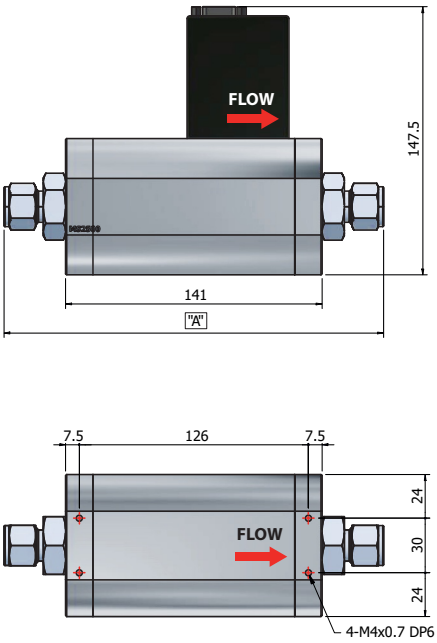
MS2500VA

Mass Flow Meter

Specifications

Model	MS2500VA
Range(N2)	300slpm~1000slpm
Accuracy	±2% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9} atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/2" SW	209
3/4" SW	210.6
1" SW	217.6



Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection

MS3600VA

Mass Flow Controller

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

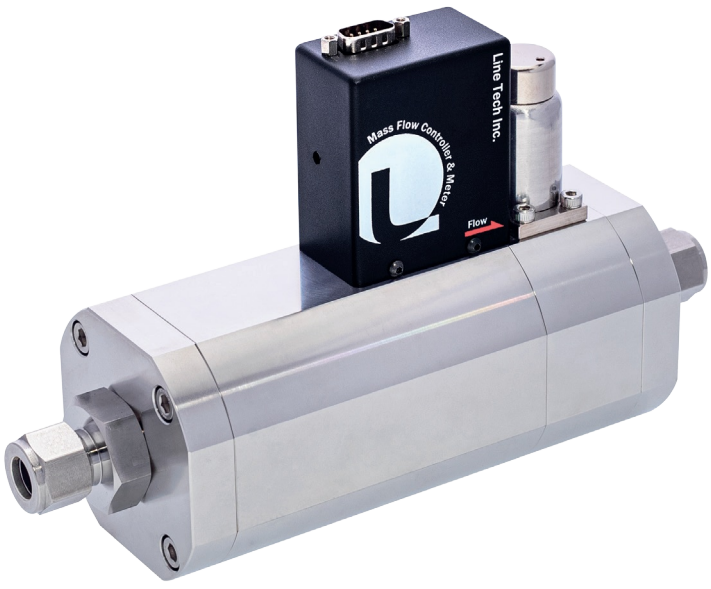
Highly Stable Removable Sensor

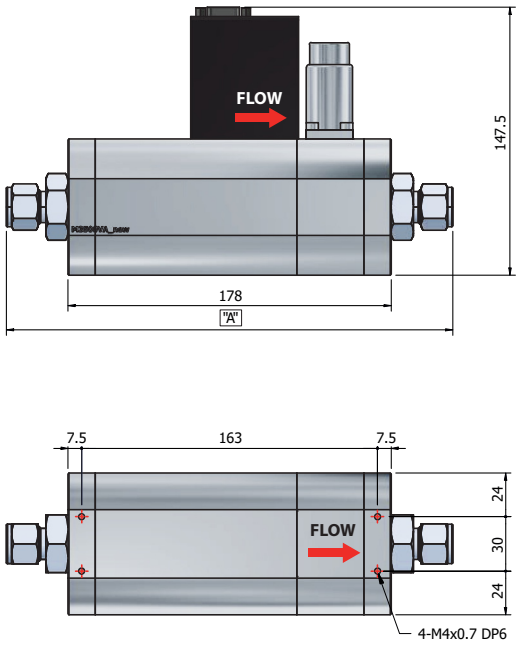
Compact Connection

Specifications

Model	MS3600VA
Range(N2)	1000slpm~1500slpm
Response Time	〈 2 sec
Accuracy	±2% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	“A” Dimension(mm)
1/2" SW	246
3/4" SW	247.6
1" SW	254.6





Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

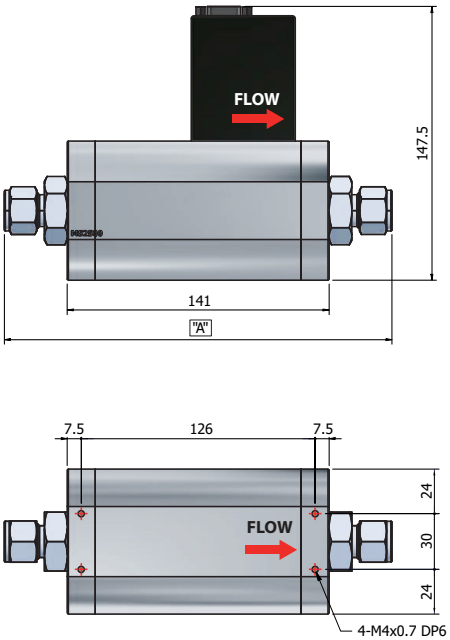
MS2600VA

Mass Flow Meter

Specifications

Model	MS2600VA
Range(N2)	1000slpm~1500slpm
Accuracy	±2% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/2" SW	209
3/4" SW	210.6
1" SW	217.6



Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection

MS3700VA

Mass Flow Controller

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

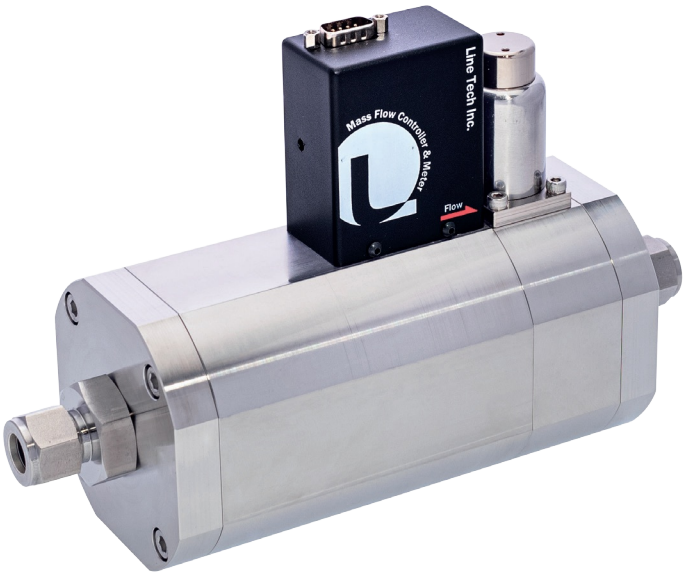
Highly Stable Removable Sensor

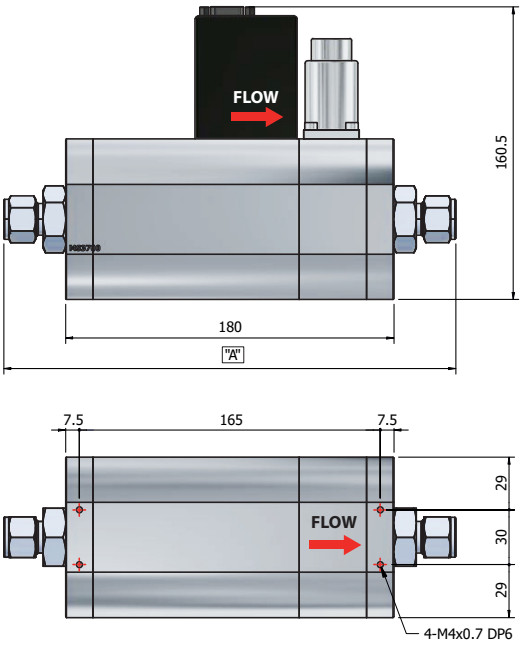
Compact Connection

Specifications

Model	MS3700VA
Range(N2)	1500slpm~2500slpm
Response Time	〈 2 sec
Accuracy	±2% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/2" SW	248
3/4" SW	249.6
1" SW	256.6





Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

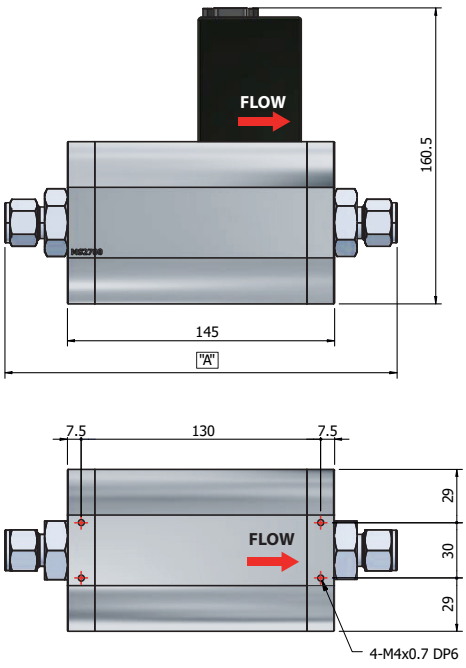
MS2700VA

Mass Flow Meter

Specifications

Model	MS2700VA
Range(N2)	1500slpm~2500slpm
Response Time	〈 2 sec
Accuracy	±2% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/2" SW	213
3/4" SW	214.6
1" SW	221.6



Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection

MS3800VA

Mass Flow Controller

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

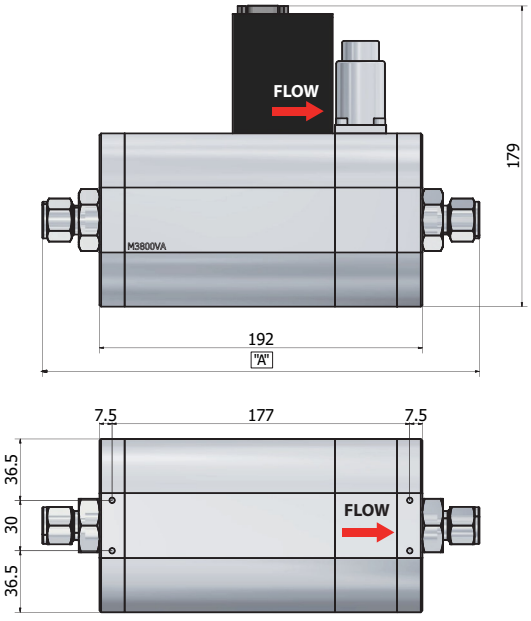
Compact Connection

Specifications

Model	MS3800VA
Range(N2)	2500slpm~5000slpm
Response Time	〈 2 sec
Accuracy	±2% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/2" SW	257
3/4" SW	259.8
1" SW	267.8

* Please contact us directly for range above 5,000 SLPM



Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

MS2800VA

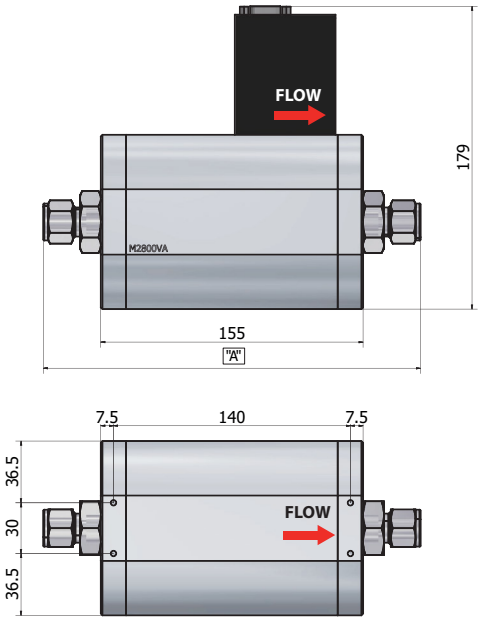
Mass Flow Meter

Specifications

Model	MS2800VA
Range(N2)	2500slpm~5000slpm
Response Time	〈 2 sec
Accuracy	±2% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/2" SW	215
3/4" SW	217
1" SW	225.8

* Please contact us directly for range above 5,000 SLPM



Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection

02

DIGITAL

MFC / MFM

Mass Flow Controller & Meter

02

DIGITAL
MFC / MFM
Mass Flow Controller & Meter

Digital Mass Flow Controller Specifications

MODEL	Full Scale N2(slpm)	Accuracy (%FS)	Repeatability (%)	Response Time(sec)	In/Out Signal (Vdc/mA)	Supply Power (Vdc)	Max Operating Pressure	Max Operating Temp(℃)
MD30C	0.01 ~ 30	± 0.25	± 0.25	〈 1	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
MD100C	30 ~ 100	± 0.25	± 0.25	〈 1	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
MD400C	100 ~ 300	± 1.0	± 0.25	〈 1	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MD500C	300 ~ 1000	± 1.0	± 0.25	〈 1	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MD600C	1000 ~ 1500	± 1.0	± 0.25	〈 1	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MD700C	1500 ~ 2500	± 1.0	± 0.25	〈 1	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MD800C	2500 ~ 5000	± 1.0	± 0.25	〈 1	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50

* Please contact us directly for range above 5,000 SLPM

Digital Mass Flow Meter Specifications

MODEL	Full Scale N2(slpm)	Accuracy (%FS)	Repeatability (%)	In/Out Signal (Vdc/mA)	Supply Power (Vdc)	Max Operating Pressure	Max Operating Temp(℃)
MD30M	0.01 ~ 30	± 0.25	± 0.25	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
MD100M	30 ~ 100	± 0.25	± 0.25	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
MD400M	100 ~ 300	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MD500M	300 ~ 1000	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MD600M	1000 ~ 1500	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MD700M	1500 ~ 2500	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50
MD800M	2500 ~ 5000	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50

