

Genesis™ Series 2" and 3" Steel Meters

Bulletin SS01060 Issue/Rev. 0.9 (9/15)

FMCTechnologies

**We put you first.
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SMITH METER® PD METERS

FMC Technologies Smith Meter® Genesis™ Series 2" and 3" PD meter is a single case, positive displacement, rotary vane meter designed for accuracy and reliability for today's custody transfer market. Relying on nearly a century of experience in the petroleum measurement world, FMC Technologies has designed the Genesis Series PD meters for biofuel blending and other refined products, offering longevity and application versatility that out-measures the competition. Some market applications include gasoline and oxygenates, ethanol, biodiesel and jet fuel.



2" Steel Meter

FEATURES

- » **Improved Flow Range¹** – Standard linear performance of 15:1 turndown with an optional 50:1 turndown, which makes the Genesis Series ideal for terminal blending and low flow applications.
- » **Integrated Electronic Output** – Meter is characterized from the factory allowing for improved linearity and reproducibility across the application range with no need for a separate pulse transmitter.
- » **Long Service Life** – Horizontal shaft design with ceramic hybrid ball bearings and (PEEK™) polyetheretherketone wear strips to significantly reduce wear on blade tip thus ensuring long life/reduced maintenance requirements.
- » **Reliable Design** – Reduced mechanical parts from traditional positive displacement meter by over 40% as well as an adjustable measuring chamber and block design to eliminate the need for hand fitted parts.
- » **Fully Sealed Design** – Eliminates the possibility of VOC emissions and maintenance requirements of packing glands and gear trains which minimizes total cost of ownership.
- » **Compact Design** – In-line installation envelope is simple with no special piping offsets.
- » **Integrated Temperature Option** – Meter includes an optional integrated temperature well with internal wiring to the HRE board and separate external Weights and Measures test well.
- » **NACE MR0175 compliant** for all pressure containing wetted components.

¹ Reference the performance chart for flow range and viscosity range.

SPECIFICATIONS

Accuracy

Applicable to various refined products from ethanol to biodiesel, up to 20 cSt in viscosity. For products above this range, consult factory for evaluation.

Typical Performance

Size	Linearity	Repeatability	Flow Range (min-max)		Viscosity Range (cSt) ²
2"	+/- 0.075%	+/- 0.01%	10-150 gpm 38-570 lpm 14-214 bph	15:1	1 - .7 to 3 2 - 3.1 to 6 3 - 6.1 to 10 4 - 10.1 to 20
	+/- 0.15%	+/- 0.02%	3-150 gpm 11-570 lpm 4-214 bph	50:1	
3"	+/- 0.075%	+/- 0.01%	33-500 gpm 127-1,900 lpm 48-714 bph	15:1	1 - .7 to 3 2 - 3.1 to 6 3 - 6.1 to 10 4 - 10.1 to 20
	+/- 0.15%	+/- 0.02%	10-500 gpm 38-1,900 lpm 14-714 bph	50:1	

Nominal Resolution Options

Gallon Registration:

- 2" - 100, 200, 500, 1,000 (Pulses/Gallon)
- 3" - 100, 200, 500 (Pulses/Gallon)

Barrel Registration:

- 2" - 5,000, 10,000, 20,000, 50,000 (Pulses/Barrel)
- 3" - 1,000, 2,000, 5,000, 10,000, 20,000 (Pulses/Barrel)

Liter Registration:

- 2" - 100, 200, 500 (Pulses/Liter)
- 3" - 100 (Pulses/Liter)

Dekalitre Registration:

- 2" - 200, 500, 1,000, 2,000, 5,000 (Pulses/Dekalitre)
- 3" - 100, 200, 500, 1,000 (Pulses/Dekalitre)

Cubic Meter Registration:

- 2" - 20,000, 50,000, 100,000, 200,000, 500,000 (Pulses/Cubic Meter)
- 3" - 5,000, 10,000, 20,000, 50,000, 100,000 (Pulses/Cubic Meter)

Operating Temperature Range

Standard: -20°F to 150°F (-29°C to 65°C)

