Genesis Series 2" and 3" Steel Meters

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Smith Meter® PD Meter

The 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, Guidant 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 of the market applications include gasoline and oxygenates, ethanol, biodiesel, and jet fuel.

Features

- Improved flow range—Standard linear performance of 15:1 turndown with an optional 30:1 turndown makes the Genesis Series ideal for terminal blending and low-flow applications. Reference the performance chart for flow range and viscosity range.
- Integrated electronic output—The Genesis meter is characterized from the factory, enabling improved linearity and reproducibility across the application range without the need for a separate pulse transmitter.
- Long service life—The horizontal shaft design with ceramic hybrid ball bearings and polyetheretherketone (PEEK) wear strips significantly reduce wear on the blade tip, ensuring long life and reduced maintenance requirements.
- Reliable design—The design features reduced mechanical parts from traditional positive displacement meters by over 40%, as well as an adjustable measuring chamber and block design to eliminate hand-fitted parts.
- Fully-sealed design—The design eliminates the possibility of volatile organic compound (VOC) emissions and maintenance requirements of packing glands and gear trains, which minimizes the total cost of ownership.
- Compact design—The in-line installation envelope is simple, without special piping offsets.
- Integrated temperature well option—The meter includes an optional integrated temperature well with internal wiring to the HRE board and separate external weights and measures test well.
- NACE compliant—Compliant with National Association of Corrosion Engineers (NACE) International standard MR0175 for all pressure-containing wetted components.

Operating Specifications

Accuracy

The Genesis Series meter's accuracy range is applicable to various refined products—from ethanol to biodiesel—with up to 20 centistokes (cSt) in viscosity. For products above this range, consult the factory for evaluation.

Operating Temperature Range

The standard operating temperature range is -20 to 150 °F (-29 to 65 °C). Pressure Equipment Directive (PED) is required for all European countries.

End Connections	Housing/Cover Material	Maximum Working Pressure at 100 °F			
		Pounds per Square Inch Gauge (psig)	Kilopascal (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

Typical Performance

Size	Linearity	Repeatability	Flow Range (Minimum to Maximum)		Viscosity Range (cSt)
2"	+/- 0.075%	+/- 0.01%	10-150 gpm 38-570 lpm 12-214 bph	15:1	1 – .7 to 3 2 – 3.1 to 6 3 – 6.1 to 10 4 – 10.1 to 20
	+/- 0.10%	+/- 0.02%	5-150 gpm 19-570 lpm 7-214 bph	30:1	
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
	+/- 0.10%	+/- 0.02%	17-500 gpm 63-1,900 lpm 24-714 bph	30:1	

NOTE: Flow range measurements are in gallons per minute (gpm), liters per minute (lpm), and barres per hour (bph). Reference the modeling code to select the application viscosity range.

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)
- Dekaliter registration:
  - 2": 200, 500, 1,000, 2,000, 5,000 (pulses/dekaliter)
  - 3": 100, 200, 500, 1,000 (pulses/dekaliter)
- 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)

Electrical Specifications

Electrical Inputs

- Direct current (DC) power range: 10 to 30 volts direct current (VDC)
- Input current: Quiescent current (no load):
  - 27 milliampere (mA) at 10 VDC
  - 20 mA at 24 VDC
  - 20 mA at 30 VDC
- Power consumption: ≤ 650 megawatt (mW) plus load

Output Signal

- 10 VDC input power supply:
  - No load: 9.7 ± 0.3 volts peak-to-peak voltage (Vpp) square wave
  - 270 ohms load: 7.6 ± 0.3 Vpp square wave (minimum)
- 24 VDC input power supply:
  - No load: 23.7 ± 0.3 Vpp square wave
  - 270 ohms load: 16 ± 0.3 Vpp square wave (minimum)
- 30 VDC input power supply:
  - No load: 29.7 ± 0.3 Vpp square wave
  - 270 ohms load: 21 ± 0.3 Vpp square wave (minimum)

Output Source Current (A & B at 270 load)

- 70 mA at 10 VDC
- 130 mA at 24 VDC
- 160 mA at 30 VDC

Output Current per Channel (A & B)

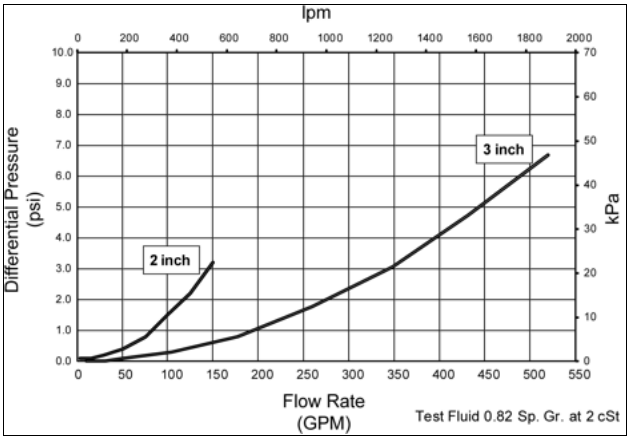
- Maximum sink current: 300 mA at 30 VDC
- Maximum source current: 80 mA at 30 VDC