* Please contact us directly for range above 5,000 SLPM

MD30C

Digital Mass Flow Controller

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection

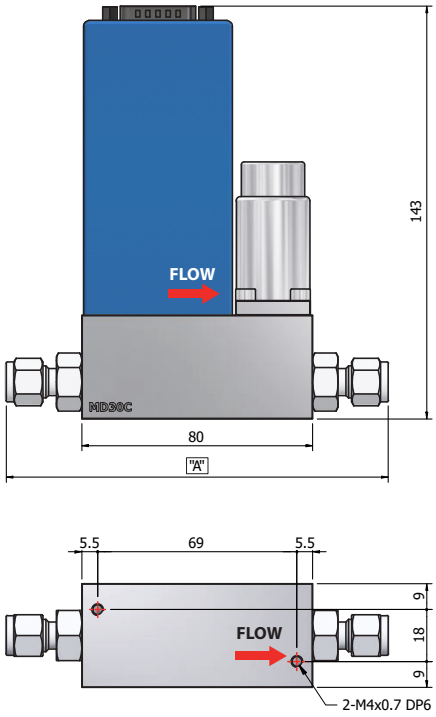
Digital Communication : [PIN14,15]

RS -485 Communication
Baud rate : 38400bps
Date : 8Bit
Stop Bite : 1Bit
Parity : None

Specifications

Model	MD30C
Range(N2)	0.01slpm~30slpm
Response Time	〈 1 sec
Accuracy	±0.25% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	〈 90 bar
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/8'' SW	126.7
1/4'' SW	128
3/8'' SW	134.3
1/4'' VCR	127.8



MD30M

Digital Mass Flow Meter

Specifications

Model	MD30M
Range(N2)	0.01slpm~30slpm
Accuracy	±0.25% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA≡
Max Operating Pressure	〈 90 bar
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/8" SW	104.5
1/4" SW	111.9
3/8" SW	115.3
1/4" VCR	107.5

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection

Digital Communication : [PIN14,15]

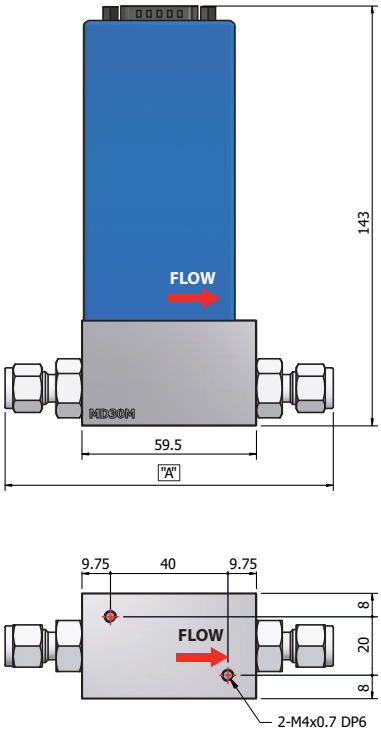
RS -485 Communication

Baud rate : 38400bps

Date : 8Bit

Stop Bite : 1Bit

Parity : None



MD100C

Digital Mass Flow Controller

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection

Digital Communication : [PIN14,15]

RS -485 Communication

Baud rate : 38400bps

Date : 8Bit

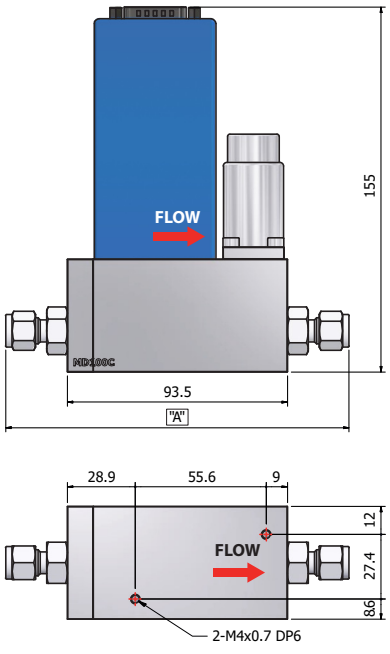
Stop Bite : 1Bit

Parity : None

Specifications

Model	MD100C
Range(N2)	30slpm~100slpm
Response Time	〈 1 sec
Accuracy	±0.25% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	〈 90 bar
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/4" SW	145.9
3/8" SW	149.3
1/2" SW	161.5
1/4" VCR	141.5
1/2" VCR	149



MD100M

Digital Mass Flow Meter

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection

Specifications

Model	MD100M
Range(N2)	30slpm~100slpm
Accuracy	±0.25% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	〈 90 bar
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/4" SW	127.4
3/8" SW	130.8
1/2" SW	143
1/4" VCR	123
1/2" VCR	130.5

Digital Communication : [PIN14,15]

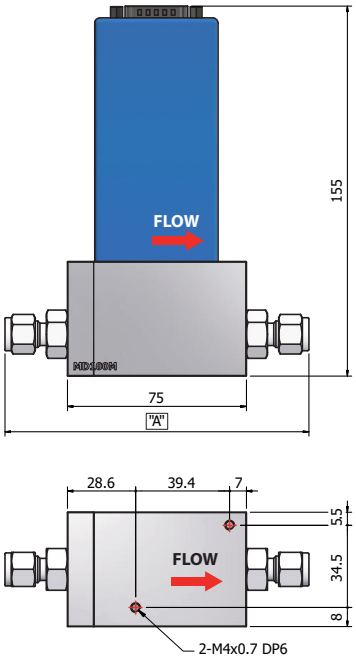
RS -485 Communication

Baud rate : 38400bps

Date : 8Bit

Stop Bite : 1Bit

Parity : None



MD400C

Digital Mass Flow Controller

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection

Digital Communication : [PIN14,15]

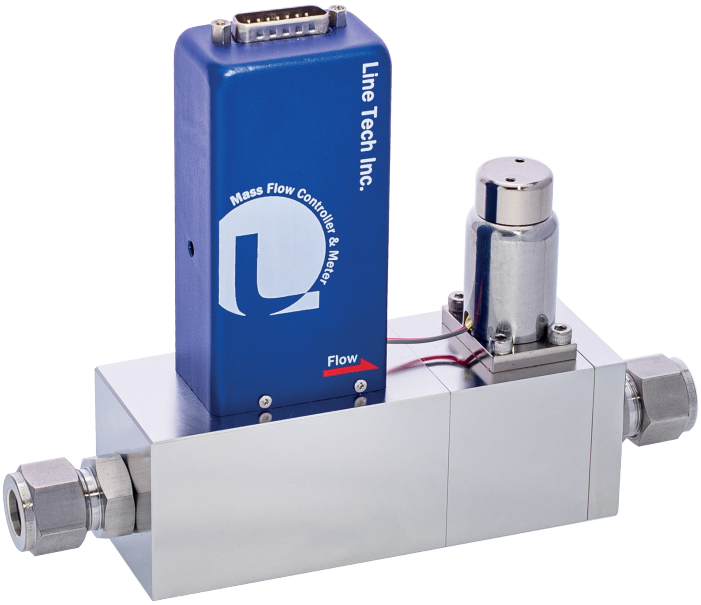
RS -485 Communication

Baud rate : 38400bps

Date : 8Bit

Stop Bite : 1Bit

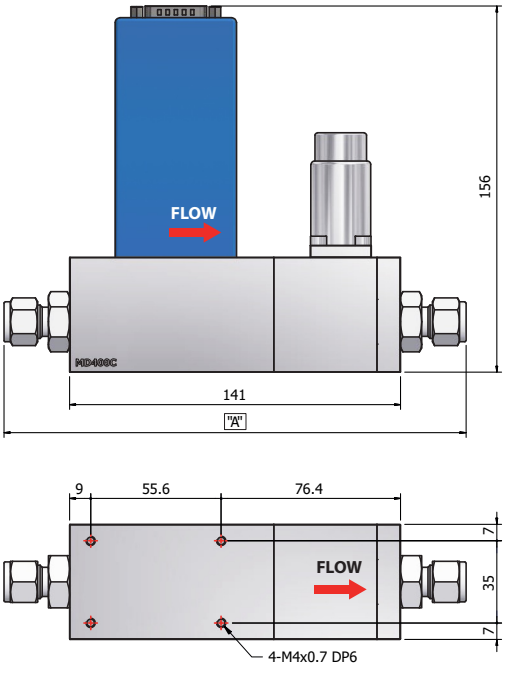
Parity : None



Specifications

Model	MD400C
Range(N2)	100slpm~300slpm
Response Time	〈 1 sec
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	“A” Dimension(mm)
3/8"SWG	196.8
1/2"SWG	209
3/4"SWG	210.6
1/2"VCR	196.5



Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

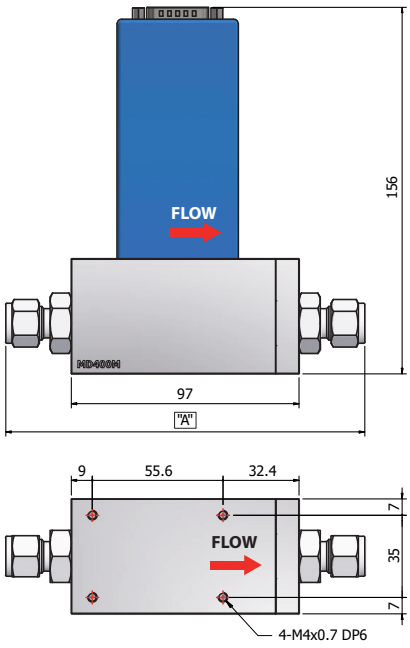
MD400M

Digital Mass Flow Meter

Specifications

Model	MD400M
Range(N2)	100slpm~300slpm
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9} atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
3/8"SWG	152.8
1/2"SWG	165
3/4"SWG	166.6
1/2"VCR	152.5



Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection

Digital Communication : [PIN14,15]

RS -485 Communication

Baud rate : 38400bps

Date : 8Bit

Stop Bite : 1Bit

Parity : None

MD500C

Digital Mass Flow Controller

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection

Digital Communication : [PIN14,15]

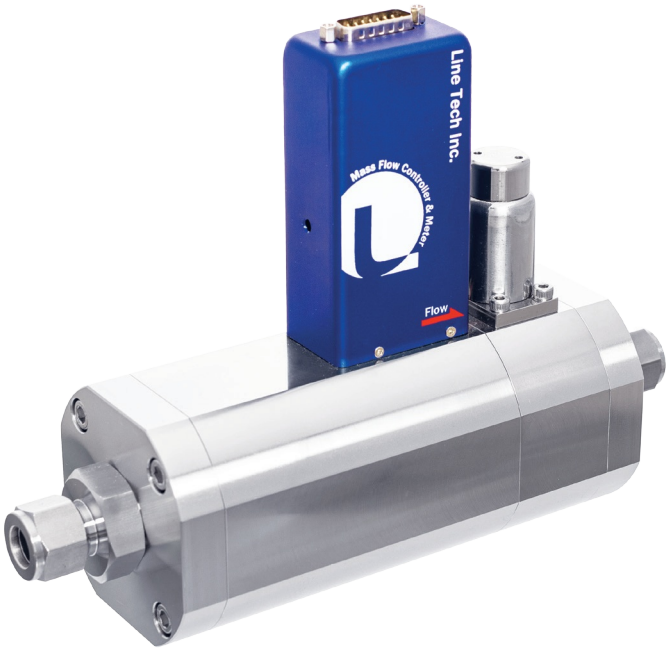
RS -485 Communication

Baud rate : 38400bps

Date : 8Bit

Stop Bite : 1Bit

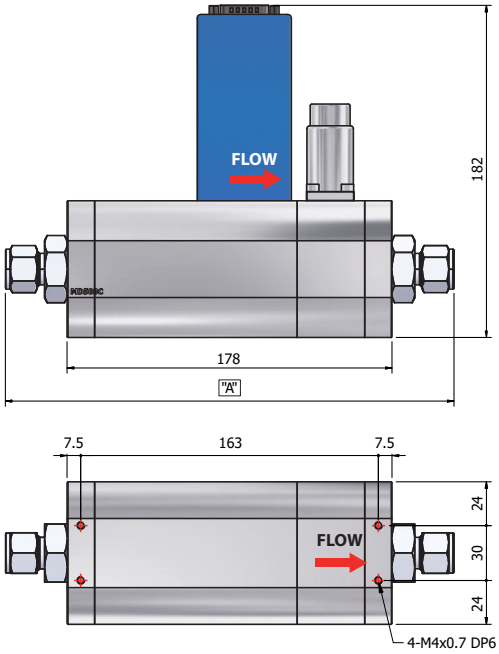
Parity : None



Specifications

Model	MD500C
Range(N2)	300slpm~1000slpm
Response Time	〈 1 sec
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/2" SW	246
3/4" SW	247.6
1" SW	254.6



Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

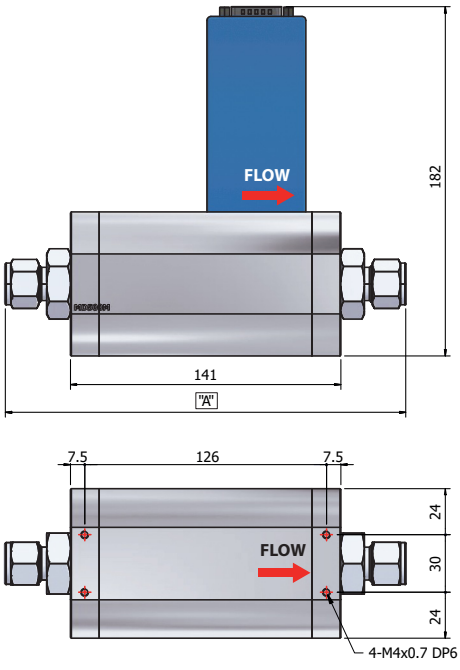
MD500M

Digital Mass Flow Meter

Specifications

Model	MD500M
Range(N2)	300slpm~1000slpm
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/2" SW	209
3/4" SW	210.6
1" SW	217.6



Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection

Digital Communication : [PIN14,15]

RS -485 Communication

Baud rate : 38400bps

Date : 8Bit

Stop Bite : 1Bit

Parity : None

MD600C

Digital Mass Flow Controller

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection

Digital Communication : [PIN14,15]

RS -485 Communication

Baud rate : 38400bps

Date : 8Bit

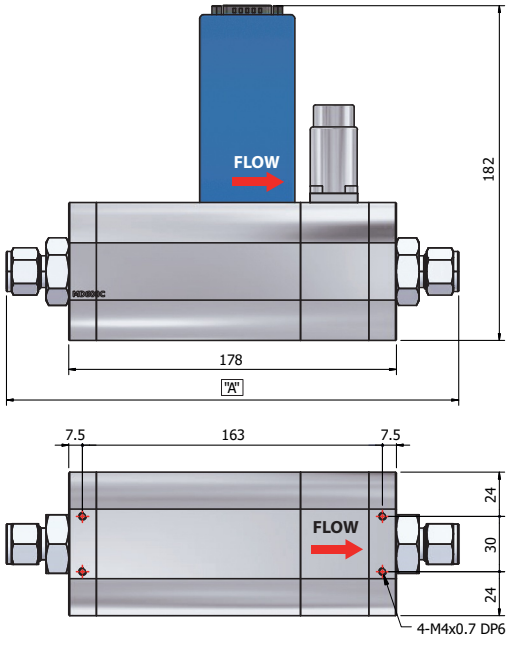
Stop Bite : 1Bit

Parity : None

Specifications

Model	MD600C
Range(N2)	1000slpm~1500slpm
Response Time	〈 1 sec
Accuracy	± 1% of FS
Repeatability	± 0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/2" SW	246
3/4" SW	247.6
1" SW	254.6



Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

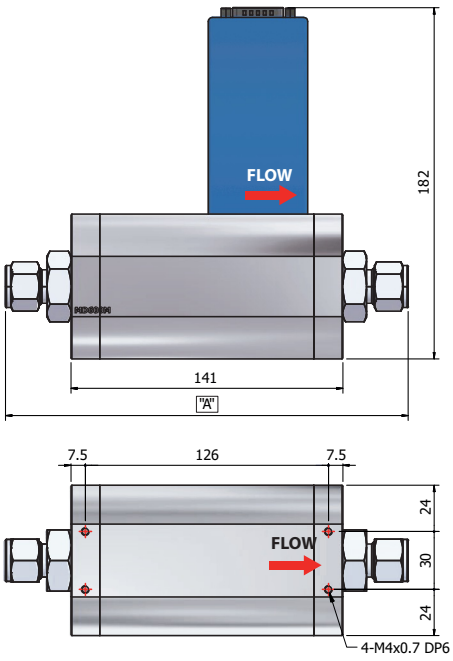
MD600M

Digital Mass Flow Meter

Specifications

Model	MD600M
Range(N2)	1000slpm~1500slpm
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/2" SW	209
3/4" SW	210.6
1" SW	217.6



Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection

Digital Communication : [PIN14,15]

RS -485 Communication

Baud rate : 38400bps

Date : 8Bit

Stop Bite : 1Bit

Parity : None

MD700C

Digital Mass Flow Controller

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection

Digital Communication : [PIN14,15]

RS -485 Communication

Baud rate : 38400bps

Date : 8Bit

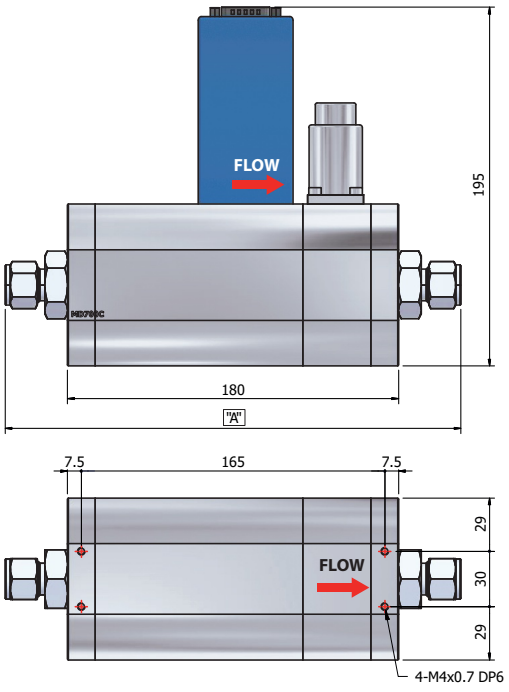
Stop Bite : 1Bit

Parity : None

Specifications

Model	MD700C
Range(N2)	1500slpm~2500slpm
Response Time	〈 1 sec
Accuracy	± 1% of FS
Repeatability	± 0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 or +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/2" SW	248
3/4" SW	249.6
1" SW	256.6



Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

MD700M

Digital Mass Flow Meter

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

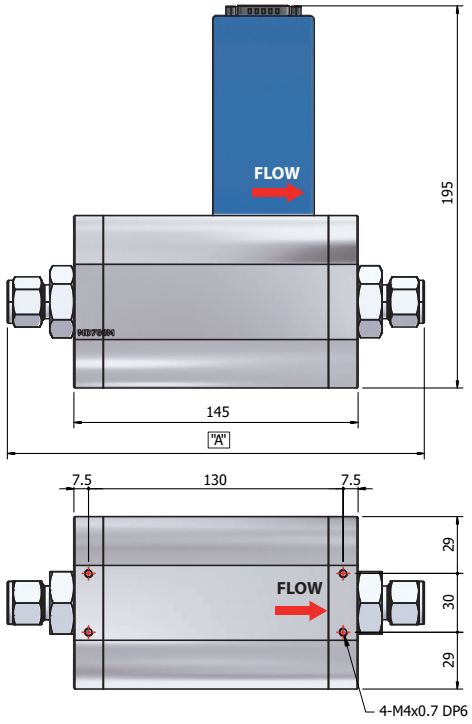
Highly Stable Removable Sensor

Compact Connection

Specifications

Model	MD700M
Range(N2)	1500slpm~2500slpm
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 or +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/2" SWG	213
3/4" SWG	214.6
1" SWG	221.6



Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

Digital Communication : [PIN14,15]

RS -485 Communication

Baud rate : 38400bps

Date : 8Bit

Parity : None

Stop Bite : 1Bit

MD800C

Digital Mass Flow Controller

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection

Digital Communication : [PIN14,15]

RS -485 Communication

Baud rate : 38400bps

Date : 8Bit

Stop Bite : 1Bit

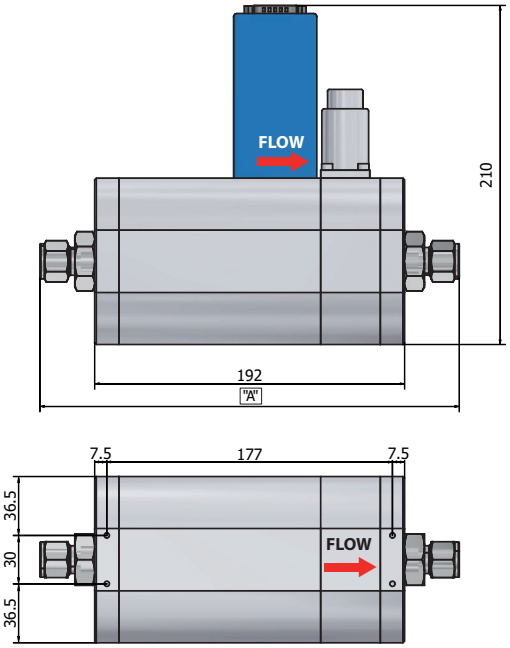
Parity : None

Specifications

Model	MD800C
Range(N2)	2500slpm~5000slpm
Response Time	〈 1 sec
Accuracy	± 1% of FS
Repeatability	± 0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/2" SW	257
3/4" SW	259.8
1" SW	267.8

* Please contact us directly for range above 5,000 SLPM



Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

MD800M

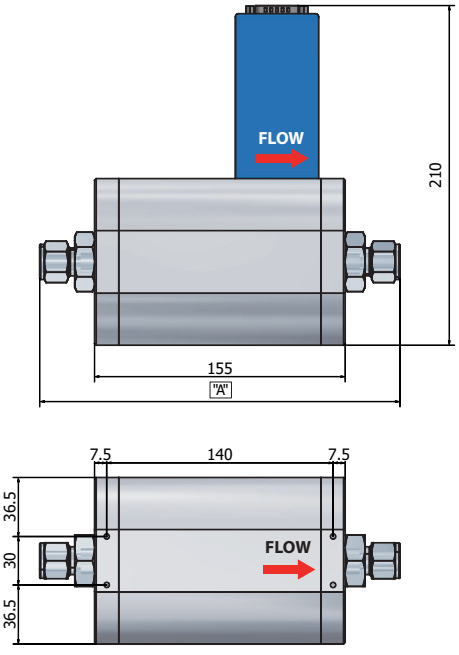
Digital Mass Flow Meter

Specifications

Model	MD800M
Range(N2)	2500slpm~5000slpm
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc, 350mA
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/2" SWG	215
3/4" SWG	217
1" SWG	225.8

* Please contact us directly for range above 5,000 SLPM



Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection

Digital Communication : [PIN14,15]

RS -485 Communication

Baud rate : 38400bps

Date : 8Bit

Parity : None

Stop Bite : 1Bit

03

Specialized Series

MFC / MFM

Mass Flow Controller & Meter

03

Specialized Series

MFC / MFM

Mass Flow Controller & Meter

Specialized Mass Flow Controller Specifications

MODEL	Full Scale N2(slpm)	Accuracy (%FS)	Repeatability (%)	Response Time(sec)	In/Out Signal (Vdc/mA)	Supply Power (Vdc)	Max Operating Pressure	Max Operating Temp(℃)
LD030C	0.01 ~ 30	± 1.0	± 0.25	〈 2	0~5 Vdc	+15 ~ 24	〈 90 bar	0 ~ 50
LM030C	0.01 ~ 30	± 1.0	± 0.25	〈 1	0~5 or 4~20	+15 ~ 24	〈 10 bar	0 ~ 50
EX070C	0.01 ~ 100	± 1.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
EX1000C	100 ~ 1000	± 2.0	± 0.25	〈 2	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50

Specialized Types Mass Flow Meter Specifications

MODEL	Full Scale N2(slpm)	Accuracy (%FS)	Repeatability (%)	In/Out Signal (Vdc/mA)	Supply Power (Vdc)	Max Operating Pressure	Max Operating Temp(℃)
LD030M	0.01 ~ 30	± 1.0	± 0.25	0~5 Vdc	+15 ~ 24	〈 90 bar	0 ~ 50
LM030M	0.01 ~ 30	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	〈 10 bar	0 ~ 50
EX070M	0.01 ~ 100	± 1.0	± 0.25	0~5 or 4~20	+15 ~ 24	〈 90 bar	0 ~ 50
EX1000M	100 ~ 1000	± 2.0	± 0.25	0~5 or 4~20	+15 ~ 24	inquiry	0 ~ 50

LD030C

Mass Flow Controller with Display

Features

Accurate Real Time Flow Measurements

Real Time Setting Changes

Fast Response

Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

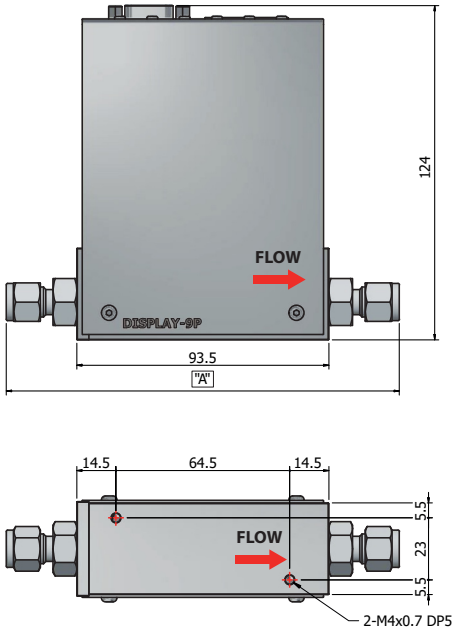
Highly Stable Removable Sensor

Compact Connection

Specifications

Model	LD030C
Range(N2)	0.01slpm~30slpm
Response Time	〈 2 sec
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc
Supply Power	+15 or +24Vdc, 350mA
Max Operating Pressure	〈 90 bar
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/8" SW	140.2
1/4" SW	141.5
3/8" SW	147.8
1/4" VCR	141.3



LD030M

MEMS Tech Mass Flow Meter

Specifications

Model	LD030M
Range(N2)	0.01slpm~30slpm
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc
Supply Power	+15 or +24Vdc, 350mA
Max Operating Pressure	〈 90 bar
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/8" SW	140.2
1/4" SW	141.5
3/8" SW	147.8
1/4" VCR	141.3

Features

Real Time Flow Measurements

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

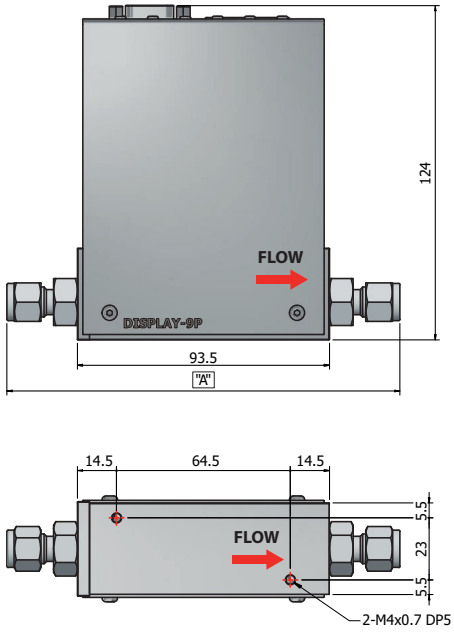
Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Compact Connection