End Connections	Housing/ Cover Material	Maximum Working Pressure @ 100°F			
		psig	kPa	bar	Pressure Code
2" ASME 150	Steel	285	1,965	19	ASME Section VIII Division 1/PED*
3" ASME 150	Steel	285	1,965	19	ASME Section VIII Division 1/PED*
DN 50, PN 16	Steel	232	1,600	16	PED*
DN 50, PN 25	Steel	362	2,500	25	PED*
DN 75, PN 16	Steel	232	1,600	16	PED*
DN 75, PN 25	Steel	362	2,500	25	PED*

* PED required for all European countries. Equipment must be manufactured by Ellerbek, Germany facility.

ELECTRICAL SPECIFICATIONS

Electrical Inputs

DC Power Range: 10 to 30 Vdc

Input Current: Quiescent Current (No Load): 27 mA @ 10 Vdc, 20 mA @ 24 Vdc, 20 mA @ 30 Vdc

Power Consumption: ≤ 650 mW plus load

Output Signal

10 Vdc Input Power Supply:

No Load: 9.7 ± 0.3 Vp-p square wave

270 Ω Load: 7.6 ± 0.3 Vp-p square wave (minimum)

24 Vdc Input Power Supply:

No Load: 23.7 ± 0.3 Vp-p square wave

270 Ω Load: 16 ± 0.3 Vp-p square wave (minimum)

30 Vdc Input Power Supply:

No Load: 29.7 ± 0.3 Vp-p square wave

270 Ω Load: 21 ± 0.3 Vp-p square wave (minimum)

Output Source Current (A & B @ 270 Load):

70 mA @ 10 Vdc, 130 mA @ 24 Vdc, 160 mA @ 30 Vdc

Output Current per Channel (A & B):

Maximum Sink Current: 300 mA @ 30 Vdc

Maximum Source Current: 80 mA @ 30 Vdc

Signal Cable

Three-wire shielded for single-channel transmission.

Size	Distance
#20 AWG	Up to 2,000 ft. (610 m)
#18 AWG	Up to 3,000 ft. (915 m)
#16 AWG	Up to 5,000 ft. (1,525 m)

² Reference the modeling code to select the application viscosity range.

APPROVALS

Hazardous Locations Electrical

North American (United States and Canada)
and countries following the US NEC Code

UL/CUL File E23545

Class I, Division I, Groups C & D

Class 1, Zone 1 AEx d IIB T5 IP65

Global

IEC Ex UL 09.0007X

Exd IIB T5 Ga/Gb IP65 Tamb = -40°C to +70°C

European Union (EU)

