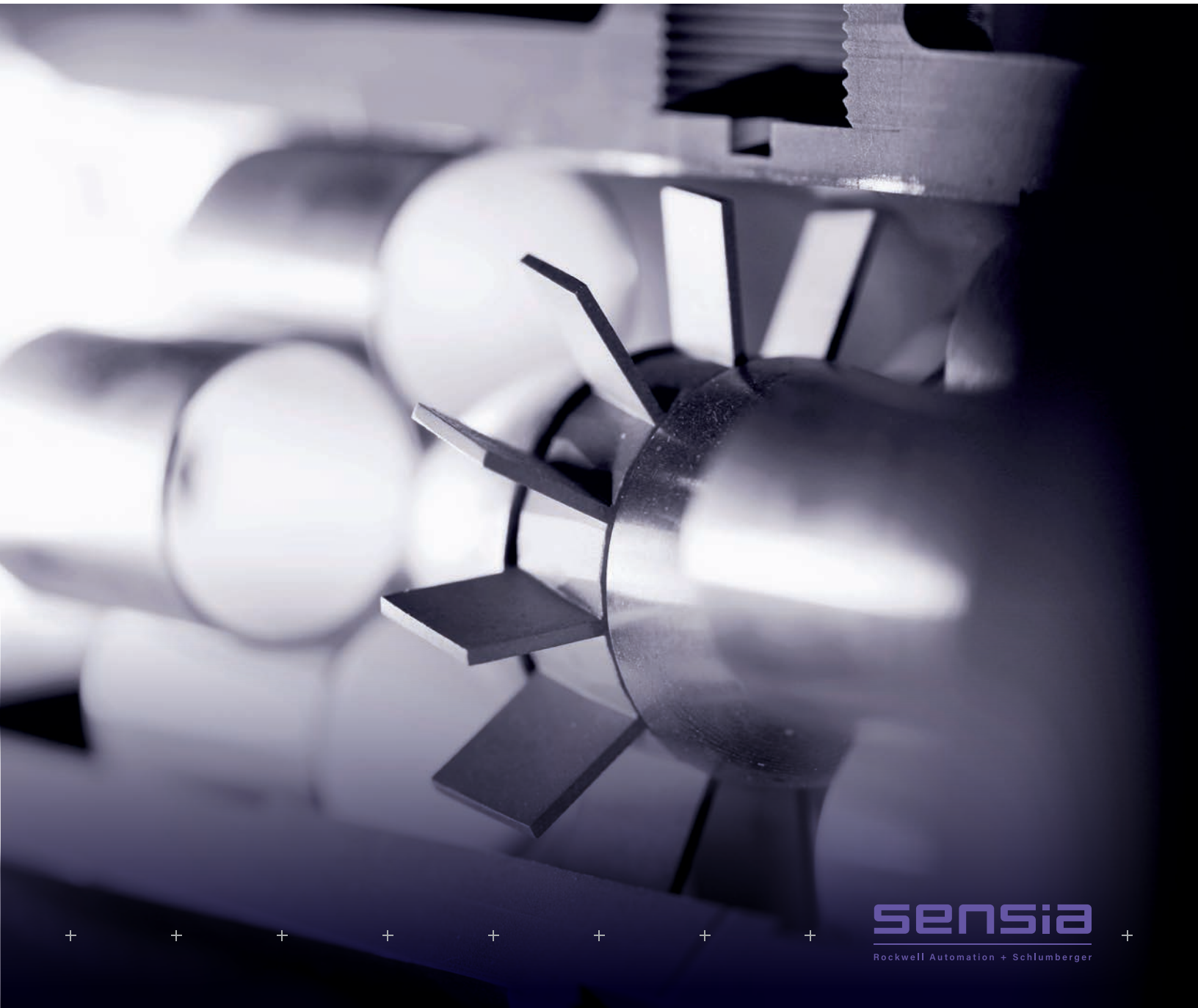
MEASUREMENT SOLUTIONS

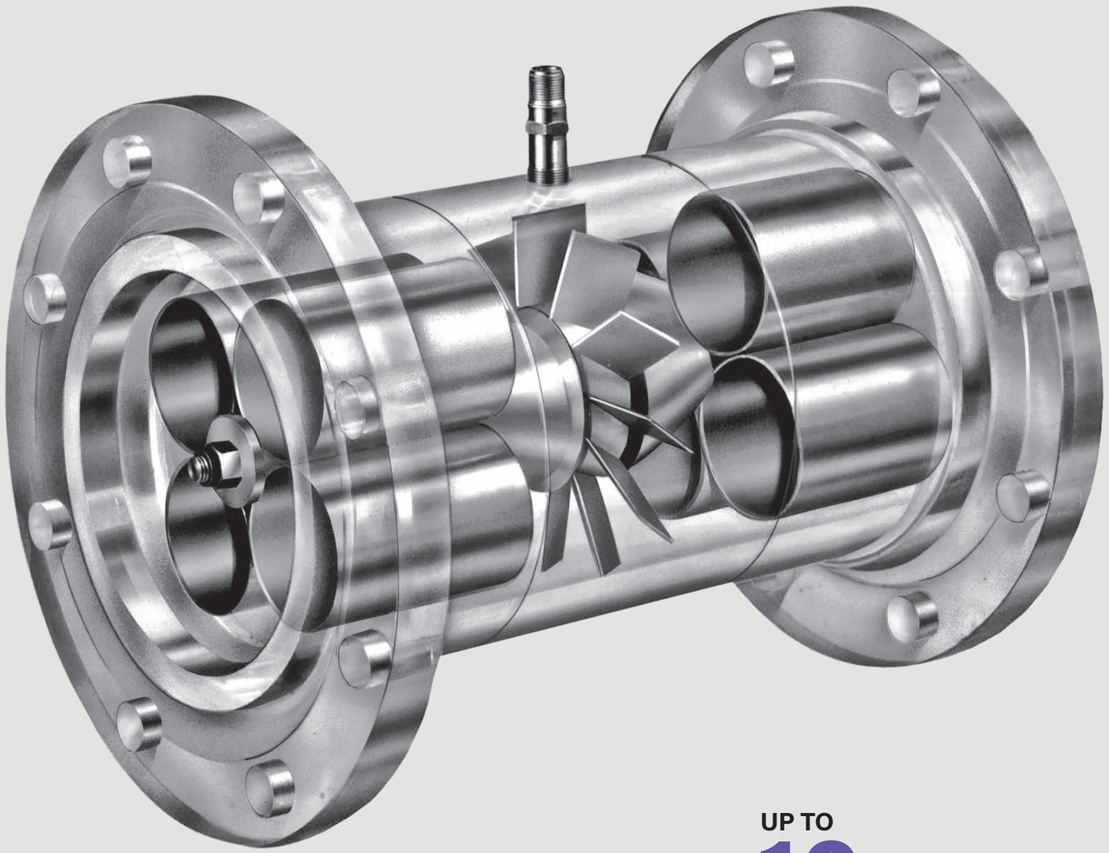
Gas Turbine Flowmeters

Robust performance and maximized availability across a range of applications



sensia

Rockwell Automation + Schlumberger



UP TO
10yrs

Low maintenance requirements: Sealed, self-lubricating bearings enable maintenance-free operation for up to 10 years

Introduction

Gas turbine flowmeter technology enables efficient measurement of many types of gases. For reliable measurement, the gas stream must be chemically compatible with the stainless steel body and internals of the meter and free of solid particles larger than dust and all liquids beyond a film. With these limitations satisfied, a gas turbine provides strategic advantages across a diverse range of applications. Sensia offers three gas turbine options: the BARTON Series 7400* gas turbine flowmeter and NUFLO* measurement technologies in 2-in wafer and ball-bearing designs.

Applications
+ Custody-transfer measurement
+ Fuel gas consumption
+ Vapor recovery
+ High-pressure cryogenic fluids

Advantages
+ Flow rangeability
+ Low pressure loss
+ Accuracy independent of gas composition change
+ No power requirement

