Model 201

Mass Flow Instruments

Porter Mass Flow products reflect over four decades of experience in the design and manufacture of precision instruments for the measurement and control of gas flow. They incorporate design principles that are simple and straightforward, yet flexible enough to operate under a wide variety of process parameters. The result is flowmeters, flow controllers and control valves that are accurate, reliable and cost-effective solutions for many gas flow applications in the analytical, process, chemical/ petrochemical, environmental, biopharmaceutical and research markets.

The 200 series is the lastest evolution of the original Porter Analog MFC. With thousands installed worldwide, they are the proven solution when cost effective high performance gas flow control is the goal. The 100 Series Mass Flow Meters are available for applications where flow measurement only is required.

SPECIFICATIONS:

Flow Capacity: Any Flow range from 0-5 SCCM to 0-10 SLPM (nitrogen equivalent).

Response Time (per SEMI E17-91 Settling Time): 1 to 2 Seconds

Accuracy and Linearity: ±1% full scale

Repeatability: Within ±0.2% full scale at any constant temperature within operating temperature range

Rangeability (Control Range): 50; 1 (2%-100% full scale) (accuracy and control)

Ambient and Operating Temperature Range: -10 to 70 °C (±14 to 158 °F)

Maximum Operating Pressure: 1000 PSIG

Temperature Coefficent (per SEMI E18-91 Zero Effect and Span Effect):
±0.05% full scale / °C of zero
±0.05% of reading/ °C of span

Mounting Orientation: Attitude insensitive

Warm-up Time: 10 minutes

External Electrical Connector: Nine (9)- pin Dconnector

Weight (approximate): 1.2 lbs

Power Supply Requirements:
(Current consumption <250 mAdc):
Voltage output models: +12 (±5%) (0-5 Vdc & 1-5 Vdc flow signal outputs only) or +15 (±10%) Vdc
Current loop models:
+15 (±5%) or +24 (±15%) Vdc

Setpoint Input/Flow Signal Output:
0-5 Vdc/0-5 Vdc (2K ohm minimum load resistance)
0-10 Vdc/0-10 Vdc (3K ohm minimum load resistance)
1-5 Vdc/1-5 Vdc (2K ohm minimum load resistance)
4-20 mAdc/4-20mAdc (refer to load resistance values below)
1-5 Vdc/4-20 mAdc (refer to load resistance values below)

Load resistance values for 4-20 mAsc flow signal output:
0-450 ohm for 6.5-15 Vdc loop supply voltage
200-750 ohm for 15-30 Vdc loop supply voltage

Parker Porter

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MATERIALS OF CONSTRUCTION

Body: 316 Stainless Steel
Sensor Assembly: 316L Stainless Steel
Orifice: 316 Stainless Steel
Valve Components (Wetted): 302 Stainless Steel, 316 Stainless Steel, 430F Stainless Steel and Sandvik® 1802
Elastomers (O-rings and Valve Seat): Buna N, EPDM, Kalrez®, Neoprene or Viton®
Process Connections: 316 Stainless Steel

Sandvik®, Kalrez® and Viton® are property of their respective owners

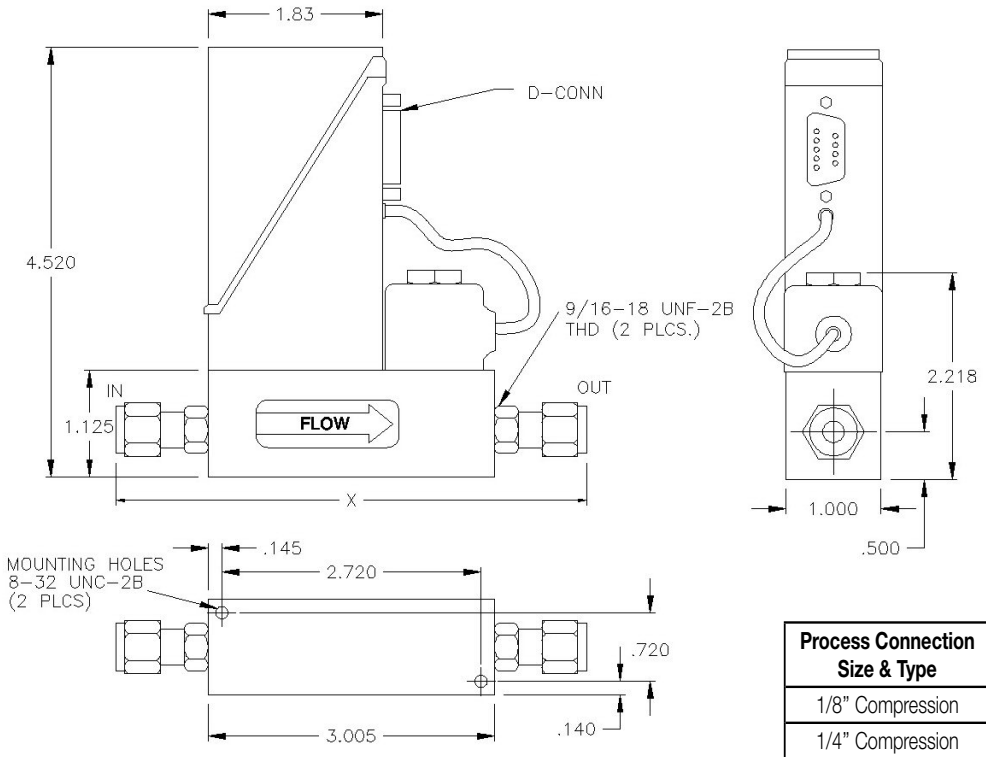
Specifications subject to change

ORDERING INFORMATION

To order, please specify:

- Model number
- Type of output signal
- Elastomer material
- Process connection size and type
- Flow capacity
- Gas type
- Operating temperature
- Inlet (supply) pressure
- Outlet pressure
- Calibration standard (i.e. 0°C, 20°C, 21.1°C or 25°C)
- Additional accessories required

DIMENSIONAL DATA



Dimensions shown in inches

Process Connection Size & Type	'X' Dimension
1/8" Compression	4.845"
1/4" Compression	5.025"
3/8" Compression	5.145"
1/4 CPI®	5.025"
3/8 CPI	5.145"
1/4" A-Lok®	5.025"
3/8" A-Lok	5.145"
1/4" MMGFS	4.885"

Get A Quick Quote on Model 201

MODEL NUMBER AND DESCRIPTION

Example: 201 - F K A S V C AA

Model
201

Model Revision Level
F: Current Revision

PC Board Electrical Connector
K: Nine (9)-Pin "D"

Setpoint Signal/Output Signal
A: 0-5 Vdc/0-5 Vdc
B: 1-5 Vdc/4-20 mAdc (sinking)
D: 1-5 Vdc/1-5 Vdc
E: 0-10 Vdc/0-10 Vdc
H: 4-20 mAdc/4-20 mAdc (sourcing)
J: 4-20 mAdc/4-20 mAdc (sinking)

Body Material
S: 316 Stainless Steel

Assembly/Calibration Features
AA: Factory Standard

Process Connection Size and Type			
A	3/8" CPI™	**M**	1/4" UltraSeal®
B	1/8" Compression	**P**	1/4" MMGFS(2)
C	1/4" Compression	**Q**	3/8" MMGFS(2)
D	3/8" Compression	**R**	3/8" UltraSeal®
E	1/2" Compression	**S**	1/2" MMGFS(2)
H	10 mm Compression	**U**	3/8" A-LOK®
I	1/4" CPI™	**W**	6 mm Compression
J	1/4" MORFS(1)	**X**	No Connections
K	3/8" MORFS(1)	**Y**	1/4" A-LOK
L	1/2" MORFS(1)	**Z**	Special Connections

Elastomers (Valve Seat/O-Rings)
B: Buna N/Buna N
E: EPDM/EPDM
K: Kalrez/Kalrez
N: Neoprene/Neoprene
V: Viton/Viton

A-LOK®, CPI™, UltraSeal™, VacuSeal™ - Parker Hannifin Corp.
(1)MORFS = Male O-Ring Face Seal
(2)MMGFS = Male Metal Gasket Face Seal

For model number options not shown above, please consult factory

OTHER AVAILABLE ANALOG MASS FLOWMETER AND MASS FLOW CONTROLLER MODELS

Type	Model	Max. Flow[1] (SLPM)	Max. Pressure[2] (PSIG)	Min. Delta[3] (PSIG)
Analog Flow Meters	111	10	1500	2
	121	10	3000	2
	112	100	1500	2
	122	100	3000	2
	113	500	1000	2
	114	1000	1000	2
	2111	10	200	2
	3211	10	1000	2

Type	Model	Max. Flow[1] (SLPM)	Max. Pressure[2] (PSIG)	Min. Delta[3] (PSIG)
Analog Flow Controllers	201	10	1000	7
	261	10	1000	7
	221	10	3000	7
	251	50	1000	35
	202	100	1000	60
	222	100	3000	60
	202A	100	200	10
	203A	500	200	40
	204A	1000	200	80
	2201	10	200	7
	3201/3261	10	1000	7

Note: The flow ranges listed are the minimum and maximum nitrogen (N_2) flow ranges available for each given model. Intermediate flow ranges are available. For correct sizing when operating parameters are questionable, please consult the factory.

Parker Hannifin Corporation
Porter Instrument Division
245 Township Line Road
Hatfield, PA 19440 USA
(215) 723-4000/ fax (215) 723-2199

Model 202

Mass Flow Instruments

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The 200 series is the lastest evolution of the original Porter Analog MFC. With thousands installed worldwide, they are the proven solution when cost effective high performance gas flow control is the goal. The 100 Series Mass Flow Meters are available for applications where flow measurement only is required.

SPECIFICATIONS:

Flow Capacity: Any Flow range from 0-10 SLPM to 0-100 SLPM (nitrogen equivalent).