DEMKO 09ATEX 0903808X

Exd IIB T5 Ga/Gb IP65 Tamb = -40°C to +70°C

Weights and Measures

NTEP Certificate of Conformance: CC 10-032

Canadian NOA AV-2421

PTB Issued OIML R117-1 Test Report

PTB Issued MID (Measuring Instrument Directive) certificate

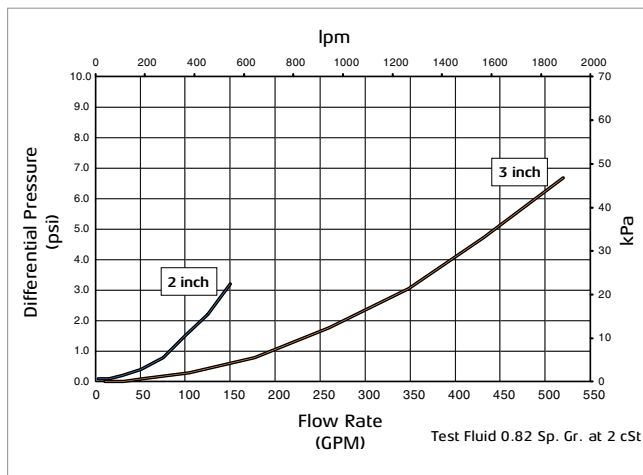
Australia NMI 5/6B/221

Pressure Safety Requirements

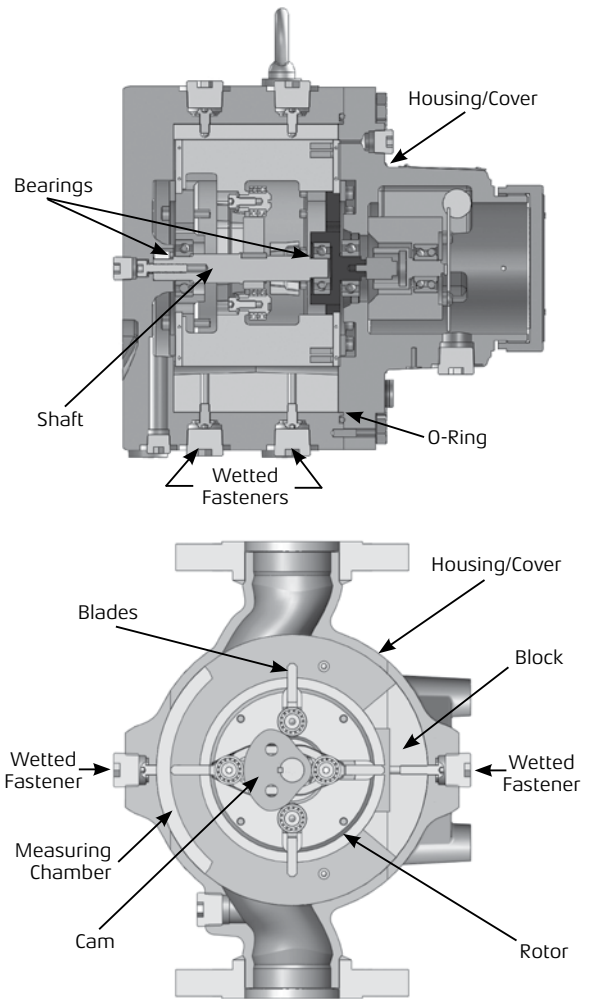
PED – Pressure Equipment Directive (Europe)

CRN – Canadian Registration Number - OF10758.23456

PRESSURE DROP



MATERIALS OF CONSTRUCTION



Housing and Cover	Carbon Steel
Block	Carbon Steel/Cast Iron
Measuring Chamber	Carbon Steel/Cast Iron
Rotor	Cast Iron
Blades	Hard Anodized Aluminum w/ PEEK™ wear strips
Cam	Hardened Stainless Steel
Shaft	Hardened Stainless Steel
Bearings	Ceramic Hybrid Stainless Steel
O-Ring	GFLT Low Temp Viton F
Wetted Fasteners	Stainless Steel/Carbon Steel

MODELING CODE

The following guide defines the correct Genesis Meter for a given application and the respective catalog code. This code is part of the ordering information and should be included on the purchase order.

Model GSC -		3	ST	15	B	2	P	0	GF	200	G	U
Meter Size												Approval
2 - 2"												U - UL/CUL, NTEP
3 - 3"												UC - UL/CUL, Measurement Canada [#]
Type of Material												A - ATEX/IEC Ex
ST - Steel												P - PED/ATEX/IEC Ex*
End Connection Size												AN - ATEX/IECEX and NMI Australia
15 - ASME 150												*Output Units
30 - ASME 300												B - Barrel
16 - DIN PN16												C - Cubic Meters
25 - DIN PN25												D - Dekalitre
Flow Range Turn Down												G - Gallon
B - 15:1 [#]												H - HectoLitre
C - 50:1												L - Litre
Viscosity												*Output Resolution (Pulses per Unit Volume)
0 - Special												000100 - 100
1 - 0.7 cSt to 3 cSt												000200 - 200
2 - 3.1 cSt to 6 cSt												000500 - 500
3 - 6.1 cSt to 10 cSt												001000 - 1,000
4 - 10.1 cSt to 20 cSt												002000 - 2,000
Cover Ports												005000 - 5,000
M - M20X1.5 THREADS												010000 - 10,000
P - 1/2" NPT												020000 - 20,000
Temperature Probe												050000 - 50,000
0 - Not Required												100000 - 100,000
1 - Required												200000 - 200,000
												500000 - 500,000
												Elastomers
												GF - GFLT (Low Temp. Viton)