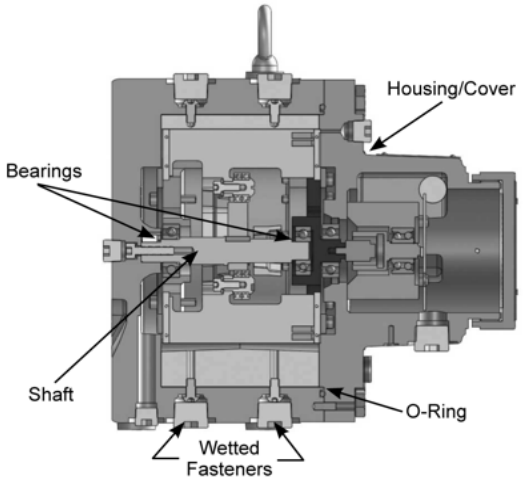
Signal Cable

The signal cable is a three-wire shielded cable for single-channel transmission.

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

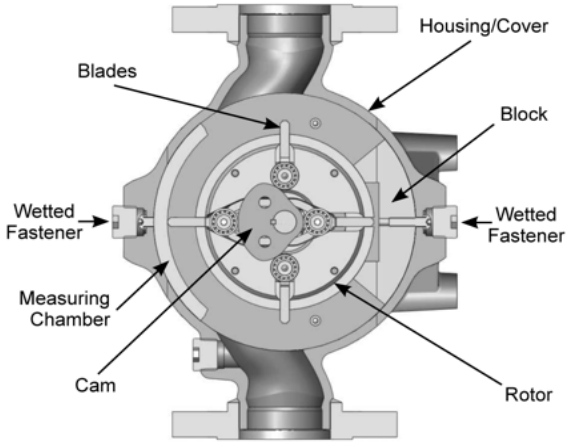
Pressure Drop





Materials of Construction

Part	Material
Housing and cover	Carbon steel
Block	Carbon steel/cast iron
Measuring chamber	Carbon steel/cast iron
Rotor	Cast iron
Blades	Hard-anodized aluminum with PEEK wear strips
Cam	Hardened stainless steel
Shaft	Hardened stainless steel
Bearings	Ceramic-hybrid stainless steel
O-ring	GFLT low temperature fluoroelastomer (FKM)
Wetted fasteners	Stainless steel/carbon steel



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
- Brazil INMETRO UL BR 25.1038X
  - Ex db IIB T5 Ga/Gb -40°C ≤ Tamb ≤ +70°C
- European Union (EU)
  - DEMKO 09ATEX 0903808X
  - Exd IIB T5 Ga/Gb IP65 Tamb = -40°C to +70°C

Weights and Measures

- USA: NTEP Certificate of Conformance: CC 10-032
- Canada: Canadian NOA AV-2421
- PTB Issued OIML R117-1 Test Report
- PTB Issued MID (Measuring Instrument Directive) certificate
- Australia NMI 5/6B/221
- Brazil INMETRO/Dimel No.: 172/2023

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

Catalog Code

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

1	2	3	4	5	6	7	8	9	10	11	12
GSC	3	ST	15	B	2	P	0	GF	200	G	U

Position 1: Code

- GSC—Catalog code

Position 2: Meter Size

- 2—2"
- 3—3"

Positions 3: Type of Material

- ST—Steel

Position 4: End Connection Size

- 15—ASME 150
- 16—DIN PN16
- 25—DIN PN25

Position 5: Flow Range Turn Down

- B—15:1

> NOTE: 15:1 turndown is the only option for Canadian meters on viscosities below 20 cSt.

- D—30:1

Position 6: Viscosity

- 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

Position 7: Cover Ports

- P—1/2" NPT

Position 8: Temperature Probe

- 0—Not required

Position 9: Elastomers

- GF—GFLT (low-temperature FKM)

Position 10: Output Resolution (Pulses per Unit Volume)

NOTE: Reference product specification for applicable combinations of output resolution and units for each meter size.

- 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

Position 11: Output Units

NOTE: Reference product specification for applicable combinations of output resolution and units for each meter size.