Response Time (per SEMI E17-91 Settling Time): 1 to 2 Seconds

Accuracy and Linearity: ±1% full scale

Repeatability: Within ±0.2% full scale at any constant temperature within operating temperature range

Rangeability (Control Range): 50; 1 (2%-100% full scale) (accuracy and control)

Ambient and Operating Temperature Range: -10 to 70 °C (±14 to 158 °F)

Maximum Operating Pressure: 1000 PSIG

Temperature Coefficent (per SEMI E18-91 Zero Effect and Span Effect):
±0.05% full scale / °C of zero
±0.05% of reading/ °C of span

Mounting Orientation: Attitude insensitive

Warm-up Time: 10 minutes

External Electrical Connector: Nine (9)- pin Dconnector

Weight (approximate): 1.2 lbs

Power Supply Requirements:
(Current consumption <250 mAdc):
Voltage output models: +12 (±5%) (0-5 Vdc & 1-5 Vdc flow signal outputs only) or +15 (±10%) Vdc
Current loop models:
+15 (±5%) or +24 (±15%) Vdc

Setpoint Input/Flow Signal Output:
0-5 Vdc/0-5 Vdc (2K ohm minimum load resistance)
0-10 Vdc/0-10 Vdc (3K ohm minimum load resistance)
1-5 Vdc/1-5 Vdc (2K ohm minimum load resistance)
4-20 mAdc/4-20mAdc (refer to load resistance values below)
1-5 Vdc/4-20 mAdc (refer to load resistance values below)

Load resistance values for 4-20 mAsc flow signal output:
0-450 ohm for 6.5-15 Vdc loop supply voltage
200-750 ohm for 15-30 Vdc loop supply voltage

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MATERIALS OF CONSTRUCTION

Body: 316 Stainless Steel
Sensor Assembly: 316L Stainless Steel
Orifice: 316 Stainless Steel
Valve Components (Wetted): 302 Stainless Steel, 316 Stainless Steel, 430F Stainless Steel and Sandvik® 1802
Elastomers (O-rings and Valve Seat): Buna N or Viton®
Process Connections: 316 Stainless Steel

Sandvik®, Kalrez® and Viton® are property of their respective owners

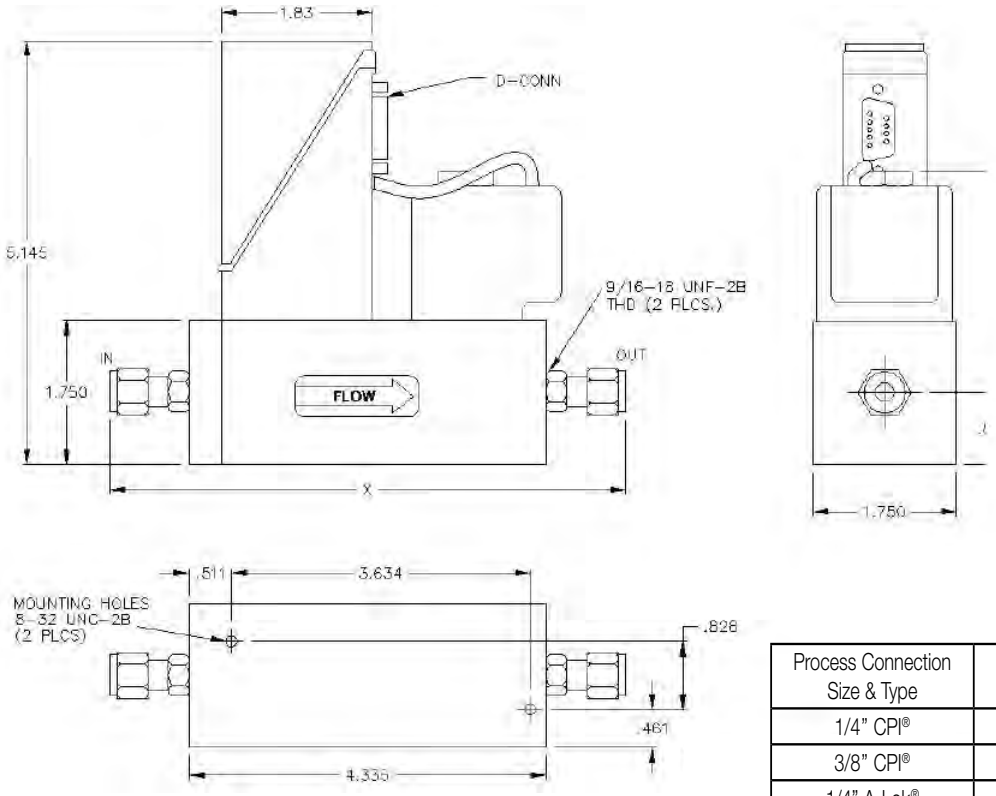
Specifications subject to change

ORDERING INFORMATION

To order, please specify:

- Model number
- Type of output signal
- Elastomer material
- Process connection size and type
- Flow capacity
- Gas type
- Operating temperature
- Inlet (supply) pressure
- Outlet pressure
- Calibration standard (i.e. 0°C, 20°C, 21.1°C or 25°C)
- Additional accessories required

DIMENSIONAL DATA



Process Connection Size & Type	'X' Dimension
1/4" CPI®	5.025"
3/8" CPI®	5.145"
1/4" A-Lok®	5.025"
3/8" A-Lok®	5.145"

Dimensions shown in inches

Get A Quick Quote on Model 202

MODEL NUMBER AND DESCRIPTION

Example: 202 F K A S V C AA

Model
202

Model Revision Level
F: Current Revision

PC Board Electrical Connector
K: Nine (9)-Pin "D"

Setpoint Signal/Output Signal
A: 0-5 Vdc/0-5 Vdc
B: 1-5 Vdc/4-20 mAdc (sinking)
D: 1-5 Vdc/1-5 Vdc
E: 0-10 Vdc/0-10 Vdc
H: 4-20 mAdc/4-20 mAdc (sourcing)
J: 4-20 mAdc/4-20 mAdc (sinking)

Body Material
S: 316 Stainless Steel

Assembly/Calibration Features
AA: Factory Standard

Process Connection Size and Type			
A	3/8" CPI™	**P**	1/4" MMGFS(2)
C	1/4" Compression	**Q**	3/8" MMGFS(2)
D	3/8" Compression	**R**	3/8" UltraSeal®
E	1/2" Compression	**S**	1/2" MMGFS(2)
H	10 mm Compression	**U**	3/8" A-LOK
I	1/4" CPI™	**W**	6 mm Compression
J	1/4" MORFS(1)	**X**	No Connections
K	3/8" MORFS(1)	**Y**	1/4" A-LOK
L	1/2" MORFS(1)	**Z**	Special Connections
M	1/4" UltraSeal®		

Elastomers (Valve Seat/O-Rings)
B: Buna N/ Buna N
V: Viton/Viton

A-LOK®, CPI™, UltraSeal™, VacuSeal™ - Parker Hannifin Corp.

(1)MORFS = Male O-Ring Face Seal

(2)MMGFS = Male Metal Gasket Face Seal

For model number options not shown above, please consult factory

OTHER AVAILABLE ANALOG MASS FLOWMETER AND MASS FLOW CONTROLLER MODELS

Type	Model	Max. Flow[1] (SLPM)	Max. Pressure[2] (PSIG)	Min. Delta[3] (PSIG)
Analog Flow Meters	111	10	1500	2
	121	10	3000	2
	112	100	1500	2
	122	100	3000	2
	113	500	1000	2
	114	1000	1000	2
	2111	10	200	2
	3211	10	1000	2

Type	Model	Max. Flow[1] (SLPM)	Max. Pressure[2] (PSIG)	Min. Delta[3] (PSIG)
Analog Flow Controllers	201	10	1000	7
	261	10	1000	7
	221	10	3000	7
	251	50	1000	35
	202	100	1000	60
	222	100	3000	60
	202A	100	200	10
	203A	500	200	40
	204A	1000	200	80
	2201	10	200	7
	3201/3261	10	1000	7

Get A Quick Quote on Model 202

Note: The flow ranges listed are the minimum and maximum nitrogen (N_2) flow ranges available for each given model. Intermediate flow ranges are available. For correct sizing when operating parameters are questionable, please consult the factory.

Parker Hannifin Corporation
Porter Instrument Division
245 Township Line Road
Hatfield, PA 19440 USA
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Model 202A

Mass Flow Instruments

Porter Mass Flow products reflect over four decades of experience in the design and manufacture of precision instruments for the measurement and control of gas flow. They incorporate design principles that are simple and straightforward, yet flexible enough to operate under a wide variety of process parameters. The result is flowmeters, flow controllers and control valves that are accurate, reliable and cost-effective solutions for many gas flow applications in the analytical, process, chemical/ petrochemical, environmental, biopharmaceutical and research markets.

The 200 series is the lastest evolution of the original Porter Analog MFC. With thousands installed worldwide, they are the proven solution when cost effective high performance gas flow control is the goal. The 100 Series Mass Flow Meters are available for applications where flow measurement only is required.

SPECIFICATIONS:

Flow Capacity: Any flow range from 0-10 SLPM to 0-100 SLPM (nitrogen equivalent).

Response Time (per SEMI E17-91 Settling Time): 1 to 2 Seconds

Accuracy and Linearity: ±1% full scale

Repeatability: Within ±0.2% full scale at any constant temperature within operating temperature range

Rangeability (Control Range): 50; 1 (2%-100% full scale) (accuracy and control)

Ambient and Operating Temperature Range: -10 to 70 °C (±14 to 158 °F)

Maximum Operating Pressure: 1000 PSIG

Temperature Coefficent (per SEMI E18-91 Zero Effect and Span Effect):
±0.05% full scale / °C of zero
±0.05% of reading/ °C of span

Mounting Orientation: Attitude insensitive

Warm-up Time: 10 minutes

External Electrical Connector: Nine (9)- pin Dconnector

Weight (approximate): 1.2 lbs

Power Supply Requirements:
(Current consumption <250 mAdc):
Voltage output models: +12 (±5%) (0-5 Vdc & 1-5 Vdc flow signal outputs only) or +15 (±10%) Vdc
Current loop models:
+15 (±5%) or +24 (±15%) Vdc

Setpoint Input/Flow Signal Output:
0-5 Vdc/0-5 Vdc (2K ohm minimum load resistance)
0-10 Vdc/0-10 Vdc (3K ohm minimum load resistance)
1-5 Vdc/1-5 Vdc (2K ohm minimum load resistance)
4-20 mAdc/4-20mAdc (refer to load resistance values below)
1-5 Vdc/4-20 mAdc (refer to load resistance values below)

Load resistance values for 4-20 mAsc flow signal output:
0-450 ohm for 6.5-15 Vdc loop supply voltage
200-750 ohm for 15-30 Vdc loop supply voltage

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MATERIALS OF CONSTRUCTION

Body: 316 Stainless Steel
Sensor Assembly: 316L Stainless Steel
Orifice: 316 Stainless Steel
Valve Components (Wetted): 302 Stainless Steel, 316 Stainless Steel, 430F Stainless Steel and Sandvik® 1802
Elastomers (O-rings and Valve Seat): Buna N or Viton®
Process Connections: 316 Stainless Steel

Sandvik®, Kalrez® and Viton® are property of their respective owners

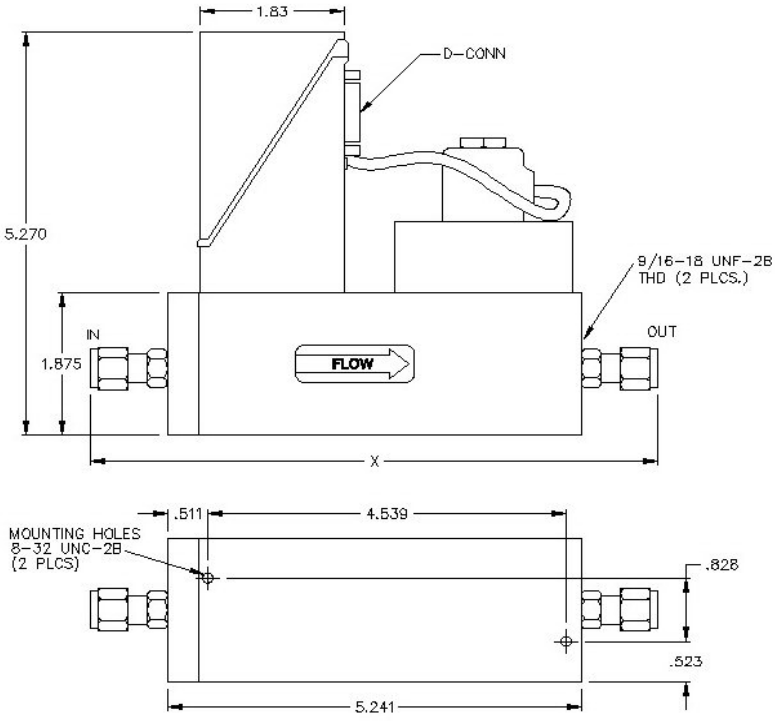
Specifications subject to change

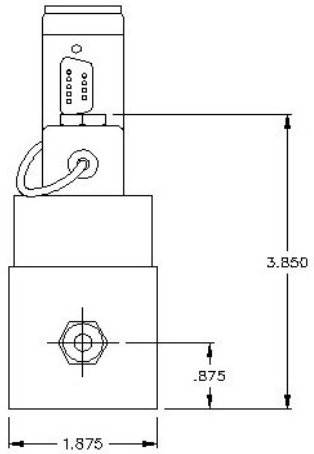
ORDERING INFORMATION

To order, please specify:

- Model number
- Type of output signal
- Elastomer material
- Process connection size and type
- Flow capacity
- Gas type
- Operating temperature
- Inlet (supply) pressure
- Outlet pressure
- Calibration standard (i.e. 0°C, 20°C, 21.1°C or 25°C)
- Additional accessories required

DIMENSIONAL DATA





Dimensions shown in inches

Process Connection Size & Type	'X' Dimension
1/4" Compression	7.261"
3/8" Compression	7.381"
1/4" CPI®	7.261"
3/8" CPI	7.381"
1/4" A-Lok®	7.261"
3/8" A-Lok	7.381"
1/4" MMGFS	7.121"
3/8" & 1/2" MMGFS	7.421"

Get A Quick Quote on Model 202A

MODEL NUMBER AND DESCRIPTION

Example: 202A F K A S V C AA

Model
202A

Model Revision Level
F: Current Revision

PC Board Electrical Connector
K: Nine (9)-Pin "D"

Setpoint Signal/Output Signal
A: 0-5 Vdc/0-5 Vdc
B: 1-5 Vdc/4-20 mAdc (sinking)
D: 1-5 Vdc/1-5 Vdc
E: 0-10 Vdc/0-10 Vdc
H: 4-20 mAdc/4-20 mAdc (sourcing)
J: 4-20 mAdc/4-20 mAdc (sinking)

Body Material
S: 316 Stainless Steel

A-LOK®, CPI™, UltraSeal™, VacuSeal™ - Parker Hannifin Corp.

(1)MORFS = Male O-Ring Face Seal

(2)MMGFS = Male Metal Gasket Face Seal

Assembly/Calibration Features
AA: Factory Standard

Process Connection Size and Type			
A	3/8" CPI™	**P**	1/4" MMGFS(2)
C	1/4" Compression	**Q**	3/8" MMGFS(2)
D	3/8" Compression	**R**	3/8" UltraSeal®
E	1/2" Compression	**S**	1/2" MMGFS(2)
H	10 mm Compression	**U**	3/8" A-LOK
I	1/4" CPI™	**W**	6 mm Compression
J	1/4" MORFS(1)	**X**	No Connections
K	3/8" MORFS(1)	**Y**	1/4" A-LOK
L	1/2" MORFS(1)	**Z**	Special Connections
M	1/4" UltraSeal®		

Elastomers (Valve Seat/O-Rings)
B: Buna N/ Buna N
V: Viton/Viton

For model number options not shown above, please consult factory

OTHER AVAILABLE ANALOG MASS FLOWMETER AND MASS FLOW CONTROLLER MODELS

Type	Model	Max. Flow[1] (SLPM)	Max. Pressure[2] (PSIG)	Min. Delta[3] (PSIG)
Analog Flow Meters	111	10	1500	2
	121	10	3000	2
	112	100	1500	2
	122	100	3000	2
	113	500	1000	2
	114	1000	1000	2
	2111	10	200	2
	3211	10	1000	2

Type	Model	Max. Flow[1] (SLPM)	Max. Pressure[2] (PSIG)	Min. Delta[3] (PSIG)
Analog Flow Controllers	201	10	1000	7
	261	10	1000	7
	221	10	3000	7
	251	50	1000	35
	202	100	1000	60
	222	100	3000	60
	202A	100	200	10
	203A	500	200	40
	204A	1000	200	80
	2201	10	200	7
	3201/3261	10	1000	7

Get A Quick Quote on Model 202A

Note: The flow ranges listed are the minimum and maximum nitrogen (N_2) flow ranges available for each given model. Intermediate flow ranges are available. For correct sizing when operating parameters are questionable, please consult the factory.

Parker Hannifin Corporation
Porter Instrument Division
245 Township Line Road
Hatfield, PA 19440 USA
(215) 723-4000/ fax (215) 723-2199

ENGINEERING YOUR SUCCESS.

Model 203A

Mass Flow Instruments

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SPECIFICATIONS:

Flow Capacity: Any Flow range from 0-100 SLPM to 0-500 SLPM (nitrogen equivalent).

Response Time (per SEMI E17-91 Settling Time): 1 to 2 Seconds

Accuracy and Linearity: ±1% full scale

Repeatability: Within ±0.2% full scale at any constant temperature within operating temperature range

Rangeability (Control Range): 50; 1 (2%-100% full scale) (accuracy and control)

Ambient and Operating Temperature Range: -10 to 70 °C (±14 to 158 °F)

Maximum Operating Pressure: 200 PSIG

Temperature Coefficent (per SEMI E18-91 Zero Effect and Span Effect):
±0.05% full scale / °C of zero
±0.05% of reading/ °C of span

Mounting Orientation: Attitude insensitive

Warm-up Time: 10 minutes

External Electrical Connector: Nine (9)- pin Dconnector

Weight (approximate): 10.9 lbs

Power Supply Requirements:
(Current consumption <250 mAdc):
Voltage output models: +12 (±5%) (0-5 Vdc & 1-5 Vdc flow signal outputs only) or +15 (±10%) Vdc
Current loop models:
+15 (±5%) or +24 (±15%) Vdc

Setpoint Input/Flow Signal Output:
0-5 Vdc/0-5 Vdc (2K ohm minimum load resistance)
0-10 Vdc/0-10 Vdc (3K ohm minimum load resistance)
1-5 Vdc/1-5 Vdc (2K ohm minimum load resistance)
4-20 mAdc/4-20mAdc (refer to load resistance values below)
1-5 Vdc/4-20 mAdc (refer to load resistance values below)

Load resistance values for 4-20 mAsc flow signal output:
0-450 ohm for 6.5-15 Vdc loop supply voltage
200-750 ohm for 15-30 Vdc loop supply voltage

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MATERIALS OF CONSTRUCTION

Body: 316 Stainless Steel
Sensor Assembly: 316L Stainless Steel
Orifice: 316 Stainless Steel
Valve Components (Wetted): 302 Stainless Steel, 316 Stainless Steel, 430F Stainless Steel and Sandvik® 1802
Elastomers (O-rings and Valve Seat): Buna N or Viton®
Process Connections: 316 Stainless Steel

Sandvik®, Kalrez® and Viton® are the property of their respective owners

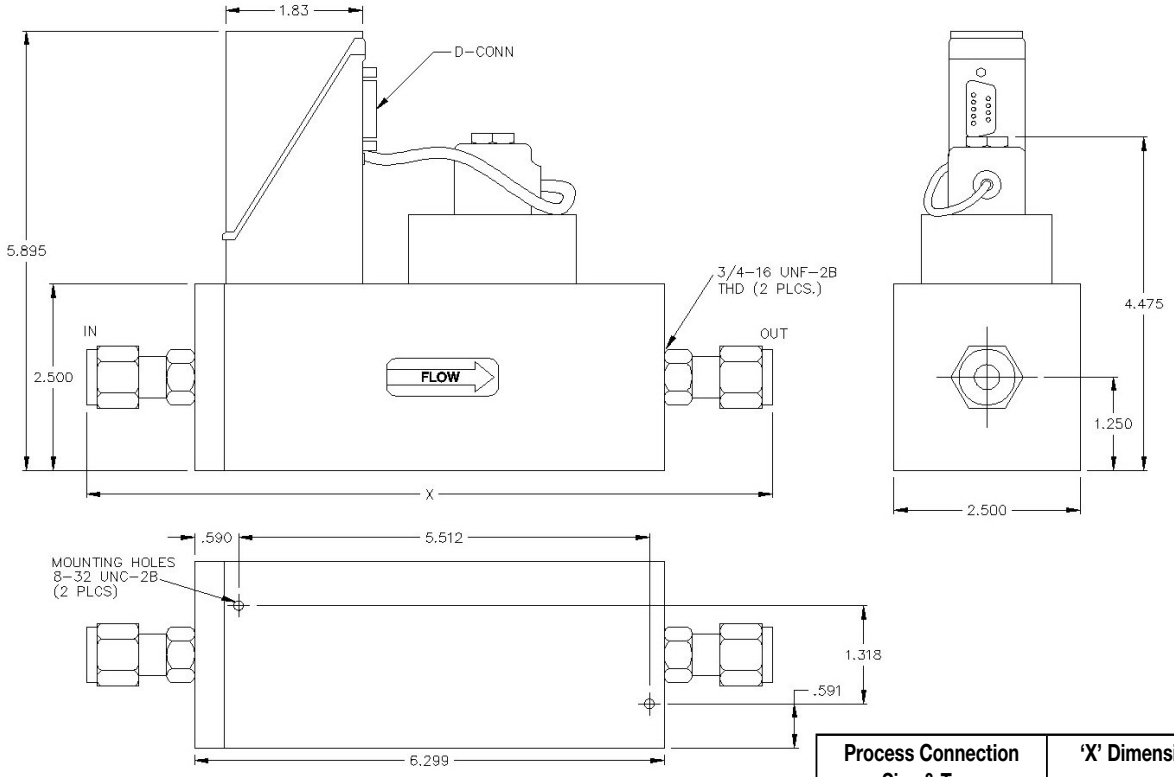
Specifications subject to change

ORDERING INFORMATION

To order, please specify:

- Model number
- Type of output signal
- Elastomer material
- Process connection size and type
- Flow capacity
- Gas type
- Operating temperature
- Inlet (supply) pressure
- Outlet pressure
- Calibration standard (i.e. 0°C, 20°C, 21.1°C or 25°C)
- Additional accessories required

DIMENSIONAL DATA



Dimensions shown in inches

Process Connection Size & Type	'X' Dimension
3/8" Compression	8.499"
1/2" Compression	8.719"
1/2" CPI®	8.719"
1/2" A-Lok®	8.719"
3/8" & 1/2" MMGFS	8.739"

Get A Quick Quote on Model 203A

MODEL NUMBER AND DESCRIPTION

Example: 203A - F K A S V C AA

Model
203A

Model Revision Level
F: Current Revision

PC Board Electrical Connector
K: Nine (9)-Pin "D"

Setpoint Signal/Output Signal
A: 0-5 Vdc/0-5 Vdc
B: 1-5 Vdc/4-20 mAdc (sinking)
D: 1-5 Vdc/1-5 Vdc
E: 0-10 Vdc/0-10 Vdc
H: 4-20 mAdc/4-20 mAdc (sourcing)
J: 4-20 mAdc/4-20 mAdc (sinking)

Body Material
S: 316 Stainless Steel

Elastomers (Valve Seat/ O-Rings)
B: Buna N/ Buna N
V: Viton/Viton

Assembly/Calibration Features
AA: Factory Standard

Process Connection Size and Type			
D	3/8" Compression	**Q**	3/8" MMGFS[2]
E	1/2" Compression	**S**	1/2" MMGFS[2]
F	1/2" CPI™	**T**	1/2" UltraSeal®
G	3/4" Compression	**V**	1/2" A-LOK
K	3/8" MORFS[1]	**X**	No Connections
L	1/2" MORFS[1]	**Z**	Special Connections

A-LOK®, CPI™, UltraSeal™, VacuSeal™ - Parker Hannifin Corp.