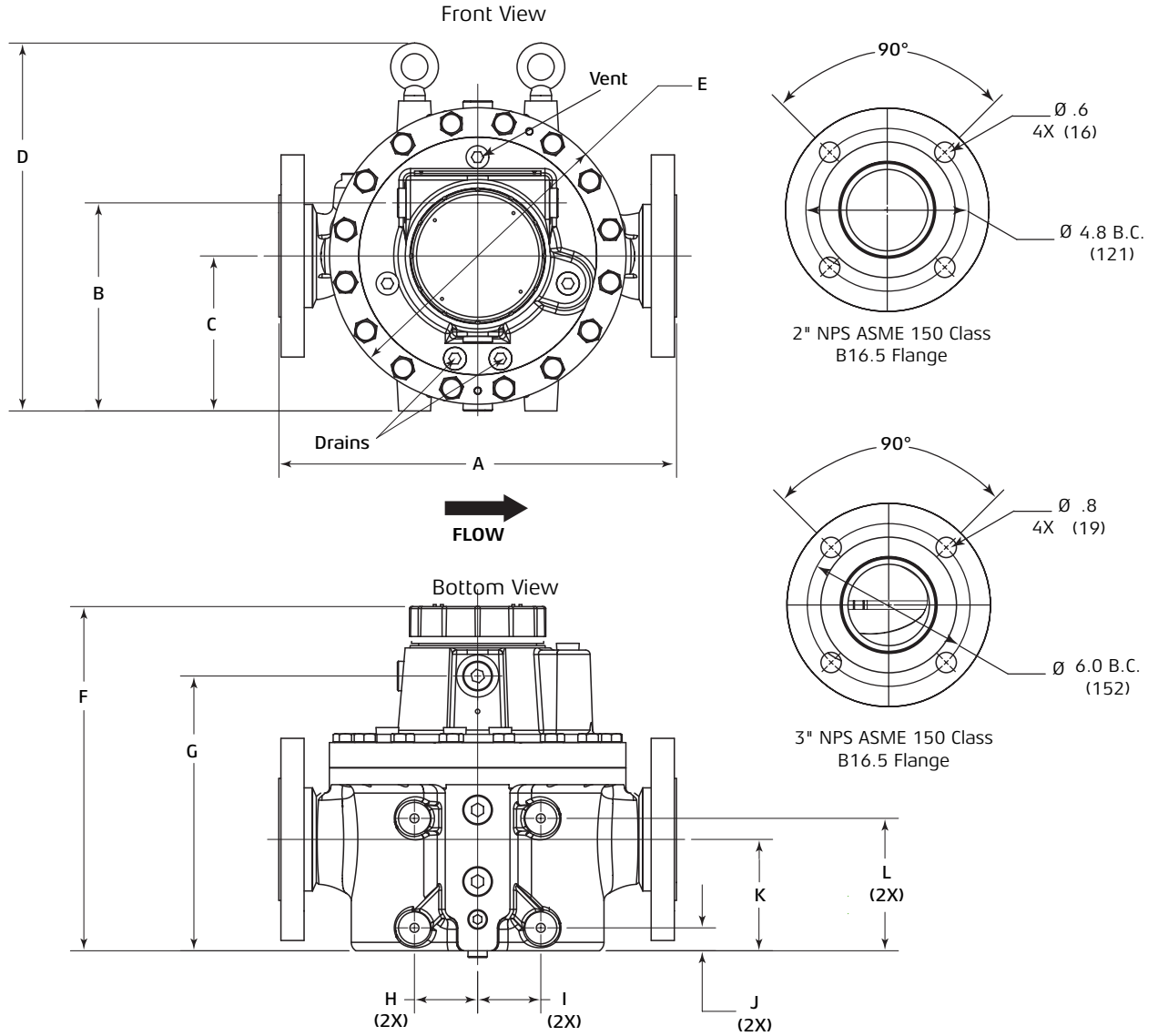
* Reference product specification for applicable combinations of Output Resolution and Units for each meter size.

