

# Genesis™ Series 2" and 3" Steel Meters

Bulletin SS01060 Issue/Rev. 1.0 (2/17)

## SMITH METER® PD METERS

TechnipFMC 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, TechnipFMC 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 Range<sup>1</sup> – 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.

<sup>1</sup> 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) <sup>2</sup>
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			Pressure Code
		psig	kPa	bar	
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.

## 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)

<sup>2</sup> 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 - 0F10758.23456

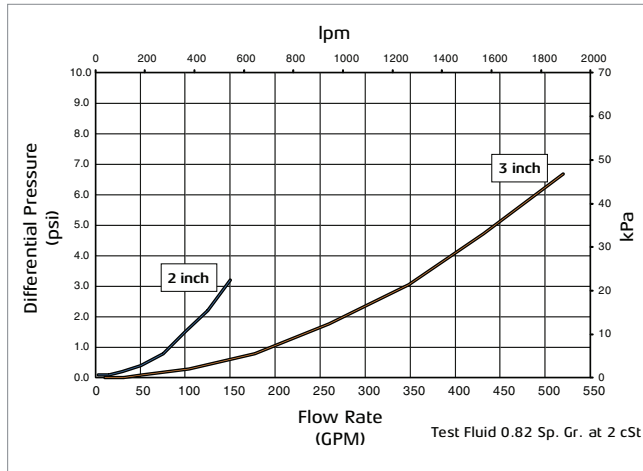
Electromagnetic Compatibility

European Union: EMC Compliance by Council Directive

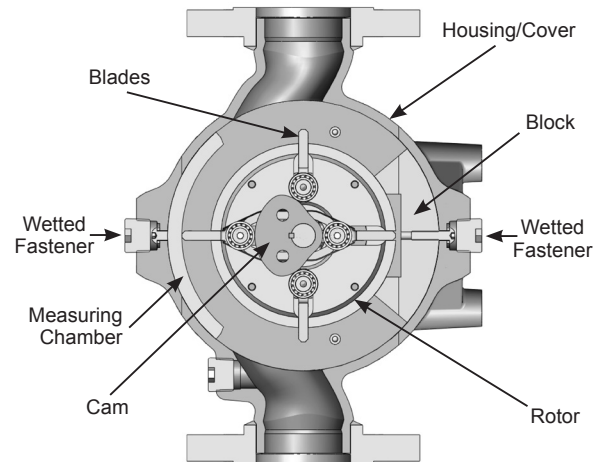
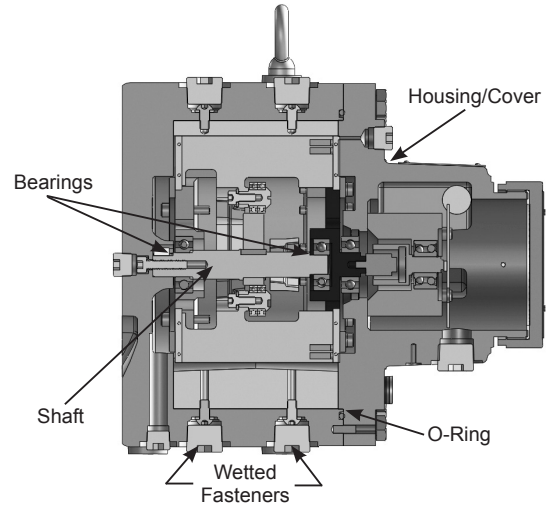
EMC Directive 2014/30/EU

EN 61326-1: Electrical equipment for measurement,  
control and laboratory use.