[1]MORFS = Male O-Ring Face Seal

[2]MMGFS = Male Metal Gasket Face Seal

For model number options not shown above, please consult factory

OTHER AVAILABLE ANALOG MASS FLOWMETER AND MASS FLOW CONTROLLER MODELS

Type	Model	Max. Flow[1] (SLPM)	Max. Pressure[2] (PSIG)	Min. Delta[3] (PSIG)
Analog Flow Meters	111	10	1500	2
	121	10	3000	2
	112	100	1500	2
	122	100	3000	2
	113	500	1000	2
	114	1000	1000	2
	2111	10	200	2
	3211	10	1000	2

Type	Model	Max. Flow[1] (SLPM)	Max. Pressure[2] (PSIG)	Min. Delta[3] (PSIG)
Analog Flow Controllers	201	10	1000	7
	261	10	1000	7
	221	10	3000	7
	251	50	1000	35
	202	100	1000	60
	222	100	3000	60
	202A	100	200	10
	203A	500	200	40
	204A	1000	200	80
	2201	10	200	7
	3201/3261	10	1000	7

Note: The flow ranges listed are the minimum and maximum nitrogen (N_2) flow ranges available for each given model. Intermediate flow ranges are available. For correct sizing when operating parameters are questionable, please consult the factory.

Get A Quick Quote on Model 203A

Parker Hannifin Corporation
Porter Instrument Division
245 Township Line Road
Hatfield, PA 19440 USA
(215) 723-4000/ fax (215) 723-2199

Model 204A

Mass Flow Instruments

Porter Mass Flow products reflect over four decades of experience in the design and manufacture of precision instruments for the measurement and control of gas flow. They incorporate design principles that are simple and straightforward, yet flexible enough to operate under a wide variety of process parameters. The result is flowmeters, flow controllers and control valves that are accurate, reliable and cost-effective solutions for many gas flow applications in the analytical, process, chemical/ petrochemical, environmental, biopharmaceutical and research markets.

The 200 series is the lastest evolution of the original Porter Analog MFC. With thousands installed worldwide, they are the proven solution when cost effective high performance gas flow control is the goal. The 100 Series Mass Flow Meters are available for applications where flow measurement only is required.

SPECIFICATIONS:

Flow Capacity: Any Flow range from 0-500 SLPM to 0-1000 SLPM (nitrogen equivalent).

Response Time (per SEMI E17-91 Settling Time): 1 to 2 Seconds

Accuracy and Linearity: ±1% full scale

Repeatability: Within ±0.2% full scale at any constant temperature within operating temperature range

Rangeability (Control Range): 50; 1 (2%-100% full scale) (accuracy and control)

Ambient and Operating Temperature Range: -10 to 70 °C (±14 to 158 °F)

Maximum Operating Pressure: 200 PSIG

Temperature Coefficent (per SEMI E18-91 Zero Effect and Span Effect):
±0.05% full scale / °C of zero
±0.05% of reading/ °C of span

Mounting Orientation: Attitude insensitive

Warm-up Time: 10 minutes

External Electrical Connector: Nine (9)- pin Dconnector

Weight (approximate): 10.9 lbs

Power Supply Requirements:
(Current consumption <250 mAdc):
Voltage output models: +12 (±5%) (0-5 Vdc & 1-5 Vdc flow signal outputs only) or +15 (±10%) Vdc
Current loop models:
+15 (±5%) or +24 (±15%) Vdc

Setpoint Input/Flow Signal Output:
0-5 Vdc/0-5 Vdc (2K ohm minimum load resistance)
0-10 Vdc/0-10 Vdc (3K ohm minimum load resistance)
1-5 Vdc/1-5 Vdc (2K ohm minimum load resistance)
4-20 mAdc/4-20mAdc (refer to load resistance values below)
1-5 Vdc/4-20 mAdc (refer to load resistance values below)

Load resistance values for 4-20 mAsc flow signal output:
0-450 ohm for 6.5-15 Vdc loop supply voltage
200-750 ohm for 15-30 Vdc loop supply voltage

Parker Porter

Get A Quick Quote on Model 204A

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MATERIALS OF CONSTRUCTION

Body: 316 Stainless Steel
Sensor Assembly: 316L Stainless Steel
Orifice: 316 Stainless Steel
Valve Components (Wetted): 302 Stainless Steel, 316 Stainless Steel, 430F Stainless Steel and Sandvik® 1802
Elastomers (O-rings and Valve Seat): Buna N, or Viton®
Process Connections: 316 Stainless Steel

Sandvik®, Kalrez® and Viton® are property of their respective owners

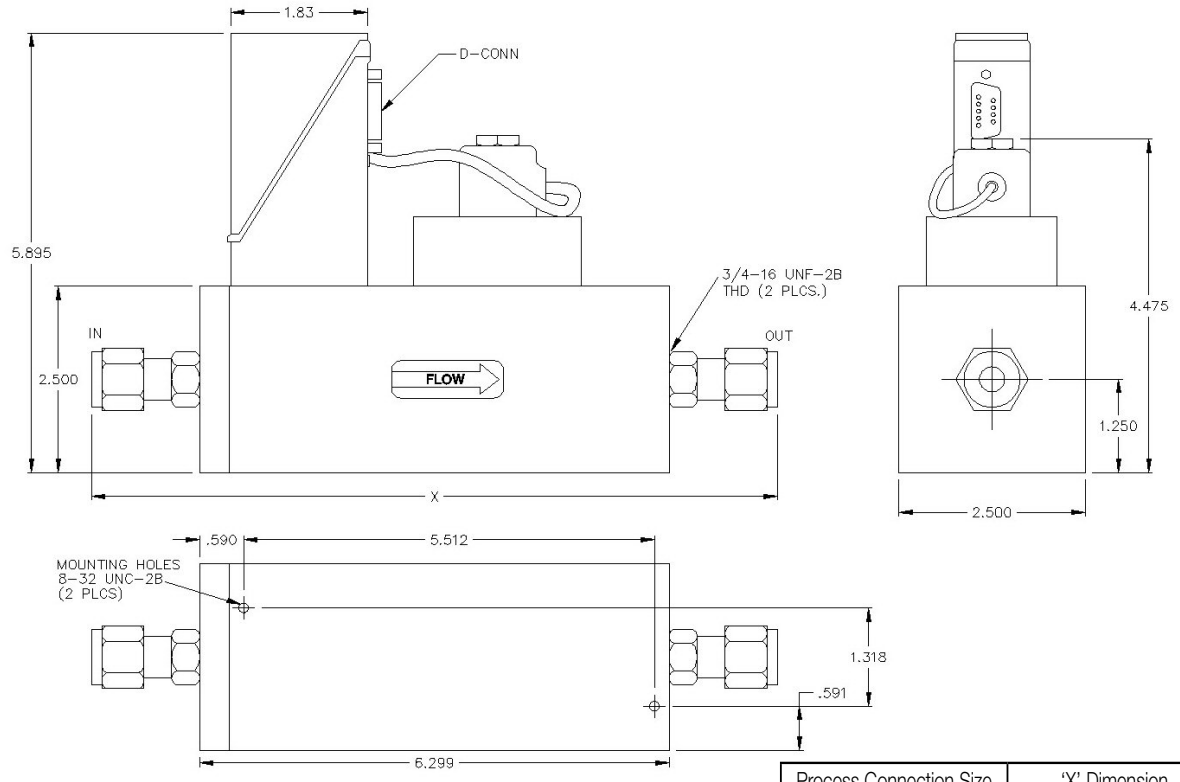
Specifications subject to change

ORDERING INFORMATION

To order, please specify:

- Model number
- Type of output signal
- Elastomer material
- Process connection size and type
- Flow capacity
- Gas type
- Operating temperature
- Inlet (supply) pressure
- Outlet pressure
- Calibration standard (i.e. 0°C, 20°C, 21.1°C or 25°C)
- Additional accessories required

DIMENSIONAL DATA

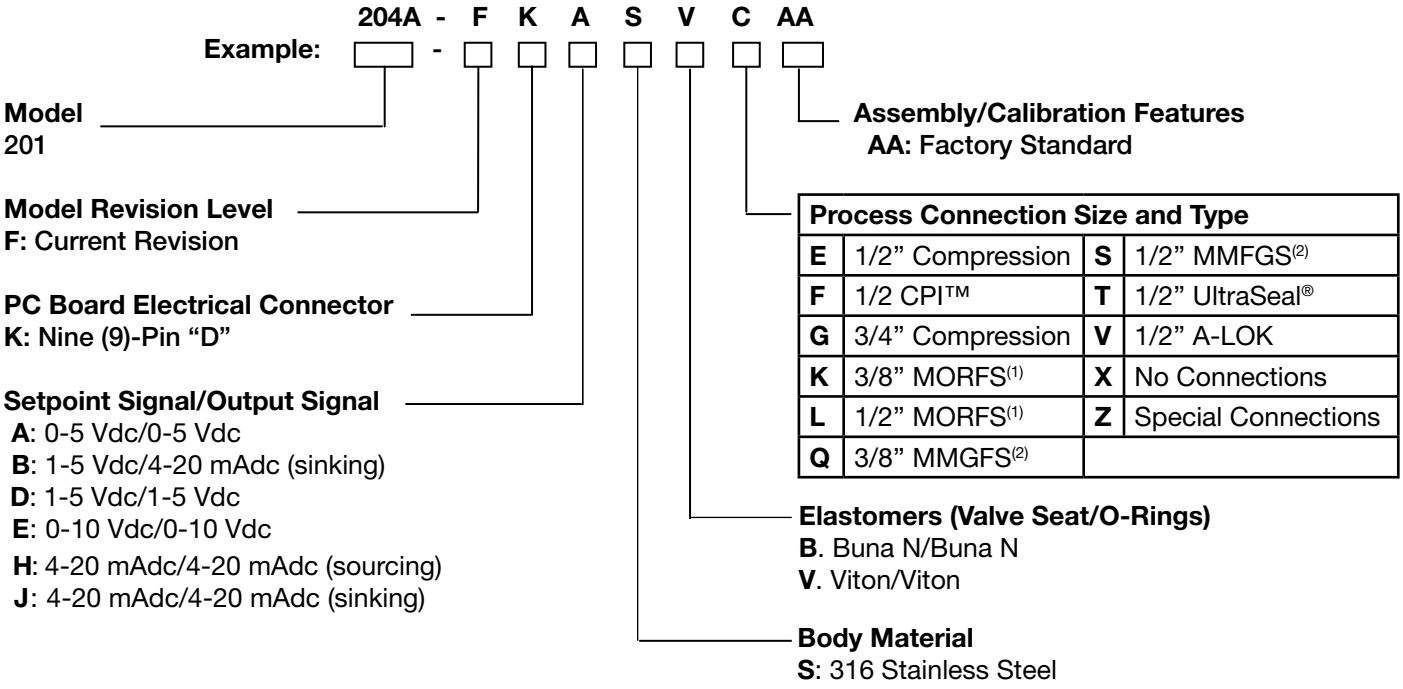


Dimensions shown in inches

Process Connection Size & Type	'X' Dimension
1/2" Compression	8.719"
3/4" Compression	9.039"
1/2" CPI™	8.719"
1/2" A-Lok®	8.719"
3/8" & 1/2" MMGFS	8.739"

Get A Quick Quote on Model 204A

MODEL NUMBER AND DESCRIPTION



Process Connection Size and Type			
E	1/2" Compression	**S**	1/2" MMFGS[2]
F	1/2 CPI™	**T**	1/2" UltraSeal®
G	3/4" Compression	**V**	1/2" A-LOK
K	3/8" MORFS[1]	**X**	No Connections
L	1/2" MORFS[1]	**Z**	Special Connections
Q	3/8" MMGFS[2]		

A-LOK®, CPI™, UltraSeal™, VacuSeal™ - Parker Hannifin Corp.