+ PED required for all European Countries.

15:1 Turndown is the only option for Canadian Meters on viscosities below 20 cSt.

DIMENSIONS

mm (Inches)

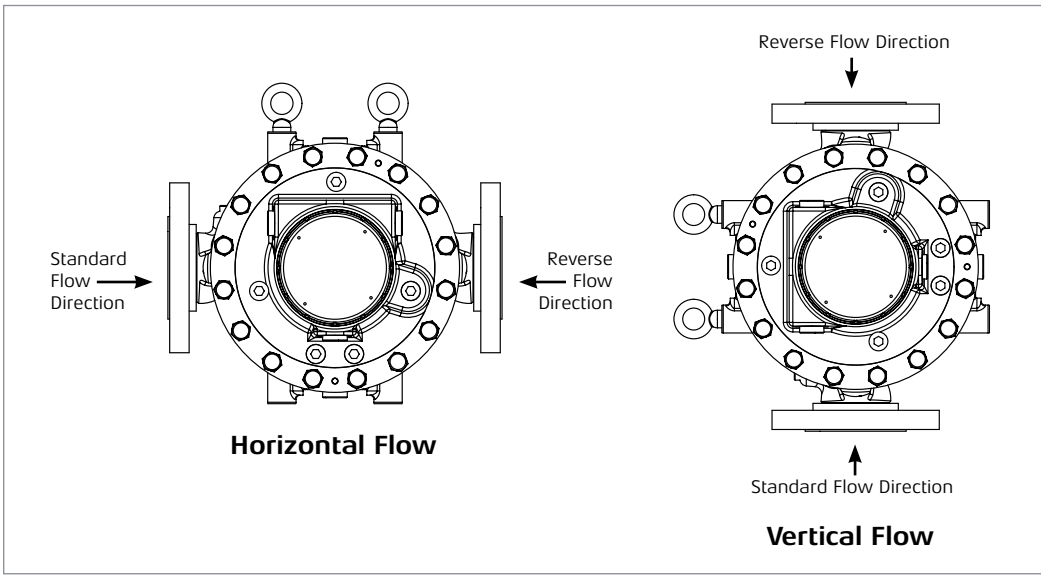


Note: Dimensions – Inches to the nearest tenth (millimeters to the nearest whole mm), each independently dimensioned from respective engineering drawings.

Size	A	B	C	D	E	F	G	H	I	J	K	L	Weight lb (kg)
2"	11.8" (300)	6.2" (157)	4.6" (117)	10.9" (277)	8.8" (224)	10.2" (259)	8.2" (207)	1.9" (48)	1.9" (48)	.7" (17)	3.3" (84)	3.9" (99)	75 (34)
3"	16.5" (419)	8.5" (215)	6.9" (175)	15.5" (394)	13" (330)	13.7" (348)	11.5" (293)	2.8" (70)	2.8" (70)	1.4" (34)	3.7" (95)	6.9" (176)	190 (86)

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ARRANGEMENT



TERMINAL CONNECTIONS: CN1

Terminal 1	+ 10 - 30 Vdc
Terminal 2	"A" Signal (Leading)
Terminal 3	"B" Signal (Lagging)
Terminal 4	Logic Common (Ground)
Terminal 5	No electrical connection on circuit board. These can be used for wiring connections or tie-ins (ex. RTD junction, etc.)
Terminal 6	
Terminal 7	
Terminal 8	

Revisions included in SS01060 Issue/Rev. 0.9 (9/15):

Page 3: Australia NMI 5/6B/221 added to Weights & Measures approvals. Page 4: Modeling Code Approval - AN - ATEX/IECEX and NMI Australia added.

The specifications contained herein are subject to change without notice and any user of said specifications should verify from the manufacturer that the specifications are currently in effect. Otherwise, the manufacturer assumes no responsibility for the use of specifications which may have been changed and are no longer in effect.

Contact information is subject to change. For the most current contact information, visit our website at www.fmctechnologies.com/measurementsolutions and click on the "Contact Us" link in the left-hand column.