LM030C

MEMS Tech Mass Flow Controller

Features

Accurate at Low Flow

Outstanding Cost Efficiency

Improved Response Time

Wide Pressure Range Compatibility

Excellent Linearity

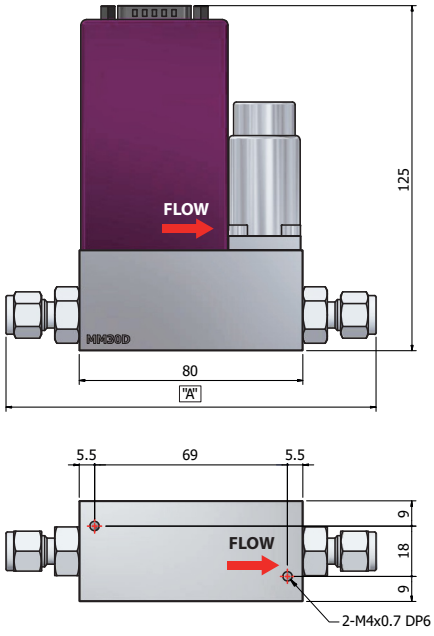
Long-Term Stability

Compact Connection

Specifications

Model	LM030C
Range(N2)	0.01slpm~30slpm
Response Time	〈 1 sec
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc
Max Operating Pressure	〈 10 bar
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/8" SW	126.7
1/4" SW	128
3/8" SW	134.3
1/4" VCR	127.8



LM030M

MEMS Tech Mass Flow Meter

Specifications

Model	LM030M
Range(N2)	0.01slpm~30slpm
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc
Max Operating Pressure	〈 10 bar
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/8" SW	106.2
1/4" SW	107.5
3/8" SW	113.8
1/4" VCR	107.3

Features

Accurate at Low Flow

Outstanding Cost Efficiency

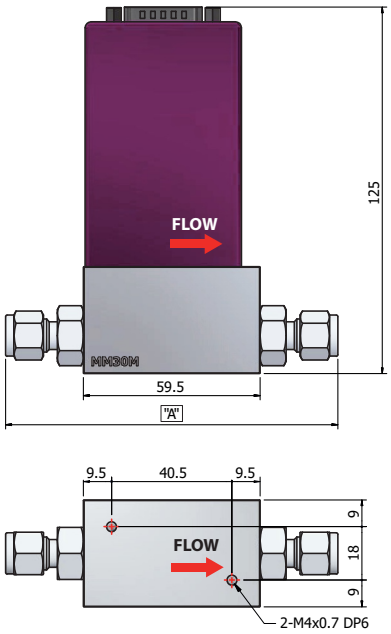
Improved Response Time

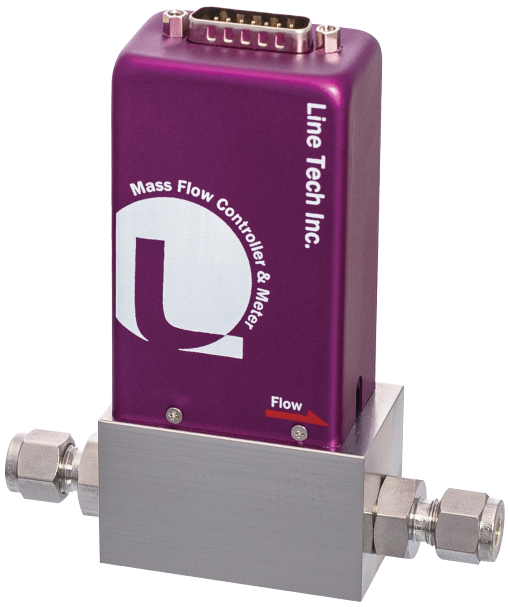
Wide Pressure Range Compatibility

Excellent Linearity

Long-Term Stability

Compact Connection





EX070C

Ex-Proof Mass Flow Controller

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Robust Industrial Construction

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

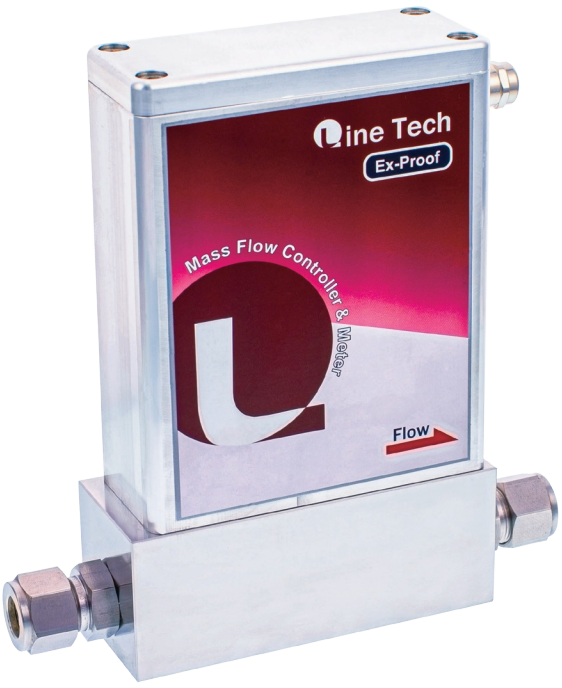
Highly Stable Removable Sensor

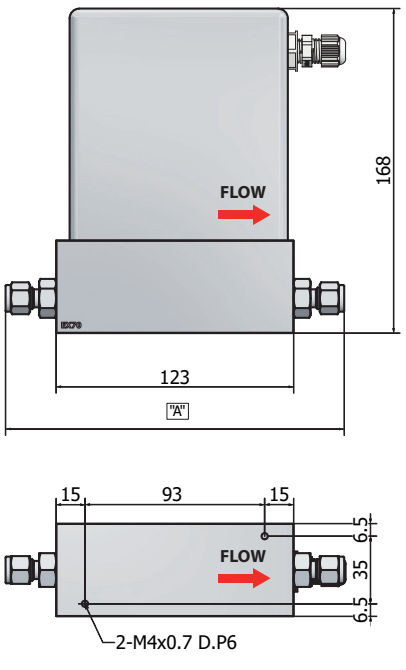
- **Safe for Hazardous Environment**
- **Ex ec IIC T4 Gc**
- **IP 65 Grade**

Specifications

Model	EX070C
Range(N2)	0.01slpm~100slpm
Response Time	〈 2 sec
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc
Max Operating Pressure	〈 90 bar
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
3/8"SW	178.8
1/2"SW	191
3/4"SW	192.6





EX070M

Ex-Proof Mass Flow Meter

Specifications

Model	EX070M
Range(N2)	0.01slpm~100slpm
Accuracy	±1% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc
Max Operating Pressure	〈 90 bar
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9} atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
3/8"SWG	197
1/2"SWG	206
3/4"SWG	209

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Robust Industrial Construction

Excellent Linearity

Long-Term Stability

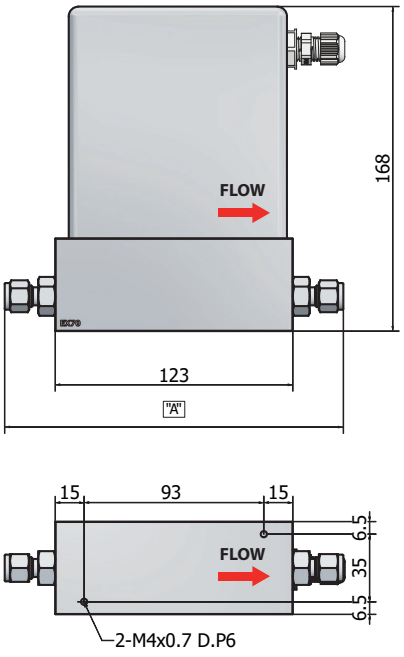
High Corrosion Resistance

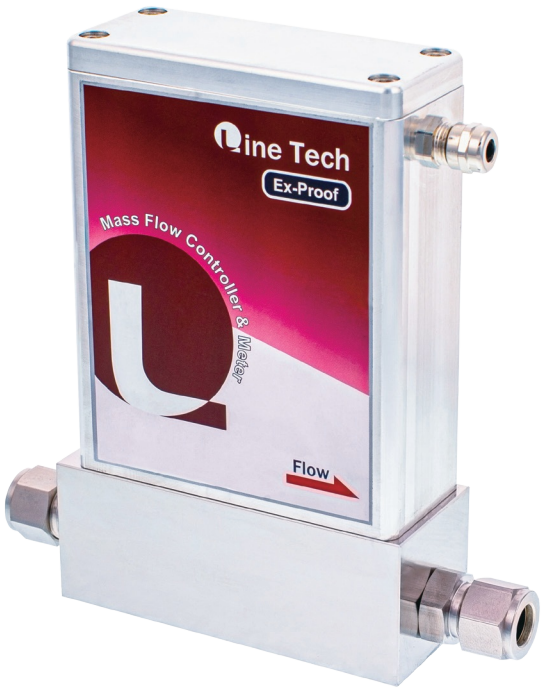
Highly Stable Removable Sensor

Safe for Hazardous Environment •

Ex ec IIC T4 Gc •

IP 65 Grade •





EX1000C

Ex-Proof Mass Flow Controller

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Robust Industrial Construction

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

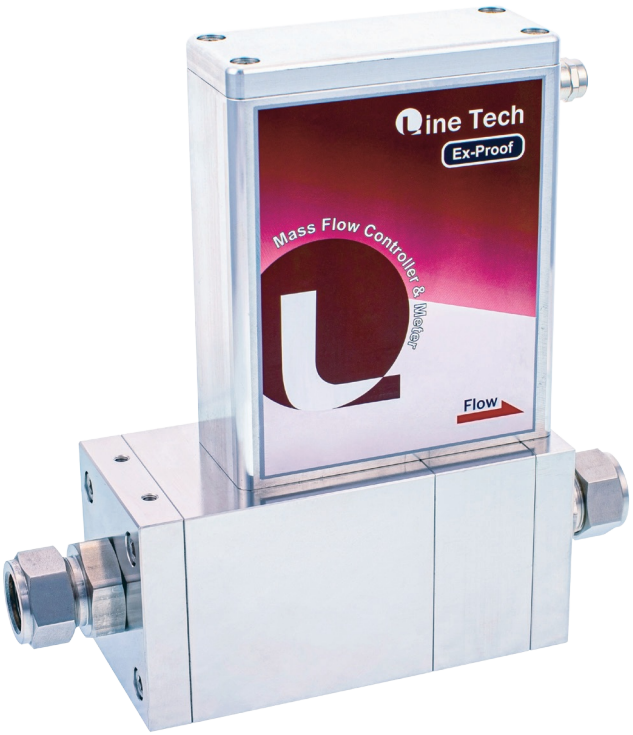
Highly Stable Removable Sensor

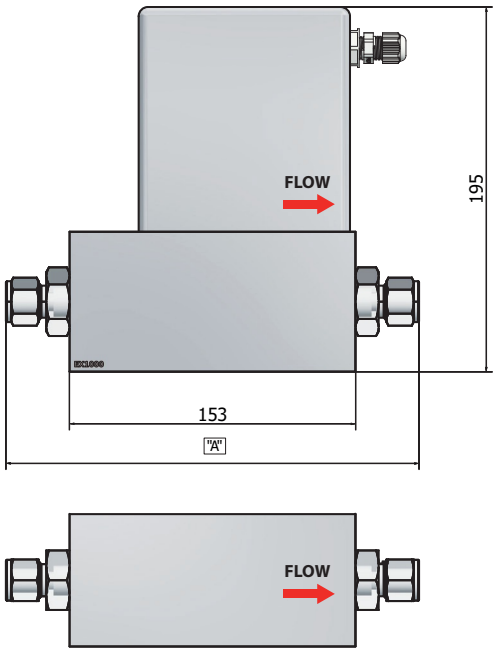
- **Safe for Hazardous Environment**
- **Ex ec IIC T4 Gc**
- **IP 65 Grade**

Specifications

Model	EX1000C
Range(N2)	100slpm~1000slpm
Response Time	〈 2 sec
Accuracy	± 2% of FS
Repeatability	± 0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/2" SW	221
3/4" SW	222.6
1" SW	229.6





Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

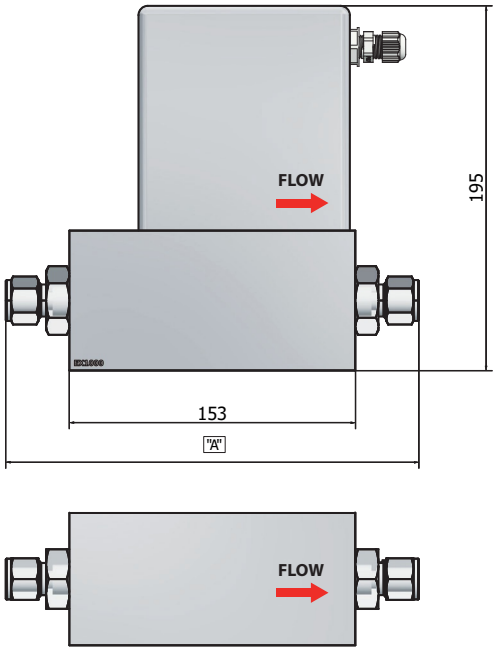
EX1000M

MEMS Tech Mass Flow Meter

Specifications

Model	EX1000M
Range(N2)	100slpm~1000slpm
Accuracy	±2% of FS
Repeatability	±0.25%
In/Out Signal	0~5Vdc or 4~20mA
Supply Power	+15 ~ +24Vdc
Max Operating Pressure	inquiry
Max Operating Temp	0~50℃
Leak Rate	1×10^{-9}atm. cc/sec
Control Range	3~100%