[1]MORFS = Male O-Ring Face Seal

[2]MMGFS = Male Metal Gasket Face Seal

For model number options not shown above, please consult factory

OTHER AVAILABLE ANALOG MASS FLOWMETER AND MASS FLOW CONTROLLER MODELS

Type	Model	Max. Flow[1] (SLPM)	Max. Pressure[2] (PSIG)	Min. Delta[3] (PSIG)
Analog Flow Meters	111	10	1500	2
	121	10	3000	2
	112	100	1500	2
	122	100	3000	2
	113	500	1000	2
	114	1000	1000	2
	2111	10	200	2
	3211	10	1000	2

Type	Model	Max. Flow[1] (SLPM)	Max. Pressure[2] (PSIG)	Min. Delta[3] (PSIG)
Analog Flow Controllers	201	10	1000	7
	261	10	1000	7
	221	10	3000	7
	251	50	1000	35
	202	100	1000	60
	222	100	3000	60
	202A	100	200	10
	203A	500	200	40
	204A	1000	200	80
	2201	10	200	7
	3201/3261	10	1000	7

Note: The flow ranges listed are the minimum and maximum nitrogen (N_2) flow ranges available for each given model. Intermediate flow ranges are available. For correct sizing when operating parameters are questionable, please consult the factory.

Parker Hannifin Corporation
Porter Instrument Division
245 Township Line Road
Hatfield, PA 19440 USA
(215) 723-4000/ fax (215) 723-2199

Model 221

Mass Flow Instruments

Porter Mass Flow products reflect over four decades of experience in the design and manufacture of precision instruments for the measurement and control of gas flow. They incorporate design principles that are simple and straightforward, yet flexible enough to operate under a wide variety of process parameters. The result is flowmeters, flow controllers and control valves that are accurate, reliable and cost-effective solutions for many gas flow applications in the analytical, process, chemical/ petrochemical, environmental, biopharmaceutical and research markets.

The 200 series is the lastest evolution of the original Porter Analog MFC. With thousands installed worldwide, they are the proven solution when cost effective high performance gas flow control is the goal. The 100 Series Mass Flow Meters are available for applications where flow measurement only is required.

SPECIFICATIONS:

Flow Capacity: Any Flow range to 0-10 SLPM (nitrogen equivalent).

Response Time (per SEMI E17-91 Settling Time): 1 to 2 Seconds

Accuracy and Linearity: ±1% full scale

Repeatability: Within ±0.2% full scale at any constant temperature within operating temperature range

Rangeability (Control Range): 50; 1 (2%-100% full scale) (accuracy and control)

Ambient and Operating Temperature Range: -10 to 70 °C (±14 to 158 °F)

Maximum Operating Pressure: 3000 PSIG

Temperature Coefficent (per SEMI E18-91 Zero Effect and Span Effect):
±0.05% full scale / °C of zero
±0.05% of reading/ °C of span

Mounting Orientation: Attitude insensitive

Warm-up Time: 10 minutes

External Electrical Connector: Nine (9)- pin Dconnector

Weight (approximate): 4.1 lbs

Power Supply Requirements:
(Current consumption <250 mAdc):
Voltage output models: +12 (±5%) (0-5 Vdc & 1-5 Vdc flow signal outputs only) or +15 (±10%) Vdc
Current loop models:
+15 (±5%) or +24 (±15%) Vdc

Setpoint Input/Flow Signal Output:
0-5 Vdc/0-5 Vdc (2K ohm minimum load resistance)
0-10 Vdc/0-10 Vdc (3K ohm minimum load resistance)
1-5 Vdc/1-5 Vdc (2K ohm minimum load resistance)
4-20 mAdc/4-20mAdc (refer to load resistance values below)
1-5 Vdc/4-20 mAdc (refer to load resistance values below)

Load resistance values for 4-20 mAsc flow signal output:
0-450 ohm for 6.5-15 Vdc loop supply voltage
200-750 ohm for 15-30 Vdc loop supply voltage

Parker Porter

Get A Quick Quote on Model 221

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MATERIALS OF CONSTRUCTION

Body: 316 Stainless Steel
Sensor Assembly: 316L Stainless Steel
Orifice: 316 Stainless Steel
Valve Components (Wetted): 302 Stainless Steel, 316 Stainless Steel, and Sandvik® 1802
Elastomers (O-rings and Valve Seat): Buna N, EPDM, Kalrez®, Neoprene or Viton®
Process Connections: 316 Stainless Steel

Sandvik®, Kalrez® and Viton® are property of their respective owners

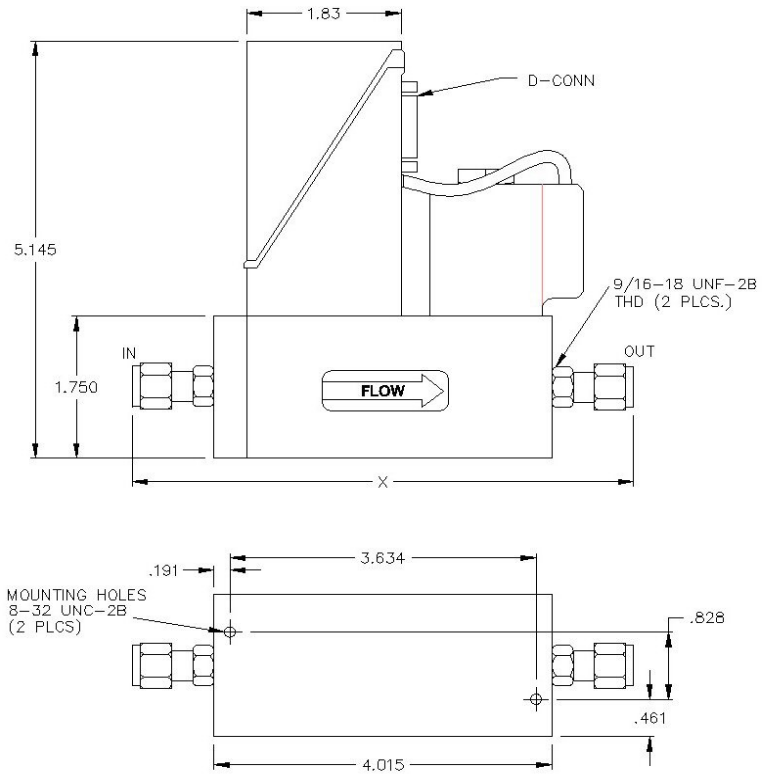
Specifications subject to change

ORDERING INFORMATION

To order, please specify:

- Model number
- Type of output signal
- Elastomer material
- Process connection size and type
- Flow capacity
- Gas type
- Operating temperature
- Inlet (supply) pressure
- Outlet pressure
- Calibration standard (i.e. 0°C, 20°C, 21.1°C or 25°C)
- Additional accessories required

DIMENSIONAL DATA



Dimensions shown in inches

Process Connection Size & Type	'X' Dimension
1/8" Compression	5.855"
1/4" Compression	6.035"
3/8" Compression	6.155"
1/4" CPI™	6.035"
3/8" CPI™	6.155"
1/4" A-Lok®	6.035"
3/8" A-Lok®	6.155"
1/4" MMGFS[2]	5.895"

Get A Quick Quote on Model 221

MODEL NUMBER AND DESCRIPTION

Example: 221 - F K A S V C AA

Model
221

Model Revision Level
F: Current Revision

PC Board Electrical Connector
K: Nine (9)-Pin "D"

Setpoint Signal/Output Signal
A: 0-5 Vdc/0-5 Vdc
B: 1-5 Vdc/4-20 mAdc (sinking)
D: 1-5 Vdc/1-5 Vdc
E: 0-10 Vdc/0-10 Vdc
H: 4-20 mAdc/4-20 mAdc (sourcing)
J: 4-20 mAdc/4-20 mAdc (sinking)

Body Material
S: 316 Stainless Steel

Assembly/Calibration Features
AA: Factory Standard

Process Connection Size and Type			
A	3/8" CPI™	**M**	1/4" UltraSeal®
B	1/8" Compression	**P**	1/4" MMGFS(2)
C	1/4" Compression	**Q**	3/8" MMGFS(2)
D	3/8" Compression	**R**	3/8" UltraSeal®
E	1/2" Compression	**S**	1/2" MMGFS(2)
H	10 mm Compression	**U**	3/8" A-LOK®
I	1/4" CPI	**W**	6 mm Compression
J	1/4" MORFS(1)	**X**	No Connections
K	3/8" MORFS(1)	**Y**	1/4" A-LOK
L	1/2" MORFS(1)	**Z**	Special Connections

Elastomers (Valve Seat/O-Rings)
B: Buna N/ Buna N
E: EPDM/EPDM
K: Kalrez/Kalrez
N: Neoprene/Neoprene
V: Viton/Viton

A-LOK®, CPI™, UltraSeal™, VacuSeal™ - Parker Hannifin Corp.
(1)MORFS = Male O-Ring Face Seal
(2)MMGFS = Male Metal Gasket Face Seal

For model number options not shown above, please consult factory

OTHER AVAILABLE ANALOG MASS FLOWMETER AND MASS FLOW CONTROLLER MODELS

Type	Model	Max. Flow[1] (SLPM)	Max. Pressure[2] (PSIG)	Min. Delta[3] (PSIG)
Analog Flow Meters	111	10	1500	2
	121	10	3000	2
	112	100	1500	2
	122	100	3000	2
	113	500	1000	2
	114	1000	1000	2
	2111	10	200	2
	3211	10	1000	2

Type	Model	Max. Flow[1] (SLPM)	Max. Pressure[2] (PSIG)	Min. Delta[3] (PSIG)
Analog Flow Controllers	201	10	1000	7
	261	10	1000	7
	221	10	3000	7
	251	50	1000	35
	202	100	1000	60
	222	100	3000	60
	202A	100	200	10
	203A	500	200	40
	204A	1000	200	80
	2201	10	200	7
	3201/3261	10	1000	7

Get A Quick Quote on Model 221

Note: The flow ranges listed are the minimum and maximum nitrogen (N_2) flow ranges available for each given model. Intermediate flow ranges are available. For correct sizing when operating parameters are questionable, please consult the factory.

