3600 Series

Severe Duty Mass Flow Meter
& Controller

High Performance Gas Flow Control for Industrial Environments

The Porter 3600 Series Digital Mass Flow Instruments are designed specifically for applications in severe industrial environments. Various models in this series meet IP 66, NEMA 4X and Class I, Div. 2 requirements. Series 3600 devices will satisfy food & beverage, biotech/ pharmaceutical and chemical processing applications that require frequent wash down, as well as chemical/petrochemical and industrial process applications where hazardous location certification is required.

Digital control electronics provide unparalleled accuracy, repeatability and control stability. TURCK™ electrical connectors simplify wiring and replacement. Percentage of reading accuracy, fast response and multi-gas capability, along with analog or digital I/O options make the Porter 3600 Series a versatile solution to many demanding applications.

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

3600 Series Features:

- NEMA 4X, IP 66 Watertight Construction
- Listed for Class 1, Division 2 Environments
- Industry Standard TURCK™ Electrical Connectors
- Stainless Steel Body and Internal Components
- Digital Electronics
- Multi-Gas Capability
- 4-20 mA, Modbus, Profibus or DeviceNet I/O
- Self-Diagnostics

Parker Porter

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Specifications

Flow Capacity
Model 3601 controller & 3611 meter:
100 SCCM to 10 SLPM
Model 3602 controller and 3612 meter:
10 SLPM to 100 SLPM (nitrogen equivalent)

Response Time (per SEMI E17-91 Settling Time)
1 to 2 seconds (consult factory for applications requiring faster response times)

Accuracy and Linearity
±1.0% of reading (20%-100% full scale) & ±0.8% of reading plus ±0.2% full scale (below 20% full scale)

Repeatability
Within ±0.2% of rate at any constant temperature within operating temperature range

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

Ambient Temperature Range
Devicenet: -10°C to 60°C (14°F to 140°F)
All Other Protocols: -10°C to 70°C (14°F to 158°F)

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

Maximum Operating Pressure: 1500 PSIG

Pressure Coefficient (per SEMI E28-92 Total Calibration Effect)
± 0.1%/atmosphere typical using nitrogen (N2)

Warm-up Time: 10 minutes

Setpoint Input/Flow Signal Output

Setpoint	Flow Signal
0-5 Vdc	0-5 Vdc (2K ohm min. load resist.)
0-10 Vdc	0-10 Vdc (3K ohm min. load resist.)
4-20 mAdc	4-20 mAdc (sourcing) (refer to load resistance values below)
0-100% (Modbus, Profibus, DeviceNet)	0-100%

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

Power Supply Requirements
All models operate from nominal power supply voltages of +15 to +24 Vdc. Current Consumption <250 mAdc (MFC), <70 mAdc (MFM)

Electrical Connections

For Class1, Div 2, NEMA4X, IP66
External Electrical Connectors on Device
Analog: TURCK™ minifast
Digital: TURCK™ minifast
Mating Cordsets (TURCK™, Inc.):
Analog: TURCK™ p/n P-RKV 71-219-*M
Digital: TURCK™ p/n P-RKV 55-099-*M (Modbus)
Digital: TURCK™ p/n RSCV RKCV 5711-*M (Devicenet; male/female)
Digital: TURCK™ p/n RKCV 5711-*M (Devicenet; female/flying leads)
Digital: for Profibus, contact factory
* Indicates cordset length
Mating Cordset for Internal Electrical Connector inside Device:
RS232 Comm: TURCK™ p/n PKG 3Z-*
* Indicates cordset length

For NEMA4X, IP66 Device
External Electrical Connectors on Device
Analog: TURCK™ eurofast
Digital: TURCK™ eurofast
Mating Cordsets (Turck, Inc.):
Analog: TURCK™ p/n RKSV 8T-*
Digital: TURCK™ p/n RKSV 4.5T-* (Modbus)
Digital: TURCK™ p/n RKCV 5711-*M (Devicenet; female/flying leads)
TURCK™ p/n RSCV RKCV 5711-*M (Devicenet; female/male)
Digital: TURCK™ p/n RKSWV 455-*M (Profibus; female/flying leads)
TURCK™ p/n RSSWV RKSWV 455-*M (Profibus; female/male)
* Cordset length indicator