Connection	"A" Dimension(mm)
1/2" SW	218
3/4" SW	221
1" SW	229.8



Greater than 40 psig (2.76 bar) inlet pressure required for flows greater than 100 slpm N2 equivalent

Features

Accurate at Low Flow

Fast Response

Wide Pressure Range Compatibility

Robust Industrial Construction

Excellent Linearity

Long-Term Stability

High Corrosion Resistance

Highly Stable Removable Sensor

Safe for Hazardous Environment •

Ex ec IIC T4 Gc •

IP 65 Grade •

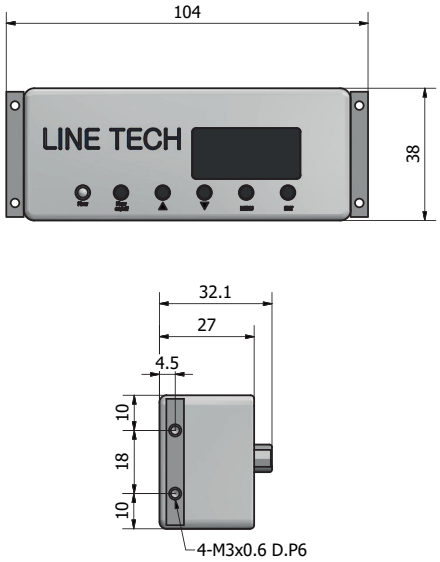
04

Other Devices / Parts

LTI-200

Read Out Box

Specifications



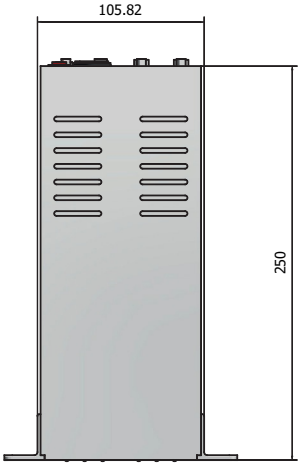
Model	LTI-200
Input Power	15Vdc ~ 24Vdc
Output Power	+15Vdc@500mA
Display Window	4Digit-7Segment
Display Repeatability	≤ ± 1.0% of Full Scale
Output Signal	0~5Vdc
Units of Display	SCCM, SLM, %
Set-Point	0~5Vdc for Full Scale
Flow On/off	Input Signal(TTL)
Flow Out Signal	0~5Vdc
Communication	RS485(Option)

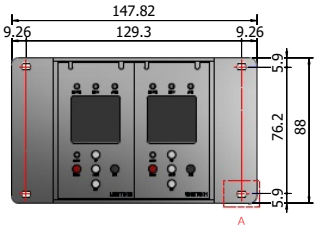
LTI-1000

Read Out Box

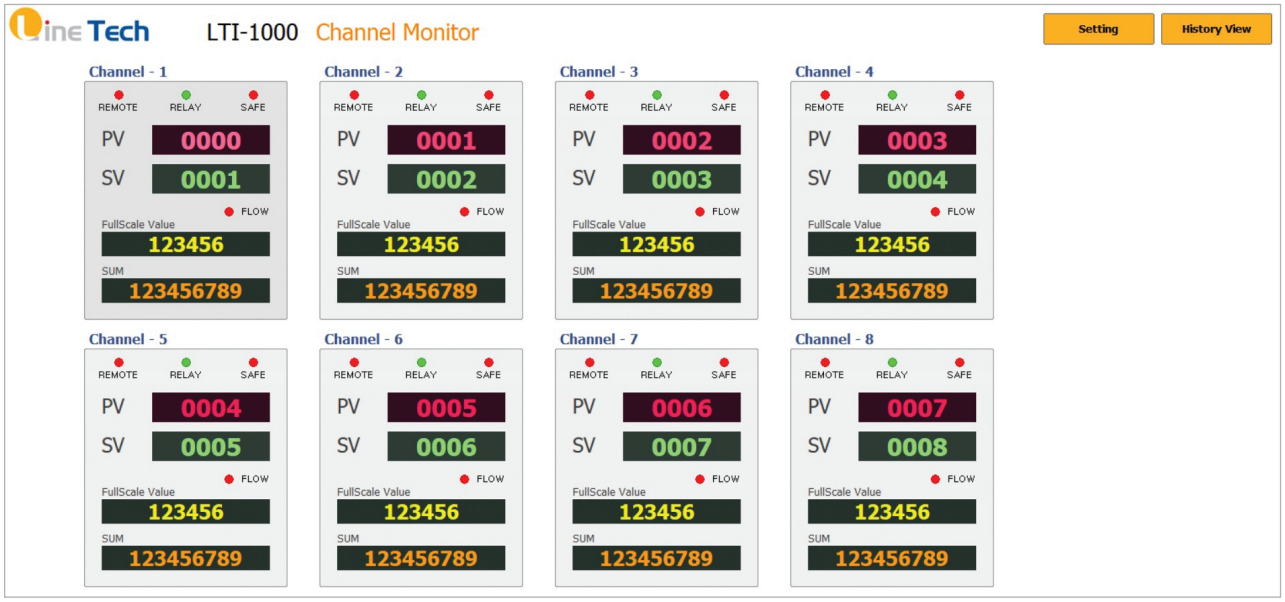
Specifications

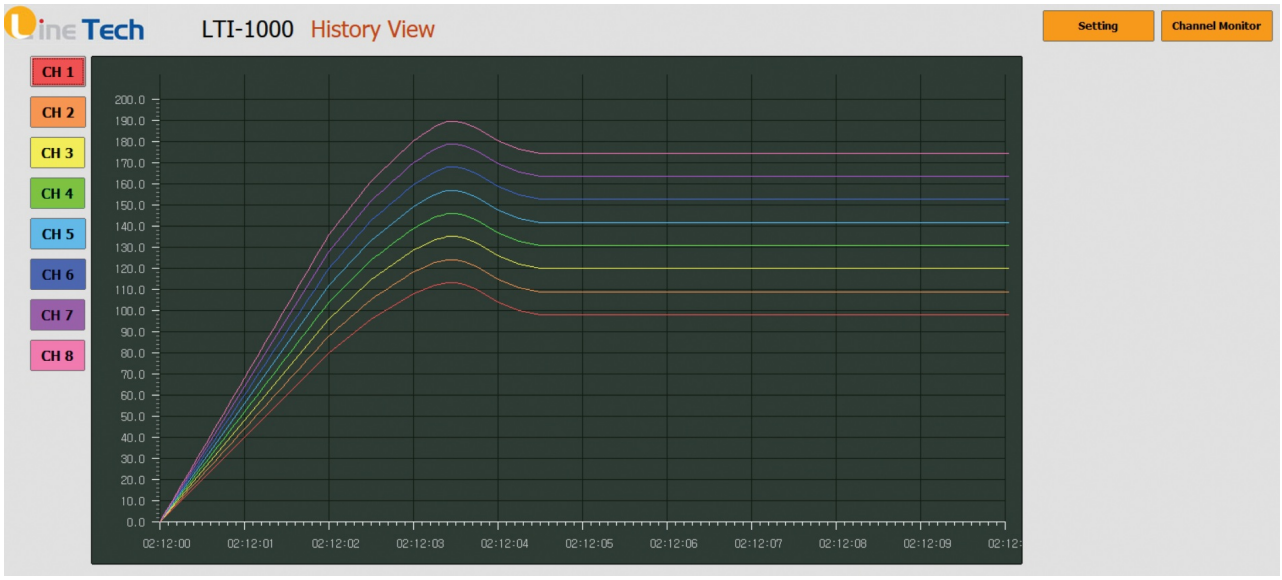
Model	LTI-1000
Input Power	220VAC(50~60Hz)
Output Power	±15VDC@500mA(Option±24VDC)
Display Window	4Digit -7Segment
Display Repeatability	≤±1.0% of Full Scale
Output Signal	0~5Vdc(Option 4-20mA)
Units of Display	SCCM, SLM, %
Remote Control	D-SUB 9PIN(Male)
1) Set-Point	0~5Vdc for Full Scale
2) Flow On/Off	Input Signal (TTL)
3) Flow Out Signal	0~5Vdc (Option;4-20mA)
4) Relay Contact Rate	1Relay (Max 24Vdc @ 1A)
5) Communication	RS-232 (9600 Baud, 8-N-1)





LTI-1000 Software



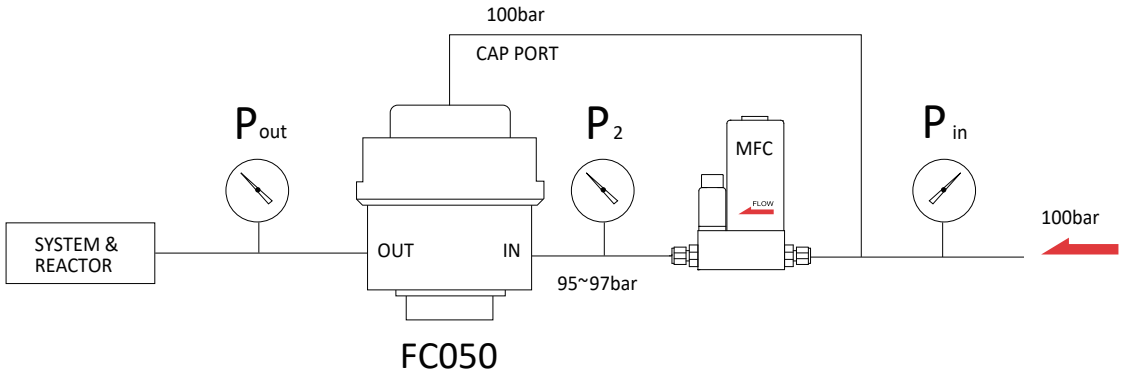


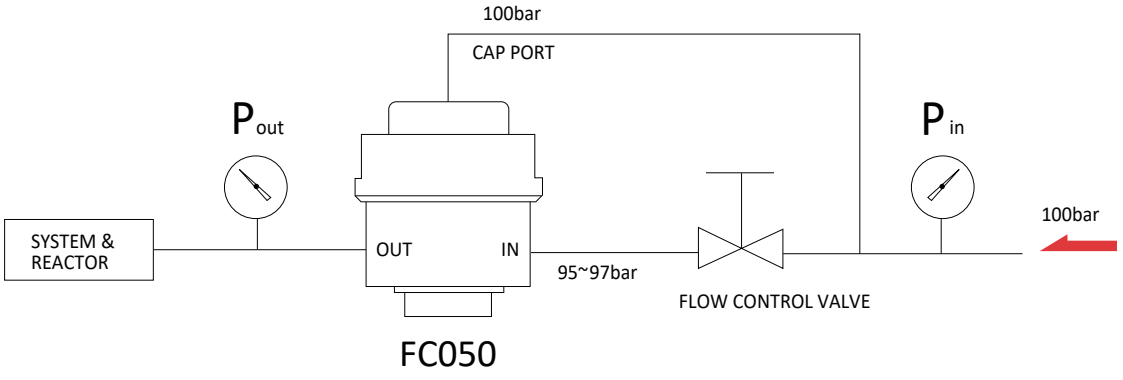
FC-050S

High Pressure, Gas or Liquid Flow Controller

Features

Auto Control Differential Pressure : 3~5 Barg
Gas Flow Range : 25sccm~50slpm
Operating Pressure Range : 15~300 Barg
Required Differential Pressure : 15 Barg
Operating Temperature Range : -20~30 ℃
Application : Corrosion Resistant



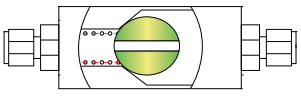


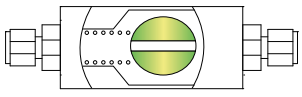
PR-030

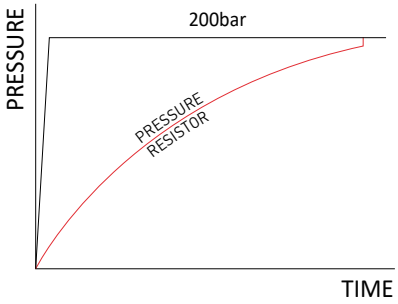
Protector Pressure Shock

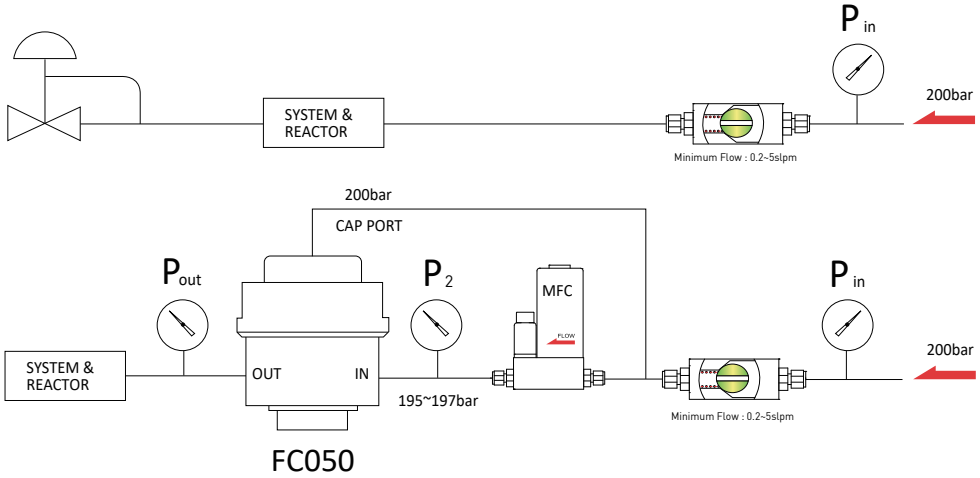
Pressure resistor

Auto Close Differential Pressure : >15 Barg
Auto Open Differential Pressure : 0.5~8 Barg
Max Gas Flow Range : 30slpm
Max Operating Pressure : < 300 Bar
Close Gas Flow Range : < 0.3~5slpm
Required Differential Pressure : 15 Barg
Operating Temperature Range :-20~100℃
Application : Corrosion Resistant


Minimum Flow : 0.2~5slpm
Fig - 1 CLOSE


FULL FANGE FLOW
Fig-1 OPEN





05

Miscellaneous

Record of excellence supported by relevant certifications

Line Tech is committed to regular testing by official bodies of standardization to ensure the quality and reliability of its products.