Parker Hannifin Corporation
Porter Instrument Division
245 Township Line Road
Hatfield, PA 19440 USA
(215) 723-4000/ fax (215) 723-2199

Model 222

Mass Flow Instruments

Porter Mass Flow products reflect over four decades of experience in the design and manufacture of precision instruments for the measurement and control of gas flow. They incorporate design principles that are simple and straightforward, yet flexible enough to operate under a wide variety of process parameters. The result is flowmeters, flow controllers and control valves that are accurate, reliable and cost-effective solutions for many gas flow applications in the analytical, process, chemical/ petrochemical, environmental, biopharmaceutical and research markets.

The 200 series is the lastest evolution of the original Porter Analog MFC. With thousands installed worldwide, they are the proven solution when cost effective high performance gas flow control is the goal. The 100 Series Mass Flow Meters are available for applications where flow measurement only is required.

SPECIFICATIONS:

Flow Capacity: Any Flow range from 0-10 SLPM to 0-100 SLPM (nitrogen equivalent).

Response Time (per SEMI E17-91 Settling Time): 1 to 2 Seconds

Accuracy and Linearity: ±1% full scale

Repeatability: Within ±0.2% full scale at any constant temperature within operating temperature range

Rangeability (Control Range): 50; 1 (2%-100% full scale) (accuracy and control)

Ambient and Operating Temperature Range: -10 to 70 °C (±14 to 158 °F)

Maximum Operating Pressure: 3000 PSIG

Temperature Coefficent (per SEMI E18-91 Zero Effect and Span Effect):
±0.05% full scale / °C of zero
±0.05% of reading/ °C of span

Mounting Orientation: Attitude insensitive

Warm-up Time: 10 minutes

External Electrical Connector: Nine (9)- pin Dconnector

Weight (approximate): 4.1 lbs

Power Supply Requirements:
(Current consumption <250 mAdc):
Voltage output models: +12 (±5%) (0-5 Vdc & 1-5 Vdc flow signal outputs only) or +15 (±10%) Vdc
Current loop models:
+15 (±5%) or +24 (±15%) Vdc

Setpoint Input/Flow Signal Output:
0-5 Vdc/0-5 Vdc (2K ohm minimum load resistance)
0-10 Vdc/0-10 Vdc (3K ohm minimum load resistance)
1-5 Vdc/1-5 Vdc (2K ohm minimum load resistance)
4-20 mAdc/4-20mAdc (refer to load resistance values below)
1-5 Vdc/4-20 mAdc (refer to load resistance values below)

Load resistance values for 4-20 mAsc flow signal output:
0-450 ohm for 6.5-15 Vdc loop supply voltage
200-750 ohm for 15-30 Vdc loop supply voltage

Get A Quick Quote on Model 222

Parker Porter

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MATERIALS OF CONSTRUCTION

Body: 316 Stainless Steel
Sensor Assembly: 316L Stainless Steel
Orifice: 316 Stainless Steel
Valve Components (Wetted): 302 Stainless Steel, 316 Stainless Steel and Sandvik® 1802
Elastomers (O-rings and Valve Seat): Buna N, EPDM, Kalrez®, Neoprene or Viton®
Process Connections: 316 Stainless Steel

Sandvik®, Kalrez® and Viton® are property of their respective owners

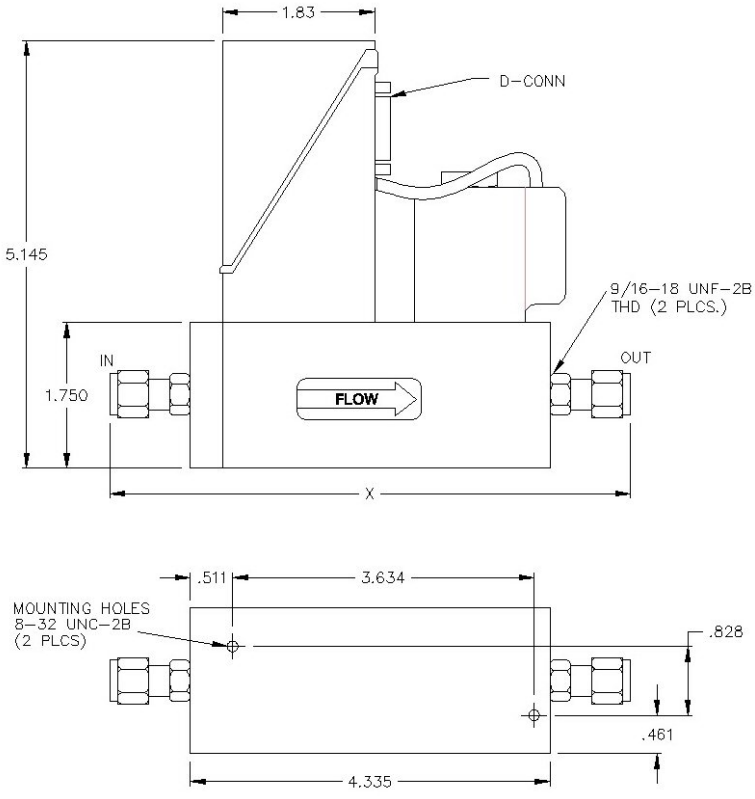
Specifications subject to change

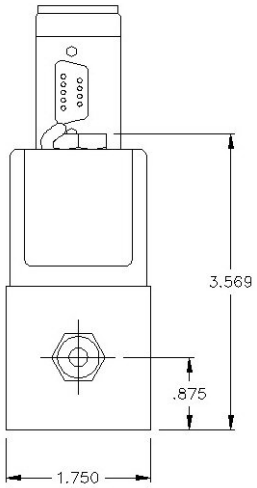
ORDERING INFORMATION

To order, please specify:

- Model number
- Type of output signal
- Elastomer material
- Process connection size and type
- Flow capacity
- Gas type
- Operating temperature
- Inlet (supply) pressure
- Outlet pressure
- Calibration standard (i.e. 0°C, 20°C, 21.1°C or 25°C)
- Additional accessories required

DIMENSIONAL DATA





Dimensions shown in inches

Process Connection Size & Type	'X' Dimension
1/4" Compression	6.335"
3/8" Compression	6.475"
1/4" CPI™	6.335"
3/8 CPI™	6.475"
1/4" A-Lok®	6.335"
3/8" A-Lok®	6.475"
1/4" MMGFS[2]	6.215"

Get A Quick Quote on Model 222

MODEL NUMBER AND DESCRIPTION

Example: 222 - F K A S V C AA

Model
222

Model Revision Level
F: Current Revision

PC Board Electrical Connector
K: Nine (9)-Pin "D"

Setpoint Signal/Output Signal
A: 0-5 Vdc/0-5 Vdc
B: 1-5 Vdc/4-20 mAdc (sinking)
D: 1-5 Vdc/1-5 Vdc
E: 0-10 Vdc/0-10 Vdc
H: 4-20 mAdc/4-20 mAdc (sourcing)
J: 4-20 mAdc/4-20 mAdc (sinking)

Body Material
S: 316 Stainless Steel

Assembly/Calibration Features
AA: Factory Standard

Process Connection Size and Type			
A	3/8" CPI™	**M**	1/4" UltraSeal®
B	1/8" Compression	**P**	1/4" MMGFS(2)
C	1/4" Compression	**Q**	3/8" MMGFS(2)
D	3/8" Compression	**R**	3/8" UltraSeal®
E	1/2" Compression	**S**	1/2" MMGFS(2)
H	10 mm Compression	**U**	3/8" A-LOK®
I	1/4" CPI™	**W**	6 mm Compression
J	1/4" MORFS(1)	**X**	X: No Connections
K	3/8" MORFS(1)	**Y**	Y: 1/4" A-LOK
L	1/2" MORFS(1)	**Z**	Z: Special Connections

Elastomers (Valve Seat/O-Ring)
B: Buna N/ Buna N
E: EPDM/EPDM
K: Kalrez/Kalrez
N: Neoprene/Neoprene
V: Viton/Viton

A-LOK®, CPI™, UltraSeal™, VacuSeal™ - Parker Hannifin Corp.
(1)MORFS = Male O-Ring Face Seal
(2)MMGFS = Male Metal Gasket Face Seal

For model number options not shown above, please consult factory

OTHER AVAILABLE ANALOG MASS FLOWMETER AND MASS FLOW CONTROLLER MODELS

Type	Model	Max. Flow[1] (SLPM)	Max. Pressure[2] (PSIG)	Min. Delta[3] (PSIG)
Analog Flow Meters	111	10	1500	2
	121	10	3000	2
	112	100	1500	2
	122	100	3000	2
	113	500	1000	2
	114	1000	1000	2
	2111	10	200	2
	3211	10	1000	2

Type	Model	Max. Flow[1] (SLPM)	Max. Pressure[2] (PSIG)	Min. Delta[3] (PSIG)
Analog Flow Controllers	201	10	1000	7
	261	10	1000	7
	221	10	3000	7
	251	50	1000	35
	202	100	1000	60
	222	100	3000	60
	202A	100	200	10
	203A	500	200	40
	204A	1000	200	80
	2201	10	200	7
	3201/3261	10	1000	7

Get A Quick Quote on Model 222

Note: The flow ranges listed are the minimum and maximum nitrogen (N_2) flow ranges available for each given model. Intermediate flow ranges are available. For correct sizing when operating parameters are questionable, please consult the factory.

Parker Hannifin Corporation
Porter Instrument Division
245 Township Line Road
Hatfield, PA 19440 USA
(215) 723-4000/ fax (215) 723-2199

WS- 0015 Rev. C 02/12

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Model 251

Mass Flow Instruments

Porter Mass Flow products reflect over four decades of experience in the design and manufacture of precision instruments for the measurement and control of gas flow. They incorporate design principles that are simple and straightforward, yet flexible enough to operate under a wide variety of process parameters. The result is flowmeters, flow controllers and control valves that are accurate, reliable and cost-effective solutions for many gas flow applications in the analytical, process, chemical/ petrochemical, environmental, biopharmaceutical and research markets.

The 200 series is the lastest evolution of the original Porter Analog MFC. With thousands installed worldwide, they are the proven solution when cost effective high performance gas flow control is the goal. The 100 Series Mass Flow Meters are available for applications where flow measurement only is required.

SPECIFICATIONS:

Flow Capacity: Any Flow range from 0-10 SLP M to 0-50 SLPM (nitrogen equivalent).

Response Time (per SEMI E17-91 Settling Time): 1 to 2 Seconds

Accuracy and Linearity: ±1% full scale

Repeatability: Within ±0.2% full scale at any constant temperature within operating temperature range

Rangeability (Control Range): 50; 1 (2%-100% full scale) (accuracy and control)

Ambient and Operating Temperature Range: -10 to 70 °C (±14 to 158 °F)

Maximum Operating Pressure: 1000 PSIG

Temperature Coefficent (per SEMI E18-91 Zero Effect and Span Effect):
±0.05% full scale / °C of zero
±0.05% of reading/ °C of span

Mounting Orientation: Attitude insensitive

Warm-up Time: 10 minutes

External Electrical Connector: Nine (9)- pin Dconnector

Weight (approximate): 1.4 lbs

Power Supply Requirements:
(Current consumption <250 mAdc):
Voltage output models: +12 (±5%) (0-5 Vdc & 1-5 Vdc flow signal outputs only) or +15 (±10%) Vdc
Current loop models:
+15 (±5%) or +24 (±15%) Vdc

Setpoint Input/Flow Signal Output:
0-5 Vdc/0-5 Vdc (2K ohm minimum load resistance)
0-10 Vdc/0-10 Vdc (3K ohm minimum load resistance)
1-5 Vdc/1-5 Vdc (2K ohm minimum load resistance)
4-20 mAdc/4-20mAdc (refer to load resistance values below)
1-5 Vdc/4-20 mAdc (refer to load resistance values below)

Load resistance values for 4-20 mAsc flow signal output:
0-450 ohm for 6.5-15 Vdc loop supply voltage
200-750 ohm for 15-30 Vdc loop supply voltage

Parker Porter

Get A Quick Quote on Model 251

ENGINEERING YOUR SUCCESS.

