

3600 Series

Severe Duty Mass Flowmeter & 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; Class I, Div. 2; IECEx and Atex Zone 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.



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3600 Series Features:

- NEMA 4X, IP 66 Watertight Construction
- Listed for Class 1, Division 2 Environments
- ATEX and IECEx Zone 2 Certified
- 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



ENGINEERING YOUR SUCCESS.

Specifications

Flow Capacity

Model 3601 controller and 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/°C 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%	0-100%

(Modbus, Profibus, DeviceNet)

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)

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

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Electrical Connections

NEMA4X, IP66, Class 1, Div 2, ATEX, IECEx (Y)

Mating Cordsets (Turck, Inc.):

Analog: Female/flying leads:
Turck p/n P-RKV 71H-219-*M

Modbus: Female/flying leads:
Turck p/n P-RKV 55H-099-*M

Devicenet: Contact factory

Profibus: Contact factory

NEMA4X, IP66, Class 1, Div 2 (X)

Mating Cordsets (Turck, Inc.):

Analog: Female/flying leads:
Turck p/n P-RKV 71H-219-*M

Devicenet: Female/Male:
Turck p/n RSCV RKCVC 5711-*M

Female/flying leads:
Turck p/n RKCVC 5711-*M

Mating Cordset for Internal Electrical Connector inside all Devices listed above:

RS232 Communications: Turck p/n PKG 3Z-*

NEMA4X, IP66 (W)

Mating Cordsets (Turck, Inc.):

Analog: Female/flying leads:
Turck p/n RKSV 8T-*

Modbus: Female/flying leads:
Turck p/n RKSV 4.5T-*

Devicenet: Female/flying leads:
Turck p/n RKCVC 5711-*M




Female/Male:
Turck p/n RSCV RKCVC 5711-*M

Profibus: Female/flying leads:
Turck p/n RKSWV 455-*M

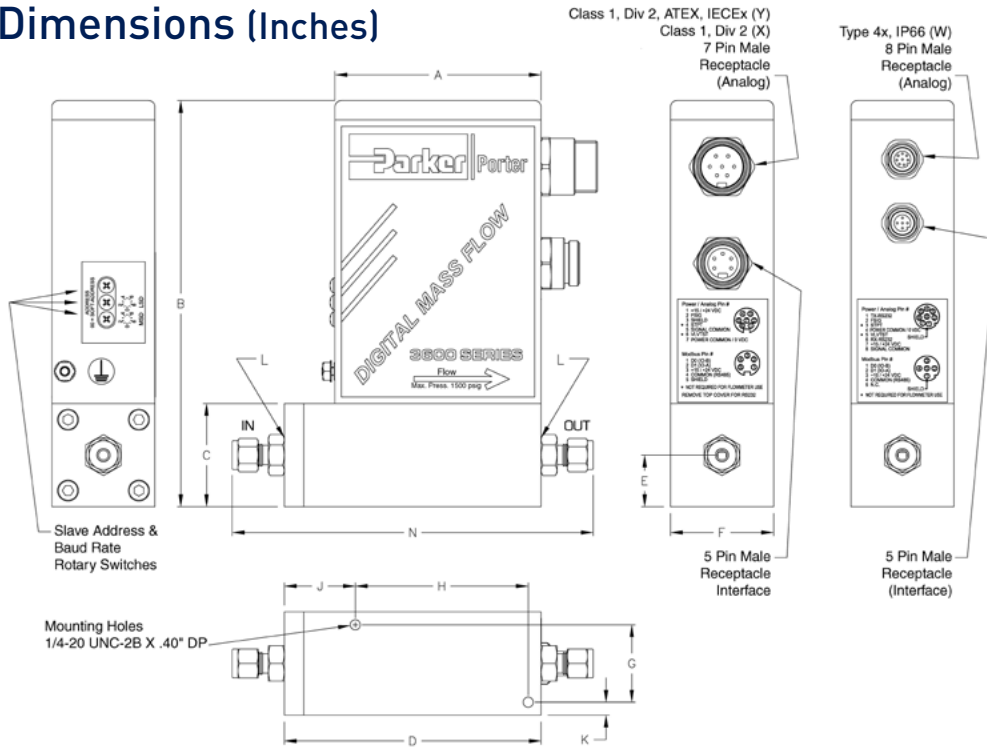
Female/Male:
Turck p/n RSSWV RKSWV 455-*M

*Cordset length indicator

Certifications (Model Dependent)

EMC Directive 89/336/EEC Pressure Equipment Directive (97/23/EC) Hazardous Location Classification Enclosure Type 4X/IP66 Temperature (Ambient) Devicenet: -10°C to 60°C (14°F to 140°F) All Other Protocols: -10°C to 70°C (14°F to 158°F)	IECEx ITS 11.0009X CE  II 3 G  Ex nA IIC T5 Gc IP66 ITS 10 ATEX 47238X CI I Div 2 Gps ABCD Class I Zone 2  AEx nA IIC T5 IP66 Ex nA IIC T5 IP66
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Dimensions (Inches)



Class 1, Div 2, ATEX, IECEx (Y)
Class 1, Div 2 (X)

Type 4x, IP66 (W)
8 Pin Male Receptacle (Analog)

Model	A	B	C	D	E	F	G	H	J	K	L	N
3602	4.00	7.875	2.00	4.982	1.00	2.00	1.50	3.355	1.377	0.250	9/16-18	Ref. Table Below