SMC

Standard Management Certification

LINE TECH INC.

#806, Daedeok-daero, Yuseong-gu, Daejeon, Korea

This is to certify that the Quality Management System of the above mentioned company has been found to comply with

ISO 9001:2015

Scope

Design, Development and Manufacture of Gas Mass Flow Controller & Meter

ANZSIC : 2839

Certificate Number:	**SKQ-11422**
Date of Initial Approval:	**14 June 2017**
Re-issued Date:	**13 June 2020**
Expiry Date:	**13 June 2023**

Approved by : Hyoung Jong Han

IAF MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT

This certificate is valid only if
Regulatory surveillance audit is conducted within the required time.
Standard Management System Co., Ltd.
(Baeksang Star Tower II, Gasan-dong) Rm 301, #165, Gasandigital 2-ro, Geumcheon-gu, Seoul, Korea T)+82-2-6111-6301 F)+82-2-6111-6309
Website : www.smcsmc.co.kr
JAS-ANZ : www.jas-anz.org/register

JAS-ANZ

1

EU Declaration Of Conformity

In accordance with EU Electromagnetic Compatibility Directive 2014/30/EU

For

Product: Mass Flow Controller & Mass Flow Meter
Type designation: MD700C, MD600C, MD500C, MD300C, MD100C, MD30C M3700VA, M2600VA, M3600VA, M2500VA, M3500VA, M2300VA, M3300VA, M2100VA, M3100VA, M2030VA, M3030VA, MD600M, MD500M, MD300M, MD100M, MD30M

Document No.: 2017-LT-CE
Year of Manufacture: 2017.

LINETECH INC.
#806, Daedeok-daero, Yuseong-gu, Daejeon, Korea

The equipment complies with the essential requirements of the above mentioned European Directive and following standards;

EN 61000-6-4:2007 + A1:2011
EN 61000-6-2:2005

Authorized Complier in the Community:

Date of Issue: May.08.2017
Authorized Signature:

Park J.S Team Manager
LINETECH INC.

Line Tech's Calibration Standards

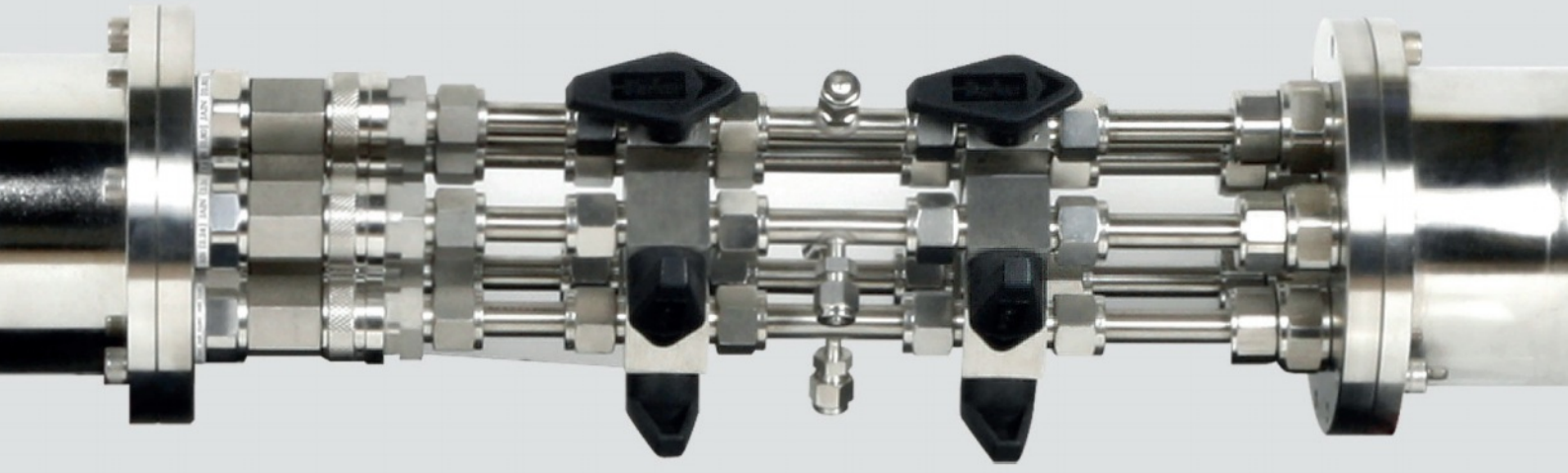
Standard Flow Measurement System

All Line Tech products are calibrated with sonic nozzle system,
the state of the art calibration instrument.

Features

Internationally Recognized Performance
Wide Measurement Range
Exceptional Accuracy
Excellent Repeatability
Convenient Mobility
Miniaturization

Description	Specification
Sonic nozzle system	Nozzle bank and 14 sonic nozzle
Flow range	0.02 SLPM ~ 3,000 SLPM
Flow control unit	Regulator (0~6 Bar)
Pressure control unit	Valve (high pressure)
Pressure sensor	2Channel (up and down stream)
System uncertainly	±0.2%



M-series Installation MANUAL

- All model's inlet and outlet connection standards are V.C.R male type and S.W.G.
- Install the equipment according to the given structure and strength conditions.
- Be sure to clean the pipe's inside by blowing high-pressured gas before connecting to MFC / MFM.

Cautions When Installing

① Check the direction of the gas flow.
② When using corrosive or inflammable gas, completely rid the system of moisture or leakage with N2 gas before usage.
③ Do not install the equipment in the presence of possible mechanical damage or vibration.

⚠ Warning !

MFC must be installed and operated with the knowledge that its valve is not applicable to stop the flow completely.

MFC/MFM Operation

- Warming Up Time

① After installation, warm up the equipment for 45 minutes to stabilize the temperature of the sensor.
② Supply gas. Check for any leakage.
③ Operate.

- Setting Up the Zero point

· The zero point may change depending on the surrounding temperature or installation structure.
· Set the final zero point only after securing the correct environment, warm-up time, and application conditions.

Analogue MS-Series Electrical Interfacing (9 pin)

Voltage

Voltage
Current

PIN NO	Function	Color	PIN CONNECTION	
			MFC	MFM
1	F.G	Green		
2	+15 ~ +24Vdc Power Supply	Red	●	●
3	Not Used	×		
4	Signal Ground	White	⊙	⊙
5	Power Ground	Blue	⊙	⊙
6	Signal Output (Option:4-20mA)	Brown	●	●
7	Ground	Black	⊙	⊙
8	Signal Input (Option:4-20mA)	Yellow	●	
9	Valve Full Open			

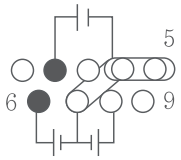
Fig-1 ⊙ Interconnected within P.C.B.

Voltage

Command and Output
Connection

- Mass Flow Controller

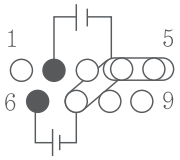
POWER +15 ~ +24Vdc



SIGNAL OUT 0~5Vdc SIGNAL IN 0~5Vdc

- Mass Flow Meter

POWER +15 ~ +24Vdc



SIGNAL OUT 0~5Vdc

VOLTAGE COMMAND AND OUTPUT CONNECTION

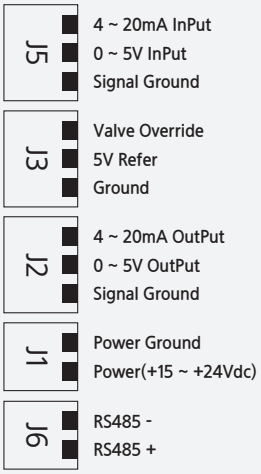
EX-Proof EX-Series Electrical Interfacing (15 pin)

In/Out Electric Connection

PIN NO	Function	Color
J5-1	4~20mA input	White
J5-2	0~5V input	Yellow
J5-3	Signal Ground	Green
J3-1	ValveOverride	×
J3-2	5V Refer	×
J3-3	Ground	×
J2-1	4~20mA Output	Orange
J2-2	0~5Vdc Output	Blue
J2-3	Signal Ground	Brown
J1-1	Power Ground	Black
J1-2	Power(+15 ~ +24Vdc)	Red
J6-1	RS485-	×
J6-2	RS485+	×

Fig-2 ⊙ Interconnected within P.C.B.

Command and Output Connection



J5-1 4~20mA Input
J5-2 0~5V Input
J5-3 Signal Ground
J2-1 4~20mA Output
J2-2 0~5V Output
J2-3 Signal Ground
J1-1 Power Ground

COMMAND AND OUTPUT CONNECTION

Analogue M-Series Electrical Interfacing (15 pin)

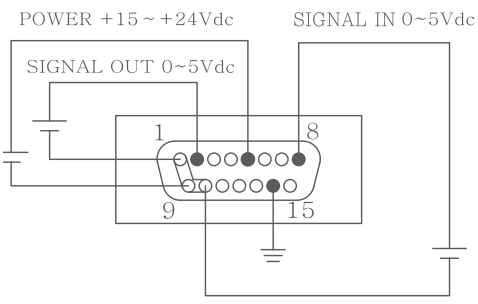
Voltage
In/Out Electric Connection

PIN NO	Function	Color	PIN CONNECTION	
			MFC	MFM
1	Command Ground	Green	⊙	⊙
2	0~5Vdc Flow Signal Output	Brown	●	●
3	Not Used	×		
4	4~20mA Flow Signal Output	Black		
5	+15 ~ +24Vdc Power Supply	Red	●	●
6	Not Used	×		
7	4~20mA Flow Command Input	Gray		
8	0~5Vdc Flow Command Input	Yellow	●	
9	Power Ground	White	⊙	⊙
10	Signal Output Ground	Blue	⊙	⊙
11	+5Vdc Reference Output	×		
12	Valve Override	×		
13	Not Used	×		
14	Shield	×	◑	◑
15	Not Used	×		

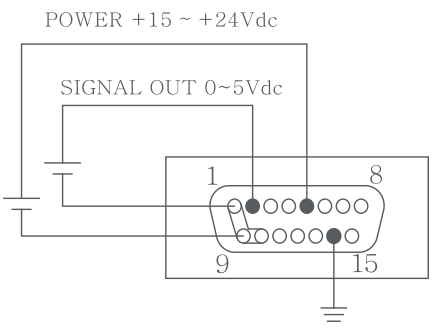
Fig-3 ⊙ Interconnected within P.C.B.

Voltage
Command and Output Connection

- Mass Flow Controller



- Mass Flow Meter



VOLTAGE COMMAND AND OUTPUT CONNECTION

Analogue M-Series Electrical Interfacing (15 pin)

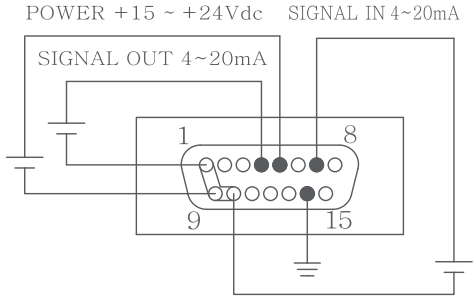
PIN NO	Function	Color	PIN CONNECTION	
			MFC	MFM
1	Command Ground	Green	⊙	⊙
2	0~5Vdc Flow Signal Output	Brown		
3	Not Used	×		
4	4~20mA Flow Signal Output	Black	●	●
5	+15 ~ +24Vdc Power Supply	Red	●	●
6	Not Used	×		
7	4~20mA Flow Command Input	Gray	●	
8	0~5Vdc Flow Command Input	Yellow		
9	Power Ground	White	⊙	⊙
10	Signal Output Ground	Blue	⊙	⊙
11	+5Vdc Reference Output	×		
12	Valve Override	×		
13	Not Used	×		
14	Shield	×	◑	◑
15	Not Used	×		

Fig-4 ⊙ Interconnected within P.C.B.