## PRESSURE DROP



## MATERIALS OF CONSTRUCTION



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

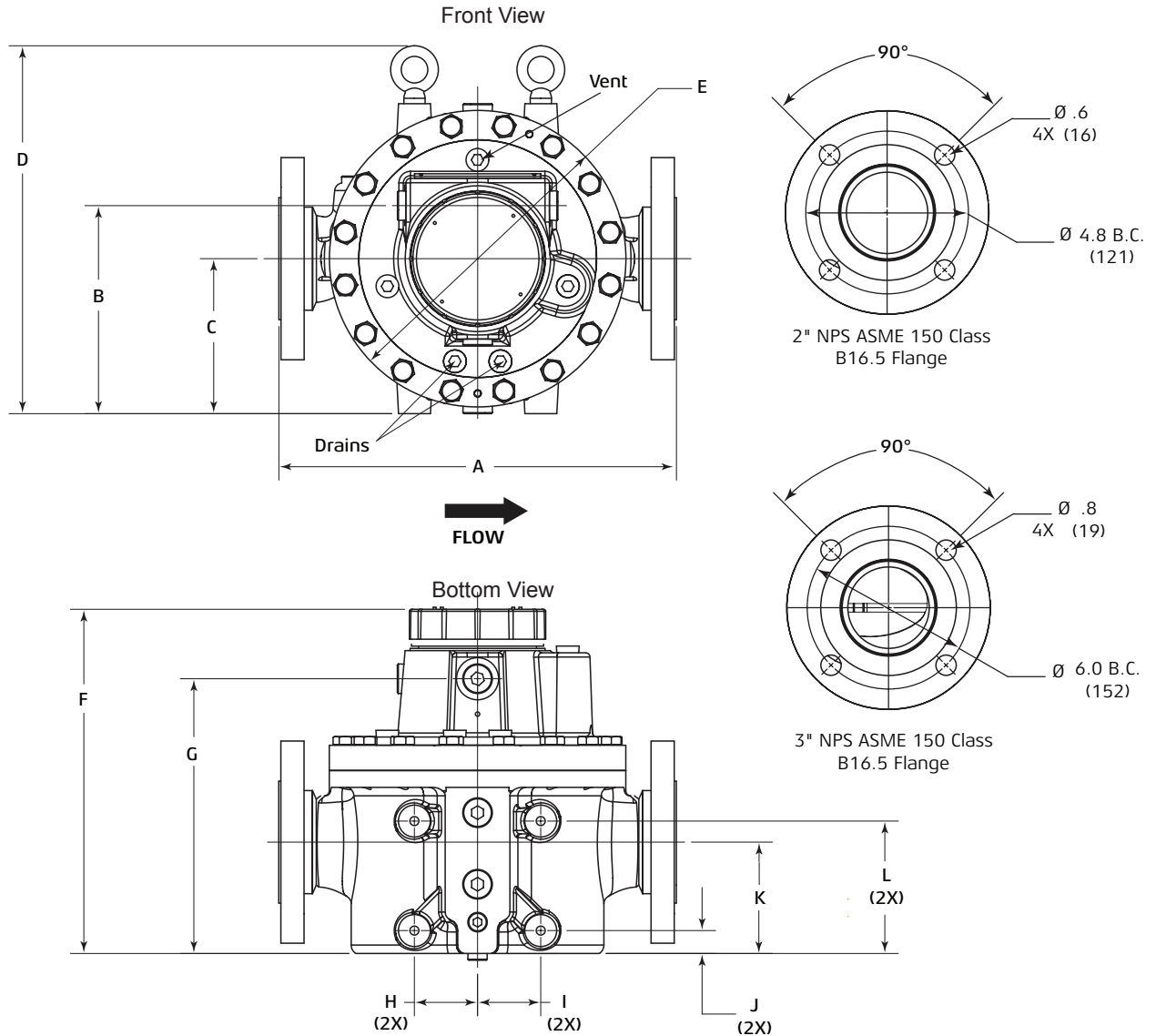
**Model GSC - 3 - ST - 15 - B - 2 - P - 0 - GF - 200 - G - U**

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

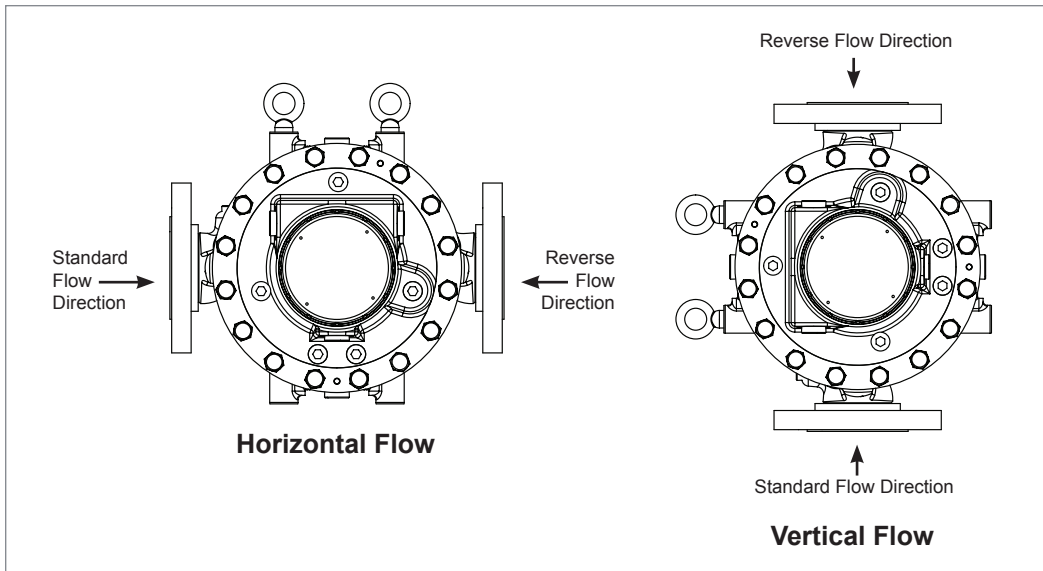
mm (Inches)



**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)

## 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. 1.0 (1/17):

Page 2: Operating temperature range - note updated. Page 3: EMC information added under approvals.

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](http://www.fmctechnologies.com/measurementsolutions) and click on the "Contact Us" link in the left-hand column.