MATERIALS OF CONSTRUCTION

Body: 316 Stainless Steel
Sensor Assembly: 316L Stainless Steel
Orifice: 316 Stainless Steel
Valve Components (Wetted): 302 Stainless Steel, 316 Stainless Steel and Sandvik® 1802
Elastomers (O-rings and Valve Seat): Buna N, EPDM, Kalrez®, Neoprene or Viton®
Process Connections: 316 Stainless Steel

Sandvik®, Kalrez® and Viton® are property of their respective owners

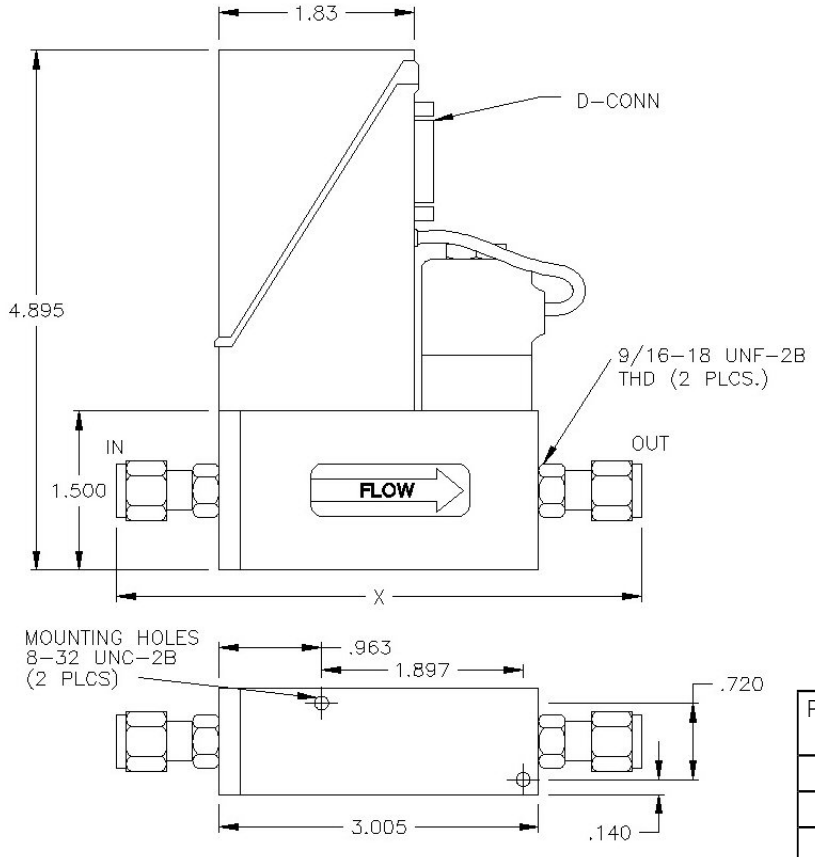
Specifications subject to change

ORDERING INFORMATION

To order, please specify:

- Model number
- Type of output signal
- Elastomer material
- Process connection size and type
- Flow capacity
- Gas type
- Operating temperature
- Inlet (supply) pressure
- Outlet pressure
- Calibration standard (i.e. 0°C, 20°C, 21.1°C or 25°C)
- Additional accessories required

DIMENSIONAL DATA



Dimensions shown in inches

Process Connection Size & Type	'X' Dimension
1/4" Compression	5.025"
3/8" Compression	5.145"
1/4" CPI®	5.025"
3/8" CPI	5.145"
1/4" A-Lok®	5.025"
3/8" A-Lok	5.145"
1/4" MMGFS	4.885"

Get A Quick Quote on Model 251

MODEL NUMBER AND DESCRIPTION

Example: 251 - F K A S V C AA

Model
251

Model Revison
F: Current Revision

PC Board Electrical Connector
K: Nine (9)-Pin "D"

Setpoint Signal/Output Signal
A: 0-5 Vdc/0-5 Vdc
B: 1-5 Vdc/4-20 mAdc (sinking)
D: 1-5 Vdc/1-5 Vdc
E: 0-10 Vdc/0-10 Vdc
H: 4-20 mAdc/4-20 mAdc (sourcing)
J : 4-20 mAdc/4-20 mAdc (sinking)

Body Material
S: 316 Stainless Steel

Assembly/Calibration Features
AA: Factory Standard

Process Connection Size and Type			
A	3/8" CPI™	**P**	1/4" MMGFS[2]
C	1/4" Compression	**Q**	3/8" MMGFS[2]
D	3/8" Compression	**R**	3/8" UltraSeal®
E	1/2" Compression	**S**	1/2" MMGFS[2]
H	10 mm Compression	**U**	3/8" A-LOK®
I	1/4" CPI™	**W**	6 mm Compression
J	1/4" MORFS[1]	**X**	No Connections
K	3/8" MORFS[1]	**Y**	1/4" A-LOK
L	1/2" MORFS[1]	**Z**	Special Connections
M	1/4" UltraSeal®		

Elastomers (Valve Seat/O-Rings)
B. Buna N/Buna N
E. EPDM/EPDM
K. Kalrez/Kalrez
N. Neoprene/Neoprene
V: Viton/Viton

A-LOK®, CPI™, UltraSeal™, VacuSeal™ - Parker Hannifin Corp.
[1]MORFS = Male O-Ring Face Seal
[2]MMGFS = Male Metal Gasket Face Seal

For model number options not shown above, please consult factory

OTHER AVAILABLE ANALOG MASS FLOWMETER AND MASS FLOW CONTROLLER MODELS

Type	Model	Max. Flow[1] (SLPM)	Max. Pressure[2] (PSIG)	Min. Delta[3] (PSIG)
Analog Flow Meters	111	10	1500	2
	121	10	3000	2
	112	100	1500	2
	122	100	3000	2
	113	500	1000	2
	114	1000	1000	2
	2111	10	200	2
	3211	10	1000	2

Type	Model	Max. Flow[1] (SLPM)	Max. Pressure[2] (PSIG)	Min. Delta[3] (PSIG)
Analog Flow Controllers	201	10	1000	7
	261	10	1000	7
	221	10	3000	7
	251	50	1000	35
	202	100	1000	60
	222	100	3000	60
	202A	100	200	10
	203A	500	200	40
	204A	1000	200	80
	2201	10	200	7
	3201/3261	10	1000	7

Note: The flow ranges listed are the minimum and maximum nitrogen (N_2) flow ranges available for each given model. Intermediate flow ranges are available. For correct sizing when operating parameters are questionable, please consult the factory.

WS-0016 Rev. B 02/12

Parker Hannifin Corporation
Porter Instrument Division
245 Township Line Road
Hatfield, PA 19440 USA
(215) 723-4000/ fax (215) 723-2199

Model 261

Mass Flow Instruments

Porter Mass Flow products reflect over four decades of experience in the design and manufacture of precision instruments for the measurement and control of gas flow. They incorporate design principles that are simple and straight forward, yet flexible enough to operate under a wide variety of process parameters. The result is flowmeters, flow controllers and control valves that are accurate, reliable and cost-effective solutions for many gas flow applications in the analytical, process, chemical/ petrochemical, environmental, biopharmaceutical and research markets.

The model 261 controller is specifically designed for SP-76 compliant manifold mount systems and is compatible with the Parker IntraFlow™ modular system.

SPECIFICATIONS:

Flow Capacity: Any Flow range from 0-5 SCCM to 0-10 SLPM (nitrogen equivalent).

Response Time (per SEMI E17-91 Settling Time): 1 to 2 Seconds

Accuracy and Linearity: ±1% full scale

Repeatability: Within ±0.2% full scale at any constant temperature within operating temperature range

Rangeability (Control Range): 50; 1 (2%-100% full scale) (accuracy and control)

Ambient and Operating Temperature Range: -10 to 70 °C (±14 to 158 °F)

Maximum Operating Pressure: 1000 PSIG

Temperature Coefficent (per SEMI E18-91 Zero Effect and Span Effect):
±0.05% full scale / °C of zero
±0.05% of reading/ °C of span

Mounting Orientation: Attitude insensitive

Warm-up Time: 10 minutes

External Electrical Connector: Nine (9)- pin Dconnector

Weight (approximate): 1.2 lbs

Power Supply Requirements:
(Current consumption <250 mAdc):
Voltage output models: +12 (±5%) (0-5 Vdc & 1-5 Vdc flow signal outputs only) or +15 (±10%) Vdc
Current loop models:
+15 (±5%) or +24 (±15%) Vdc

Setpoint Input/Flow Signal Output:
0-5 Vdc/0-5 Vdc (2K ohm minimum load resistance)
0-10 Vdc/0-10 Vdc (3K ohm minimum load resistance)
1-5 Vdc/1-5 Vdc (2K ohm minimum load resistance)
4-20 mAdc/4-20mAdc (refer to load resistance values below)
1-5 Vdc/4-20 mAdc (refer to load resistance values below)

Load resistance values for 4-20 mAsc flow signal output:
0-450 ohm for 6.5-15 Vdc loop supply voltage
200-750 ohm for 15-30 Vdc loop supply voltage

Parker Porter

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MATERIALS OF CONSTRUCTION

Body: 316 Stainless Steel
Sensor Assembly: 316L Stainless Steel
Orifice: 316 Stainless Steel
Valve Components (Wetted): 302 Stainless Steel, 316 Stainless Steel, 430F Stainless Steel and Sandvik® 1802
Elastomers (O-rings and Valve Seat): Buna N, EPDM, Kalrez®, Neoprene or Viton®

Sandvik®, Kalrez® and Viton® are property of their respective owners

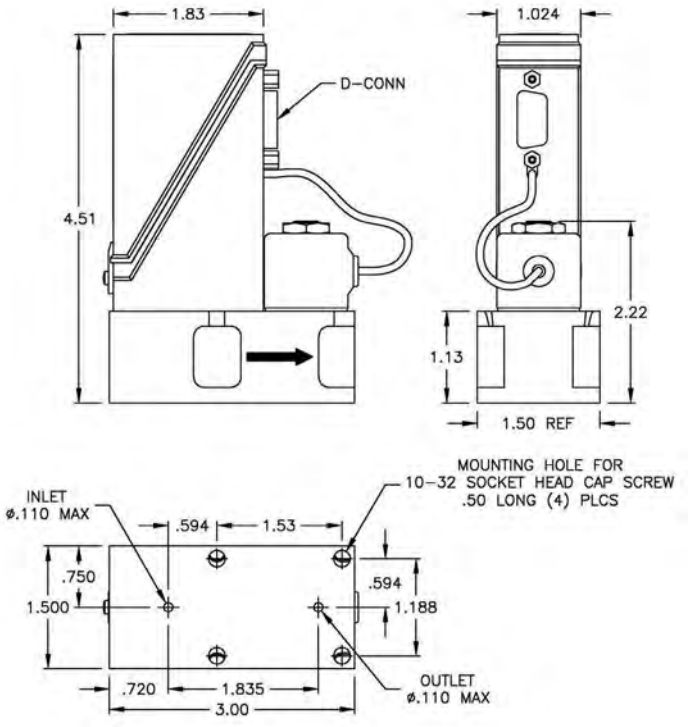
Specifications subject to change

ORDERING INFORMATION

To order, please specify:

- Model number
- Type of output signal
- Elastomer material
- Flow capacity
- Gas type
- Operating temperature
- Inlet (supply) pressure
- Outlet pressure
- Calibration standard (i.e. 0°C, 20°C, 21.1°C or 25°C)
- Additional accessories required

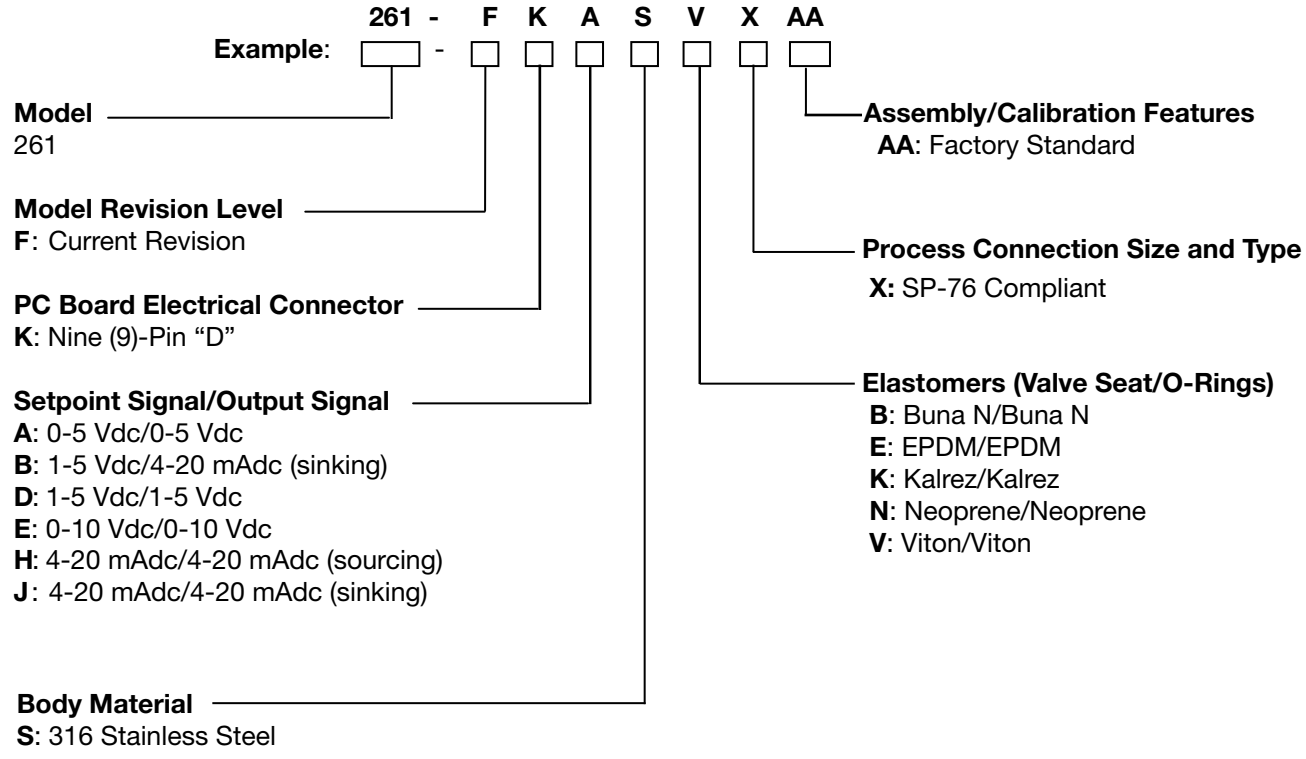
DIMENSIONAL DATA



Dimensions shown in inches

Get A Quick Quote on Model 261

MODEL NUMBER AND DESCRIPTION



A-LOK®, CPI™, UltraSeal™, VacuSeal™ - Parker Hannifin Corp.

(1)MORFS = Male O-Ring Face Seal

(2)MMGFS = Male Metal Gasket Face Seal

For model number options not shown above, please consult factory

OTHER AVAILABLE NON-SP-76 COMPLIANT ANALOG MASS FLOWMETER AND MASS FLOW CONTROLLER MODELS

Type	Model	Max. Flow[1] (SLPM)	Max. Pressure[2] (PSIG)	Min. Delta[3] (PSIG)
Analog Flow Meters	111	10	1500	2
	121	10	3000	2
	112	100	1500	2
	122	100	3000	2
	113	500	1000	2
	114	1000	1000	2
	2111	10	200	2
	3211	10	1000	2

Type	Model	Max. Flow[1] (SLPM)	Max. Pressure[2] (PSIG)	Min. Delta[3] (PSIG)
Analog Flow Controllers	201	10	1000	7
	261	10	1000	7
	221	10	3000	7
	251	50	1000	35
	202	100	1000	60
	222	100	3000	60
	202A	100	200	10
	203A	500	200	40
	204A	1000	200	80
	2201	10	200	7
	3201/3261	10	1000	7

Note: The flow ranges listed are the minimum and maximum nitrogen (N_2) flow ranges available for each given model. Intermediate flow ranges are available. For correct sizing when operating parameters are questionable, please consult the factory.

Parker Hannifin Corporation
Porter Instrument Division
245 Township Line Road
Hatfield, PA 19440 USA
(215) 723-4000/ fax (215) 723-2199

2200 Series

Mass Flow Instruments

Precise & Affordable Mass Flow Control

The Porter 2200 Series Mass Flow Instruments bring a new dimension to affordable mass flow control. Series 2200 utilizes the same proven thermal sensor assembly, control circuitry and unique laminar flow elements found in the standard Porter mass flow products. Model 2201 includes the Porter EPC proportional control valve, the same valve assembly used by many analytical instrument manufacturers for accurate gas flow control. This results in mass flow instruments that are affordable without compromising precision, control integrity or reliability.

Materials of Construction

Body	Aluminum
Valve Base (Body)	Aluminum
Orifice	Brass (Model 2201)
Valve Components (Wetted)	Stainless Steel (Model 2201)
Elastomers (O-rings and Valve Seat)	Buna N, EPDM, Neoprene or Viton®
Process Connections	Nickel-plated brass (inlet) and aluminum (outlet-integral to body)

Viton® is a registered trademark of DuPont Dow Elastomers L.L.C.

Specifications

Flow Capacity	Maximum flows from 40 SCCM to 10 SLPM (based on nitrogen [N_2] @ 70°F & 5 PSIG)
Response Time	3 to 4 seconds
Accuracy and Linearity	±2% full scale
Repeatability	Within ±0.2% full scale at any constant temperature within operating temperature range
Rangeability (Control Range)	50:1 (2%-100% full scale)
Ambient & Operating Temperature Range	-10°C to 70°C (+14°F to 158°F)
Maximum Operating Pressure	200 PSIG
Temperature Coefficient	±0.1%/°C
Pressure CoeffIcient	±0.1%/atmosphere typical using N_2
Setpoint Input/Flow Signal Output	0-5 Vdc (2K ohm minimum load resistance for flow signal output)
Power Supply Requirements (current consumption <250 mAdc)	+12 (±5%) or +15 (±10%) Vdc +24 Vdc (used for 4-20 mAdc PCB)
Mounting Orientation	Attitude insensitive
Warm-up Time	10 minutes
External Electrical Connector	Nine (9)-pin D-connector
Inlet/Outlet Process Connections	1/8" female NPT

Contact Information:

Parker Hannifin Corporation
Porter Instrument Division
245 Township Line Road
Hatfield, PA 19440

phone 215 723 4000
fax 215 723 2199
Industrial@parker.com

www.parker.com

Parker | Porter

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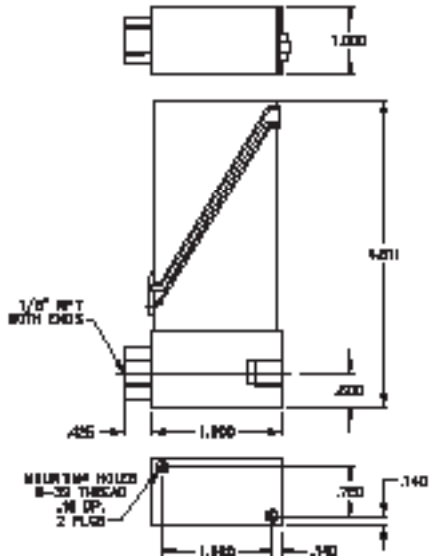
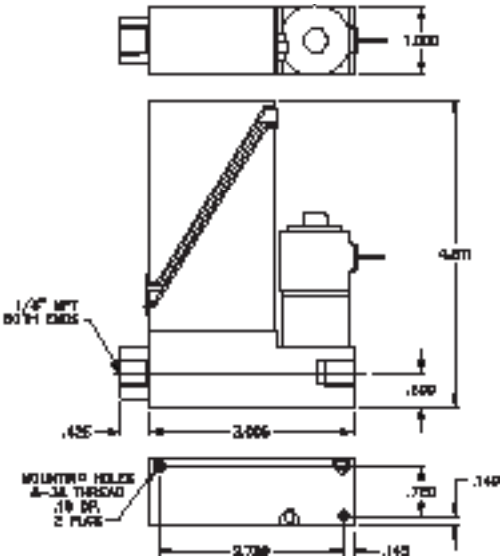
Dimensions

Model 2211



Model 2201



Ordering Information

To order, please specify:

- Flow capacity
- Gas type
- Operating temperature
- Inlet (supply) pressure
- Outlet pressure
- Calibration standard (i.e. 0°C, 20°C, 21.1°C or 25°C)
- Elastomer material
- Additional accessories required (e.g., interface module, inter-connecting cable assembly, etc.)

2201	A	A	A	V	C	1	AA

Basic Model Number

2211	Mass Flowmeter
2201	Mass Flow Controller

Model Revision

A	Factory Specified

Setpoint Signal*/Output Signal

A	0-5 Vdc/ 0-5 Vdc
B	0-5 Vdc/4-20 mAdc (sinking)
H	4-20 mAdc/ 4-20 mAdc (sourcing)
J	4-20 mAdc/4-20 mAdc (sinking)

Body Orifice*/ Inlet Adapter Materials

A	Aluminum/Brass/Brass (nickel-plated)

Elastomer Material (O-Rings/Valve Seat*)

B	Buna N/Buna N
E	EPDM/EPDM
N	Neoprene/Neoprene
V	Viton®/Viton®

Valve Flow Designator

(Factory Specified, based on flow and pressures) Use X for model 2211

Inlet & Outlet Process Connections

1	1/8" Female NPT
2	1/8" Compression Fitting
3	1/4" Compression Fitting

Customer Application

AA	(Factory Specified)

*Setpoint, valve orifice and seat applicable to Model 2201 only

Example: 2201AAAVC1AA

This example part number describes a 2201 model mass flow controller, factory revision A, with 0-5 Vdc setpoint and output signals, Viton® elastomers and 1/8" female NPT inlet and outlet process connections.