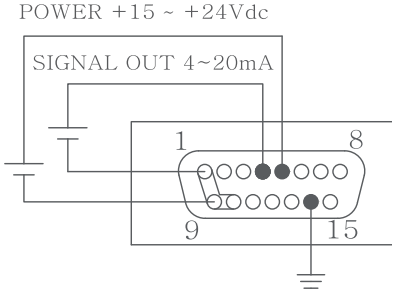
Current
In/Out Electric Connection

Current
Command and Output Connection

- Mass Flow Controller



- Mass Flow Meter



VOLTAGE COMMAND AND OUTPUT CONNECTION

Digital MD-Series Electrical Interfacing (15 pin)

Voltage

In/Out Electric Connection

PIN NO	Function	Color
1	Command Ground	Green
2	0~5Vdc Flow Signal Output	Brown
3	Not Used	×
4	4~20mA Flow Signal Output	Black
5	+15 ~ +24Vdc Power Supply	Red
6	Not Used	×
7	4~20mA Flow Command Input	Gray
8	0~5Vdc Flow Command Input	Yellow
9	Power Ground	White
10	Signal Output Ground	Blue
11	+5Vdc Reference Output	×
12	Valve Override	×
13	Not Used	
14	RS 485 -	
15	RS 485 +	

- Digital Communication : [PIN14,15]

RS-485 Communication

Baud rate : 38400bps

Date : 8Bit

Stop Bite : 1Bit

Parity : None

Digital MD-Series Electrical Interfacing (15 pin)

PIN NO	Function	Color
1	Command Ground	Green
2	0~5Vdc Flow Signal Output	Brown
3	Not Used	×
4	4~20mA Flow Signal Output	Black
5	+15 ~ +24Vdc Power Supply	Red
6	Not Used	×
7	4~20mA Flow Command Input	Gray
8	0~5Vdc Flow Command Input	Yellow
9	Power Ground	White
10	Signal Output Ground	Blue
11	+5Vdc Reference Output	×
12	Valve Override	×
13	Not Used	
14	RS 485 -	
15	RS 485 +	

Current

In/Out Electric Connection

- Digital Communication : [PIN14,15]

RS-485 Communication

Baud rate : 38400bps

Date : 8Bit

Stop Bite : 1Bit

Parity : None

Analogue M-Series Electrical Interfacing (9 pin)

Voltage

In/Out Electric Connection

LTI-200

PIN NO	Function	Color
1	Signal Ground	Orange
2	Power Ground	Blue
3	N.C	
4	Signal Ground	Green
5	+15Vdc~24Vdc	Red
6	Signal Output	Gray
7	Signal Input	Yellow
8	RS 485 A +	White
9	RS 485 B -	Black

Voltage

In/Out Electric Connection

M3200VA

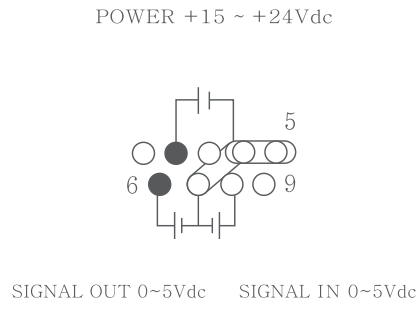
PIN NO	Function	Color	PIN CONNECTION	
			MFC	MFM
1	F.G	Green		
2	+15 ~ +24Vdc Power Supply	Red	●	●
3	Not Used	×		
4	Signal Ground	White	⊙	⊙
5	Power Ground	Blue	⊙	⊙
6	Signal Output (Option:4-20mA)	Brown	●	●
7	Ground	Black	⊙	⊙
8	Signal Input (Option:4-20mA)	Yellow	●	
9	Valve Full Open			

Fig-3 ⊙ Interconnected within P.C.B.

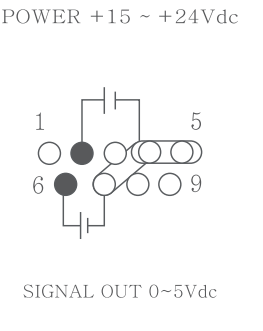
Voltage

Command and Output Connection

- Mass Flow Controller



- Mass Flow Meter



VOLTAGE COMMAND AND OUTPUT CONNECTION

LTI-1000 MFC Connector DSUB-9PIN Female

MFC
Pin connection (0-5VDC)

PIN NO	Name	Function
1	GND	Ground
2	GND	Ground
3	-15VDC	DC-15V
4	GND	Ground
5	+15VDC	MFC POWER DC ±15V(DC+24V : Option)
6	Set-point Signal	Output 0-5VDC (4-20mA : Option)
7	Flow Signal	Input 0-5VDC (4-20mA ; Option)
8	GND	Ground
9	GND	Ground

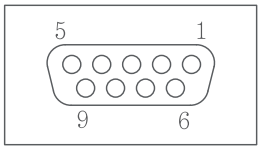
I/O
Pin connection (0-5VDC)

PIN NO	Name	Function
1	N.C	N.C
2	TTL Input	MFC Switch(On : 0Vdc, Off : Open)
3	GND	GND
4	Relay N.O	Relay N.O(Max : +24Vdc @ 1A)
5	Relay Common	Relay Common(Max : +24Vdc @ 1A)
6	GND	GND
7	Flow out	Flow out (0-5Vdc)
8	Flow control	Input(0-5Vdc)
9	Relay N.C	Relay N.C(Max : +24Vdc @ 1A)

MFC
Pin connection (4-20mA)

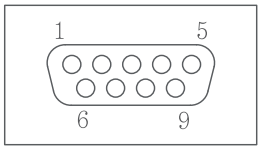
PIN NO	Name	Function
1	N.C	N.C
2	TTL Input	MFC Switch(On : 0Vdc, Off : Open)
3	GND	Ground
4	Relay N.O	Relay N.O(Max : +24Vdc @ 1A
5	Relay Common	Relay Common(Max : +24Vdc @ 1A)
6	GND	Ground
7	Flow Signal	Flow out (4-20mA)
8	Flow control	Input Set Point (4-20mA)
9	Relay N.C	Relay N.C(Max : +24Vdc @ 1A)

MFC Pin connection(0-5VDC)



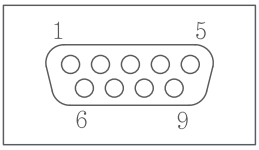
Front View(female) Dsub-9

I/O Pin connection(0-5VDC)



Front View(male) Dsub-9

MFC Pin connection(4-20mA)



Front View(male) Dsub-9

VOLTAGE COMMAND AND OUTPUT CONNECTION

Services and Support

Commitment to Excellence

Line Tech is committed to providing our business partners with the assistance and services they need for the ideal application of our products. Our services include, but are not limited to:

- Customer Seminar and Training
- Repairment Service
- Replacement of parts / products
- Recalibration of instruments
- On-site trouble shooting
- On/off site consultation services

Furthermore, all Line Tech products and accessories carry a one-year warranty from the date of original purchase by our customers against defects in materials and workmanship when used normally according to our operation manuals. Should you encounter any issue with our products or services, please contact us at **linetech@line-tech.co.kr** or **+82-42-624-0700.**

Want to submit a feedback?

Please email us at **linetech@line-tech.co.kr**, and we will reply as soon as possible.

06

Appendix

Use of the Conversion TABLE

$$\text{Actual gas flow rate} = \text{Output reading} \times \frac{\text{Factor of the gas}}{\text{Factor of the calibrated gas}}$$

Example 1

The controller is calibrated for nitrogen
The desired gas carbon dioxide.
The output reading is 75 sccm when carbon dioxide is flowing,
Then 75 × 0.74 = 55.50 sccm.

in order to calculate the conversion factor for a gas mixure, the following formula should be used.

$$\text{Sensor Conversion Factor } \textbf{Mixture} = \frac{100}{\frac{P1}{\text{Sensor Conversion Factor 1}} + \frac{P2}{\text{Sensor Conversion Factor 2}} + \frac{Pn}{\text{Sensor Conversion Factor n}}}$$

Where, P1 = percentage(%) of gas 1 (by volume)
P2 = percentage(%) of gas 2 (by volume)
Pn = percentage(%) of gas n (by volume)

Example 2

The desired gas is 20% Helium(He) and 80% Chlorine(Cl_2) by volume.
The desired full scale flow rate of the mixture is 20 slpm.
Sensor conversion factor for the mixture is

$$\textbf{Mixture} \text{ Factor} = \frac{100}{\frac{20}{1.39} + \frac{80}{0.88}} = 0.950$$

Air equivalent flow = 20/0.950 = 21.05 slpm.

Gas Sealing Selection and Gas Factor

	Source J-836-D-508 Rev.b	Formula	GasFactor	Orifice Factor	Density(kg/m³)	Recommended	Allowed	Not Recommended
1	1,1,2-Trichloro-1,1,2-Triflouroet (f113)	C2CL3F3	0.231	2.520	7.920	Buna	-	Viton/Buna/Kalrez
2	1,1-Difluoro-1-Chloroethane	C2H3CLF2	0.341	1.957	4.776	Buna	-	-
3	1,1-Difluoroethane	CH3CHF2	0.415	1.536	2.940	Kalrez	-	-
4	1,1-Difluoroethylene	CH2:CF2	0.458	1.512	2.860	Viton	-	-
5	1,2-Dibromotetrafluoroethane (f114B2)	C2Br2F4	0.215	2.905	10.530	Teflon	Viton/Buna/Kalrez	Epdm
6	1,2-Dichloroethane (Ethylene dichloride)	C2H4CL2	0.382	1.879	4.419	Kalrez	-	-
7	1,2-Dichlorotetrafluoroethane (f114)	C2CL2F4	0.231	2.449	7.479	Buna	Epdm	-
8	1,3-Butadiene	C4H6	0.354	1.413	2.491	Viton	Teflon-Kalrez	Buna/Epdm
9	1,1,1,2-Tetrafluoroethane (R134A)	C2H2F4	0.307	1.908	4.556	Epdm		
10	1,1,2,2,-Tetrafluoroethane (R134)	C2H2F4	0.295	1.908	4.556			
11	1,2-Propylene Oxide	C3H6O	0.348	1.440	2.594			
12	1-Butene	C4H8	0.294	1.435	2.503	Viton	Kalrez	Buna/Epdm
13	1-Pentene, 4-Methyl	C6H12	0.200	1.733	3.758			
14	2,2Dichloro–1,1,1-Trifloroethane	C2HCL2F3	0.259	2.336	6.829			
15	2,2-Dimethylpropane	C(CH3)4	0.247	1.613	3.244	Buna	-	-
16	2-Chlro-1,1,1,2-Tetrafluoroethane (R124)	C2HCIF4	0.027	2.207	6.094			
17	2-Chlorobutane	C4H9CL	0.234	1.818	4.134			
18	2-Methyl-1,3-Butadiene	C5H8	0.247	1.559	3.042			
19	3-Methyl-1-butene	C5H1O	0.252	1.584	3.127	-	-	-
20	Acetonitrile	C2H3N	0.510	1.211	1.833			
21	Acetylene(Ethyne)	C2H2	0.615	0.970	1.173	Viton	Epdm/Buna/Teflon-K	-
22	Acrolein	C3H4O	0.362	1.415	2.054			
23	Air	Air	0.998	1.018	1.293	Viton	Epdm/Buna/Teflon-K	-
24	Allene	C3H4	0.478	1.199	1.787	Buna	-	-
25	Ammonia	NH3	0.786	0.781	0.771	Epdm/Teflon	Buna/Teflon	Viton
26	Argon	Ar	1.395	1.195	1.784	Viton	Epdm/Buna/Teflon-K	-
27	Arsine	AsH3	0.754	1.661	3.478	Teflon-Kalrez	-	-
28	Benzene	C6H6	0.294	1.670	3.488			
29	Borane	H3B	0.778	0.703	0.618			
30	Boron Trichloride	BCL3	0.443	2.044	5.227	Teflon-Kalrez*	Viton	-
31	Boron Trifluoride	BF3	0.579	1.569	3.025	Teflon-Kalrez	Viton	-
32	Bromine	Br2	0.800	2.388	7.136			
33	Bromine Pentafluoride	BrF5	0.287	2.502	7.806	Teflon	Kalrez	Viton/Epdm/Buna
34	Bromine Trifluoride	BrF3	0.439	2.214	6.108	Teflon	Kalrez	Viton/Epdm/Buna
35	Bromotrifluoroethylene	C2BrF3	0.326	2.397	7.165	Viton	Buna	-
36	Bromotrifluoromethane (f13B1)	CBrF3	0.412	2.303	6.615	Buna	Epdm	Viton/Kalrez
37	Butane	C4H1O	0.257	1.467	2.593	Viton	Buna/Kalrez	Epdm
38	Carbon Dioxide	CO2	0.740	1.255	1.977	Buna	Kalrez	Viton/Epdm