Certifications (Model Dependent)

EMC Directive 89/336/EEC Pressure Equipment Directive (97/23/EC) Hazardous Location Classification Non-Incendive Enclosure Type 4X/IP66 **Temperature (Ambient)** Devicenet: -10° to 60°C (14° to 140°F) All Other Protocols: -10 to 70°C (14° to 158°F)	CI I Div 2 Gps ABCD Class I Zone 2 AEx nA IIC T5 IP66 Ex nA IIC T5 IP66 Intertek 4000657 CE

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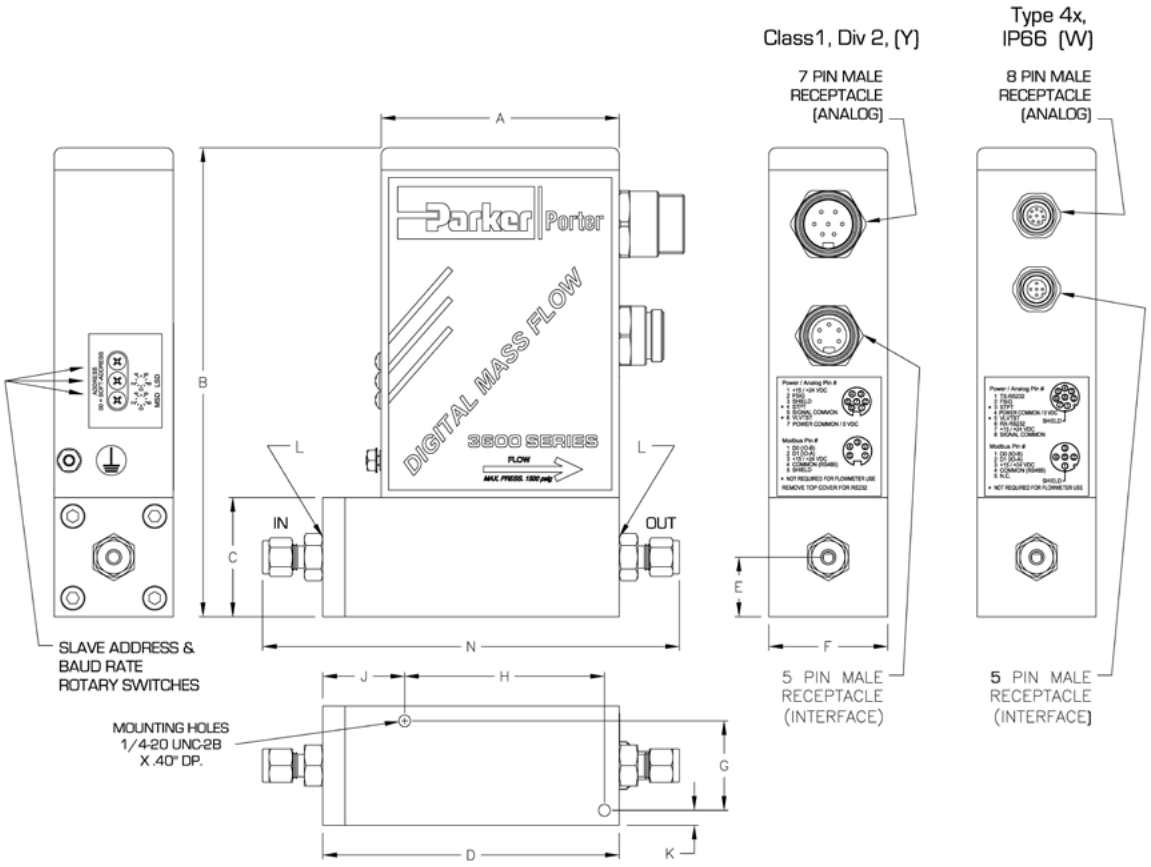
Materials

Body	316 Stainless Steel
Sensor Assembly	316L Stainless Steel
Orifice	316 Stainless Steel (MFCs only)
Valve Components (Wetted)	302 Stainless Steel, 316 Stainless Steel, 430F Stainless Steel and Sandvik® (MFCs only)
Elastomers	Buna N, EPDM, Kalrez®, Neoprene or Viton®
Process Connections	316 Stainless Steel