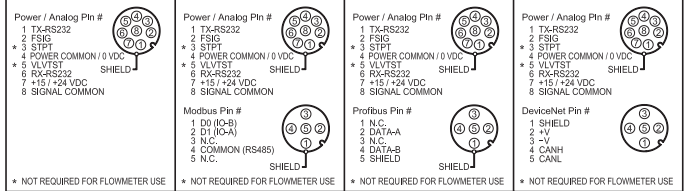
Model	A-LOK®/CPI™					VacuSeal™			
	1/8"	1/4"	3/8"	1/2"	3/4"	1/4"	3/8"	1/2"	
3602	6.822	7.002	7.122	7.282	N/A	6.862	7.162	7.162	

External Wiring Diagram and Connector Pinouts

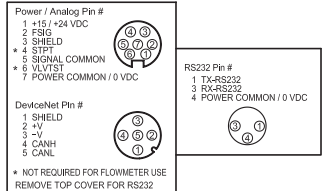


Analog/Power Connector
Digital Communications Connector

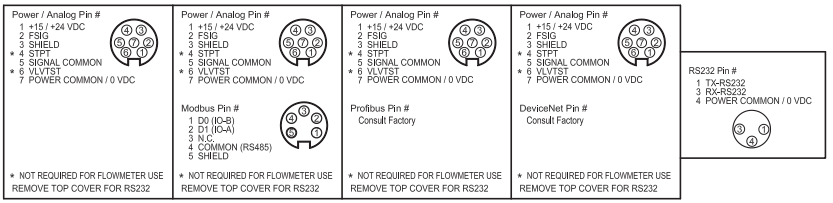
W Configuration – Washdown Only



X Configuration – Washdown C1D2



Y Configuration – Washdown C1D2/ATEX/IECEx

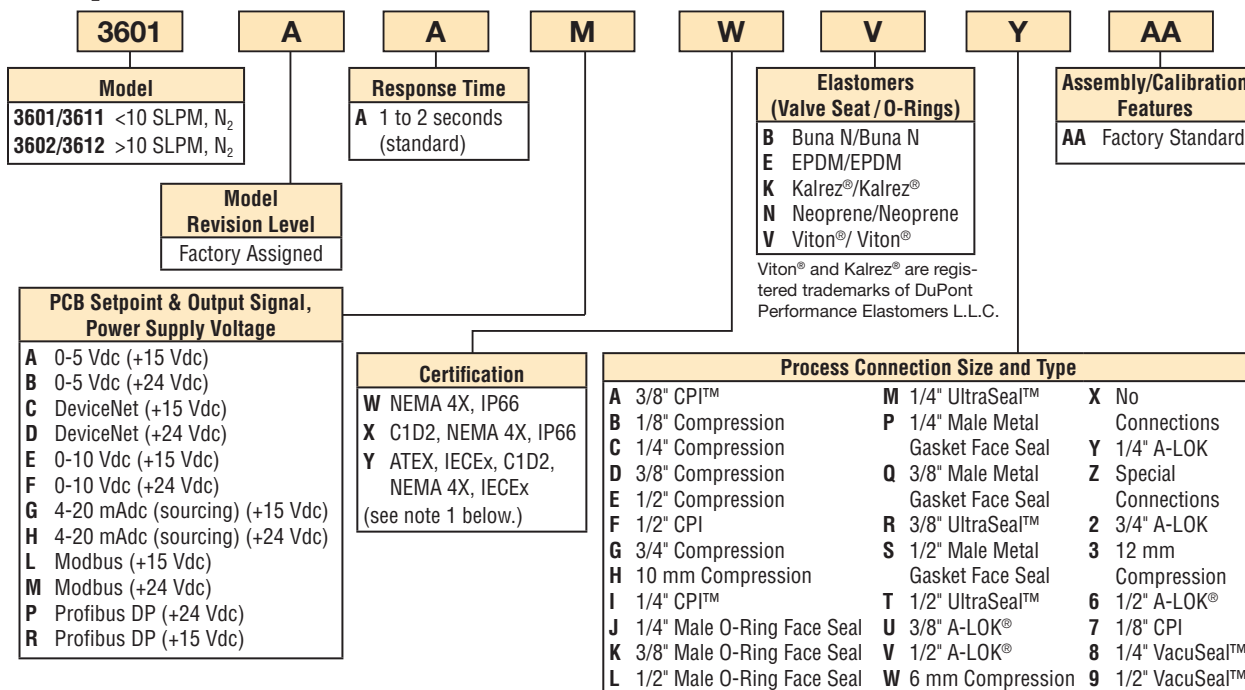


Ordering Information

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



Note 1: Porter Washdown Model 3600 Product Offerings

Model Type / Certifications	Model Code Field 8	Communications Type			
		Analog	Modbus	Devicenet	Profibus
Model 3600 Mass Flowmeters/Controllers Ingress Protection, IP66 / NEMA 4X	W	A	A	A	A
Model 3600 Mass Flowmeters/Controllers Ingress Protection/Hazardous Environment, IP66 / NEMA 4X / Class I Div 2	X			A	
Model 3600 Mass Flowmeters/Controllers Ingress Protection/Hazardous Environment, IP66 / NEMA 4X / C1D2 / ATEX / IECEx	Y	A	A	AW	AW

Key: A = Available AW = Available, Wiring Modifications Required

⚠ WARNING – USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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