※ Note : CO2 / 5bar ↑ Kalrez Set
10bar ↑ Kalrez O · ring Teflon seat

Gas Sealing Selection and Gas Factor

	Source J-836-D-508 Rev.b	Formula	GasFactor	Orifice Factor	Density(kg/m)	Recommended	Allowed	Not Recommended
39	Carbon Disulfide	CS2	0.638	1.650	3.393	Viton	Kalrez	Buna/Epdm
40	Carbon Monoxide	CO	0.995	1.000	1.250	Viton	Buna/Epdm/Kalrez	-
41	Carbon Tetrachloride	CCL4	0.344	2.345	6.860	Viton	Kalrez	Buna/Epdm
42	Carbon Tetrachloride (f14)	CF4	0.440	1.770	3.926	Viton	Kalrez	-
43	Carbonyl Fluoride	COF2	0.567	1.555	2.045	Viton	-	-
44	Carbonyl Sulfide	COS	0.680	1.463	2.680	Viton	-	-
45	Chlorine	CL2	0.876	1.598	3.214	Viton	Kalrez	Buna/Epdm
46	Chlorine Dioxide	CLO2	0.693	1.554	3.011	Viton	Kalrez	Buna/Epdm
47	Chlorine Trifluoride	CLF3	0.433	1.812	4.125	Kalrez	-	Viton/Buna/Epdm
48	Chlorodifluoromethane (f22)	CHCLF2	0.505	1.770	3.906	Epdm	Kalrez	Viton/Buna/Epdm
49	Chloroform (Trichloromenthane)	CHCL3	0.442	2.066	5.340	Viton	Kalrez	Buna/Epdm
50	Chloropentafluoroethane (f115)	C2CLF5	0.243	2.397	7.165	Epdm	-	Buna
51	Chlorotrifluoroethylene	C2CLF3	0.337	2.044	5.208	Teflon	-	-
52	Chlorotrifluoromethane (f13)	CCLF3	0.430	1.985	4.912	Kalrez	-	-
53	CIS-2-Butene	C4H8	0.320	1.435	2.503	Buna	-	-
54	Cyanogen	(CN)2	0.498	1.366	2.322	Kalrez	-	-
55	Cyanogen Chloride	CLCN	0.618	1.480	2.730	Kalrez	-	-
56	Cyclobutane	C4H8	0.387	1.413	2.491	Buna	-	-
57	Cyclopropane	C3H6	0.505	1.224	1.877	Buna	-	-
58	Deuterium	D2	0.995	0.379	0.177	Viton	-	-
59	Diborane	B2H6	0.448	1.000	1.235	Kalrez	-	-
60	Diboromodifluoromethane (f12B2)	CBr2F2	0.363	2.652	8.768	Viton	-	-
61	Dichlorodifluoromethane (f12)	CCL2F2	0.390	2.099	5.492	Buna	-	Viton/Teflon/Kalrez/Epdm
62	Dichloroethylene	C2H2CI2	0.397	1.860	4.329			
63	Dichlorofluoromethane (f21)	CHCL2F	0.456	1.985	4.912	Kalrez	-	Viton/Buna/Epdm
64	Dichloromethane	CH2CI2	0.522	1.741	3.793			
65	Dichlorosilane	SiH2CL2	0.442	1.897	4.506	Kalrez	-	-
66	Diethylamine	C4H1N	0.222	1.616	3.266			
67	Diedthylsilane	C4H12Si	0.183	1.775	3.940			
68	Difluoromethane (R32)	CF2H2	0.627	1.360	2.411			
69	Dimethylamine	(CH3)2NH	0.370	1.269	2.013	Kalrez	-	-
70	Dimethylether	(CH3)2O	0.392	1.281	2.055	Viton	Buna/Epdm/Kalrez	-
71	Dimethylsulfide	C2H6S	0.357	1.489	2.775			
72	Dimethylzinc	C2H6Zn	0.234	1.846	4.262			
73	Disilane	Si2H6	0.332	1.493	2.779	Teflon	-	-
74	Ethane	C2H6	0.490	1.038	1.357	Viton	Buna/Kalrez	Epdm
75	Ethanol	C2H6O	0.394	1.282	2.057			
76	Ethyl chloride	C2H5CL	0.408	1.516	2.897	Viton	Buna/Kalrez	Epdm

Gas Sealing Selection and Gas Factor

	Source J-836-D-508 Rev.b	Formula	GasFactor	Orifice Factor	Density(kg/m^3)	Recommended	Allowed	Not Recommended
77	Ethylacetylene	C4H6	0.365	1.384	2.388	Buna	-	-
78	Ethylene	C2H4	0.619	1.000	1.261	Viton	Buna/Kalrez	Epdm
79	Ethlene Oxide	C2H40	0.589	1.254	1.965	Kalrez	-	Viton/Buna/Epdm
80	Fiuorine	F2	0.924	1.163	1.695	Metal	-	-
81	Fluoroform (f23)	CHF3	0.529	1.584	3.127	Kalrez*	-	-
82	Germanium Tetrachloride	GeCL4	0.268	2.766	9.574	Kalrez*		
83	Germanium Tetrafluoride	GeF4	0.356	2.303	6.636			-
84	Germanium Tetrahydride(Germane)	GeH4	0.559	1.654	3.423			
85	Halothane (R123B1)	C2HBrCLF3	0.257	2.654	8.814			
86	Helium	He	1.386	0.378	0.178	Viton	Buna/Epdm/Kalrez	-
87	Hexafluoroacetone	C3F6O	0.219	2.434	7.414	-	-	-
88	Hexafluorobenzine	C6F6	0.632	2.577	8.309			
89	Hexafluorobutadiene	C4F6	0.213	2.405	7.236			
90	Hexafluoroethane (f116)	C2F6	0.255	2.219	6.139	Buna	-	-
91	Hexafluoropropylene (HFP)	C3F6	0.249	2.312	6.663	Buna	-	-
92	Hexamethyldisilane (HMDS)	(CH2)6Si2	0.139	2.404	7.208	Kalrez	-	-
93	Hexamethyldisiloxane	C6H18OSi2	0.110	2.408	7.251			
94	Hexane	C6H14	0.204	1.757	3.847	Viton	Buna/Kalrez	Epdm
95	Hexylamine	C6H15N	0.158	1.901	4.519			
96	Hydrogen	H2	1.008	0.269	0.090	Viton	Buna/Epdm/Kalrez	-
97	Hydrogen Bromide	HBr	0.987	1.695	3.645	Viton	Epdm/Kalrez	Buna
98	Hydrogen Chloride	HCL	0.983	1.141	1.639	Epdm	Kalrez	Buna
99	Hydrogen Cyanide	HCN	0.744	0.973	1.179	Kalrez	-	-
100	Hydrogen Fluoride	HF	0.998	0.845	0.893	Kalrez	-	Viton/Buna/Epdm
101	Hydrogen Iodide	HI	0.953	2.144	5.789	Kalrez	-	-
102	Hydrogen Selenide	H2Se	0.837	1.695	3.613	Kalrez	-	-
103	Hydrogen Sulfide	H2S	0.850	1.108	1.539	Teflon/Kalrez	Epdm	Viton/Buna
104	Iodine Pentafluoride	IF5	0.283	2.819	9.907	Teflon	-	Viton/Buna/Epdm
105	Isobutane	C4H1O	0.260	1.440	2.596	Kalrez*	-	-
106	Isobutene	C4H8	0.289	1.435	2.503	Kalrez*	-	-
107	Isopentane	C5H12	0.211	1.605	3.222	-	-	-
108	Krypton	Kr	1.382	1.729	3.708	Viton	-	-
109	Methacrolein	C4H6O	0.313	1.582	3.13			
110	Methane	CH4	0.763	0.763	0.717	Buna/Viton	Kalrez	Epdm
111	Methanol	CH4O	0.609	1.069	1.431			
112	Methyl Bromide	CH3Br	0.646	1.834	4.236	-	-	-
113	Methyl Chloride	CH3CL	0.687	1.347	2.308	Kalrez	-	Viton/Buna/Epdm
114	Methyl Fluoride	CH3F	0.761	1.102	1.518	-	-	-

Gas Sealing Selection and Gas Factor

	Source J-836-D-508 Rev.b	Formula	GasFactor	Orifice Factor	Density (kg/m^3)	Recommended	Allowed	Not Recommended
115	Methyl Mercaptan	CH4S	0.588	1.313	2.146	-	-	-
116	Methyl Silane	CH6Si	0.393	1.283	2.061			
117	Methyl Trichlorosilane(MTS)	CH3CL3Si	0.267	2.310	6.675			
118	Methyl Vinyl Ether	C3H6O	0.337	1.435	2.567	Kalrez	-	-
119	Methylacetylene	C3H4	0.473	1.196	1.782	Kalrez	-	-
120	Monoethyanolamine	C2H7NO	0.305	1.477	2.728			
121	Monoethyalamine(CH3CH2NH2)	C2H7	0.395	1.269	2.013	Kalrez	-	-
122	Monomethylamine	CH3NH2	0.565	1.067	1.420	Kalrez	-	-
123	Neon	Ne	1.398	0.847	0.902	Viton	Buna/Epdm/Kalrez	
124	Nickel Carbonyl	Ni(CO)4	0.212	2.371	7.008	-	-	-
125	Nitric Acid	HNO3	0.491	1.500	2.814			
126	Nitric Oxide	NO	0.995	1.030	1.339	Kalrez*	Viton	-
127	Nitrogen	N2	1.000	1.000	1.251	Viton	Buna/Epdm/Kalrez	-
128	Nitrogen Dioxide	NO2	0.758	1.713	2.052	Kalrez	-	
129	Nitrogen Trifluoride	NF3	0.501	1.598	3.168	Teflon	Kalrez	-
130	Nitrogen Trioxide	N2O3	0.443	1.649	3.389	-	-	-
131	Nitrosyl Chloride	NOCL	0.664	1.529	2.913	Kalrez	-	-
132	Nitrous Oxide	N2O	0.752	1.259	1.964	Buna	-	-
133	Octofluorocyclobutane	C4F8	0.169	2.672	8.933	-	-	-
134	Octafluorotetrahydrofuran	C4F8O	0.165	2.777	9.644			
135	Octofluorocyclobutane	C4F8	0.169	2.672	8.933			
136	Oxygen	O2	0.988	1.067	1.429	Viton	Epdm/Kalrez	Buna
137	Oxygen Difluoride	OF2	0.672	1.388	2.402	-	-	-
138	Ozone	O3	0.738	1.310	2.138	Viton	Epdm/Kalrez	Buna
139	Pentafluoroethane	C2HF5	0.287	2.070	5.360			
140	Pentane(n-Pentane)	C5H12	0.212	1.605	3.222	-	-	-
141	Perchlory Fluoride	CLO3F	0.448	1.905	4.571	-	-	-
142	Perfluoro-2-Butene	C4F8	0.268	2.672	8.933	-	-	-
143	Perfluorobutane	C4F10	0.738	2.918	10.610	-	-	-
144	Perfluoromethyl-Vinylether(PMVE)	PMVE	0.296	2.029	5.131	-	-	-
145	Perfluoropropane	C3F8	0.179	2.591	8.396	-	-	-
146	Phosgene	COCL2	0.504	1.881	4.418	Kalrez	-	-
147	Phosphine	PH3	0.783	1.100	1.517	Kalrez	-	-
148	Phosphorous Oxychloride	POCI3	0.327	2.340	6.847			
149	Phosphorous Pentafluoride	PF5	0.346	2.109	5.620	-	-	-
150	Phosphorous Trifluoridide	PF3	0.495	1.770	3.906	-	-	-
151	Propadiene	C3H4	0.439	1.196	1.789			
152	Propane(same as CH3CH2CH3)	C3H8	0.343	1.274	2.008	Viton	Buna/Kalrez	Epdm

Gas Sealing Selection and Gas Factor

	Source J-836-D-508 Rev.b	Formula	GasFactor	Orifice Factor	Density (kg/m^3)	Recommended	Allowed	Not Recommended
153	Propylene(Propene)*	C3H6	0.401	1.234	1.875	Viton*	Kalrez	Buna/Epdm
154	Rhenium Hexafluoride	ReF6	0.230	3.279	13.410	-	-	-
155	Silane	SiH4	0.625	1.070	1.440	Kalrez	-	-
156	Silicon Tetrachloride	SiCL4	0.310	2.462	7.579	Teflon-Kalrez	-	-
157	Silicon Tetrafluoride	SiF4	0.395	1.931	4.648	Teflon	-	-
158	Sulfur Dioxide	SO2	0.728	1.529	2.858	Epdm	Kalrez/Teflon	Buna/Viton
159	Sulfur Hexafluoride	SF6	0.270	2.348	6.516	Epdm/Teflon	Buna	Kalrez
160	Sulfur Tetrafluoride	SF4	0.353	1.957	4.776	-	-	-
161	Sulfur Trioxide	SO3	0.535	1.691	3.575		-	
162	Sulfuryl Fluoride	SO2F2	0.423	1.931	4.648	-	-	-
163	Tetrachloromethane	CCL4	0.344	2.345	6.858	-	-	-
164	Tetraethylsilane	C8H20Si	0.111	2.270	6.445			
165	Tetrafluoroethylene (TFE)	C2F4	0.361	1.905	4.526	Buna	-	Kalrez
166	Tetrafluorohydrazine	N2F4	0.367	1.926	4.624	-	-	-
167	Tetramethylsilane	C4H12Si	0.183	1.775	3.94			
168	Titanium Tetrachloride	TiCl4	0.296	2.602	8.47			
169	Toluene (C6H5)	CH3	0.234	1.814	4.115			
170	Trans-2-Butene	C4H8	0.291	1.435	2.503	-	-	-
171	Trichlorofluoromethane (f11)	CCL3F	0.374	2.244	6.281	Teflon	-	Buna/Epdm/Kalrez
172	Trichlorosilane	SiHCL3	0.329	2.201	6.038	Viton/Kalrez	-	-
173	Trifluoroethane	C2H3F3	0.333	1.732	3.753			
174	Trifluoropropene	C3H3F3	0.286	1.852	4.289			
175	Trimethyl Aluminum	C3H9AI	0.259	1.604	3.219			
176	Trimethylamine	(CH3)3N	0.316	1.467	2.639	Kalrez	-	-
177	Trimethylgallium	C3H39Ga	0.237	2.025	5.123			
178	Trimethyloxyborane (TMB)	B(OCH3)3	0.300	1.929	4.638	-	-	-
179	Trimethylsilane	C3H10Si	0.235	1.627	3.313			
180	Tungsten Hexafluoride	WF6	0.227	3.264	13.280	Teflon	-	-
181	Uranium Hexafluoride	UF6	0.220	3.548	15.700	Teflon	-	-
182	Vinyl Bromide	C2H3Br	0.524	1.985	4.772	-	-	-
183	Vinyl Chloride	C2H3CL	0.542	1.492	2.788	Viton	Kalrez	Buna/Epdm
184	Vinyl Fluoride	C2H3F	0.576	1.281	2.046	Kalrez	-	-
185	Water Vapor	H20	0.861	0.802	0.804	-	-	-
186	Xennon	Xe	1.383	2.180	5.851	Viton	Buna/Epdm/Kalrez	-
187	Z"gas mixture in volume"	mixgas	0.742	1.216	1.851			

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