Dimensions (Inches)

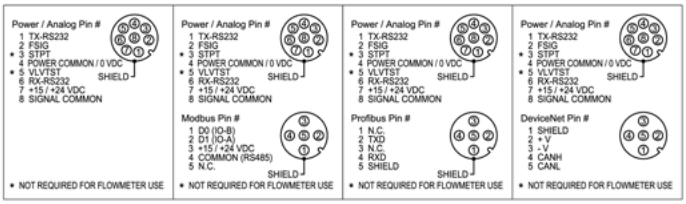


Model	A	B	C	D	E	F	G	H	J	K	L	N
3602	4.000	7.875	2.000	4.982	1.000	2.000	1.500	3.355	1.377	0.250	9/16-18	Ref. Table Below

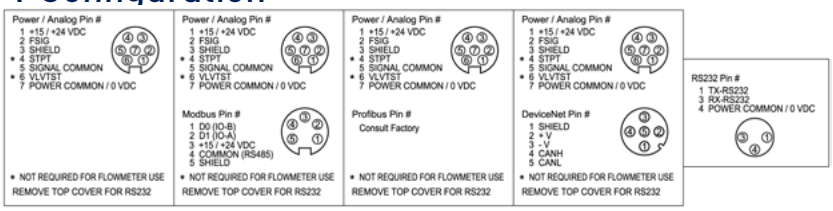
Model	A-LOK®/CPI™					VacuSeal™		
	1/8"	1/4"	3/8"	1/2"	3/4"	1/4"	3/8"	1/2"
3602	6.822	7.002	7.122	7.282	N/A	6.862	7.162	7.162

External Wiring Diagram Cable Information and Connector Pinouts

W Configuration



Y Configuration



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Ordering Information

Use the following guide to determine the specific product number you require.

The following example describes a 3600 Series Flow Controller, standard response, Modbus communications , 24 Vdc power, NEMA 4Xx & IP 66 Certification, Viton® elastomers and 1/4" A-LOK® connections.

Example: 3601AAMWVYAA

3601	A	A	M	W	V	Y	AA

Model

3601/3611 <10 SLPM, N_2
3602/3612 >10 SLPM, N_2

Model Revision Level

Factory Assigned

Response Time

A 1 to 2 seconds (standard)

PCB Setpoint & Output Signal, Power Supply Voltage

A 0-5 Vdc (+15 Vdc)
B 0-5 Vdc (+24 Vdc)
C DeviceNet (+15 Vdc)
D DeviceNet (+24 Vdc)
E 0-10 Vdc (+15 Vdc)
F 0-10 Vdc (+24 Vdc)
G 4-20 mAdc (sourcing) (+15 Vdc)
H 4-20 mAdc (sourcing) (+24 Vdc)
L Modbus (+15 Vdc)
M Modbus (+24 Vdc)
P Profibus DP (+24 Vdc)
R Profibus DP (+15 Vdc)

Elastomers (Valve Seat / O-Rings)

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

Viton® and Kalrez® are registered trademarks of DuPont Performance Elastomers L.L.C.

Certification

W NEMA 4X, IP66
Y NEMA 4X, IP66, Class 1, Div 2

Process Connection Size and Type

A 3/8" CPI™
B 1/8" Compression
C 1/4" Compression
D 3/8" Compression
E 1/2" Compression
F 1/2" CPI
G 3/4" Compression
H 10 mm Compression
I 1/4" CPI™
J 1/4" Male O-Ring Face Seal
K 3/8" Male O-Ring Face Seal
L 1/2" Male O-Ring Face Seal
M 1/4" UltraSeal™
P 1/4" Male Metal Gasket Face Seal
Q 3/8" Male Metal Gasket Face Seal
R 3/8" UltraSeal™
S 1/2" Male Metal Gasket Face Seal
T 1/2" UltraSeal™
U 3/8" A-LOK®
V 1/2" A-LOK®
W 6 mm Compression
X No Connections
Y 1/4" A-LOK
Z Special Connections
2 3/4" A-LOK
3 12 mm Compression
6 1/2" A-LOK®
7 1/8" CPI
8 1/4" VacuSeal™
9 1/2" VacuSeal™

Assembly/ Calibration Features

AA Factory Standard