- B—Barrel
- C—Cubic meters
- D—Dekaliter
- G—Gallon
- L—Liter

Position 12: Approval

- U—UL/CUL, NTEP
- UC—UL/CUL, Measurement Canada

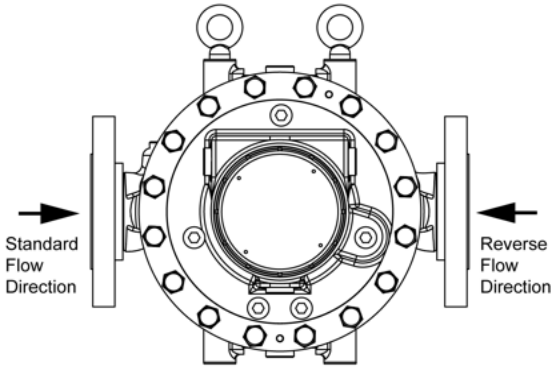
NOTE: 15:1 turndown is the only option for Canadian meters on viscosities below 20 cSt.

- A—ATEX/IECEx
- P—PED/ATEX/IECEx

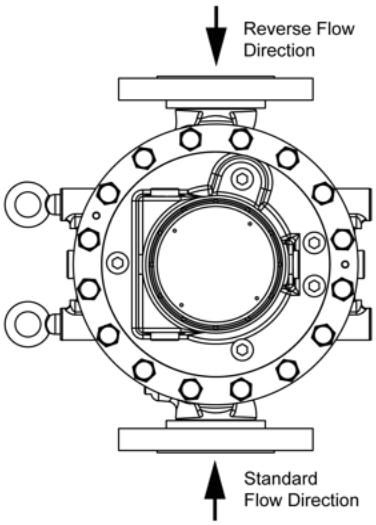
NOTE: PED required for all European Countries.

- AN—IECEx and NMI Australia
- I—INMETRO

Arrangement



Horizontal Flow

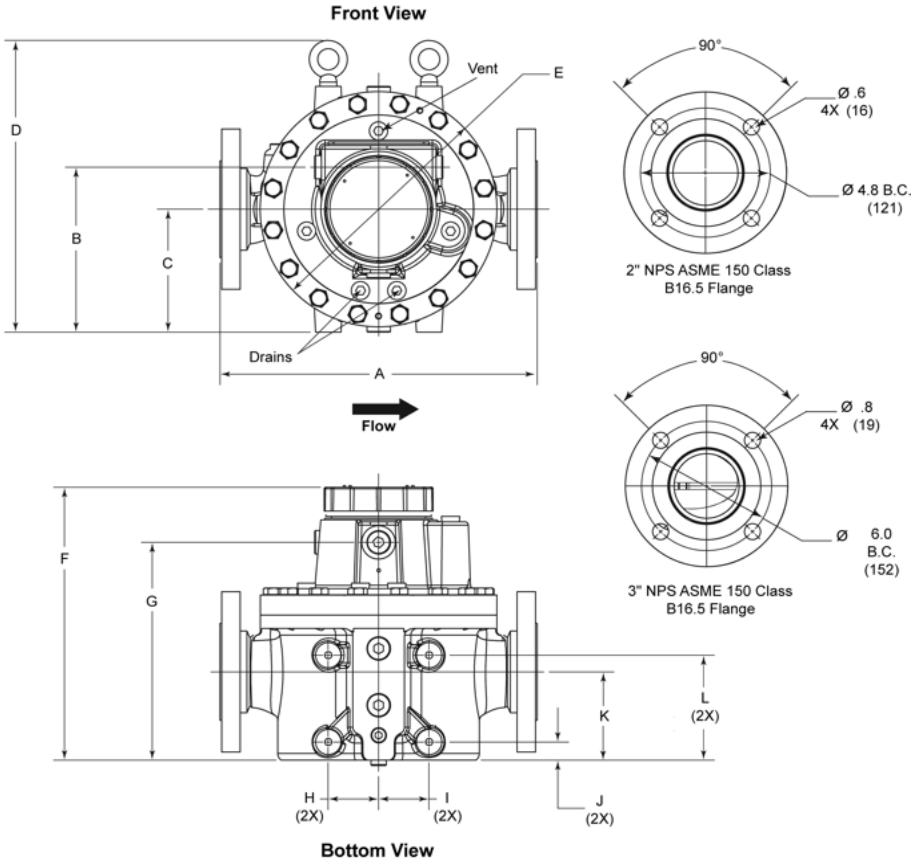


Vertical Flow

Terminal	Connection
Terminal 1	+ 10 - 30 VDC
Terminal 2	"A" Signal (leading)
Terminal 3	"B" Signal (lagging)
Terminal 4	Logic Common (ground)
Terminal 5	Terminals 5 through 8 do not have electrical connection on the circuit board.
Terminal 6	
Terminal 7	
Terminal 8	

Dimensions and Weight

The dimensions are in inches (") to the nearest tenth (millimeters (mm) to the nearest whole millimeter), each independently dimensioned from respective engineering drawings. Weight is measured in pounds (lb) or kilograms (kg).



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)

The specifications contained herein are subject to change without notice and any user of said specifications should verify from the manufacture 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.

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