	BARTON Series 7400 Flowmeter	NUFLO Technology 2-in-Wafer Flowmeter	NUFLO Technology Ball-Bearing Flowmeter
End connection types	Threaded and flanged	Wafer flanged	Threaded, flanged, hammer union, wafer, and grooved
Minimum nominal flowing gauge pressure,† psi [MPa]	100 [0.69]	1 [0.0069]	1,000 [6.89]
Maximum pressure,‡ psi [MPa]	6,000 [41.3]	3,705 [25.5]	15,000 [103.4]
Nominal meter sizes, in [mm]	¾ to 12 [20 to 300]	2 [50]	1 to 8 [25 to 200]
Repeatability, % of indicated flow	0.1	0.5	0.8
Linearity,§ % of indicated flow	1	2	3

† Meter performance is a function of the fluid density at flowing conditions. The pressure indicated is a typical nominal value. Consult the specifications for each meter type for details.
‡ Pressure may be less dependant on end connections selected.
§ Linearity is without application of the multiple K-factors. The NUFLO MC-III* flow totalizer or Scanner* flow computers can enhance the linearity achieved to near that of the repeatability specification. Linearity of ball-bearing NUFLO technology and BARTON* gas turbine measurement technology is limited by the minimum density specifications.

Operation

The rotor speed in a turbine flowmeter is proportional to the volumetric flow rate of the gas flowing across the blades. As the rotor turns, a reluctance-type pickup coil mounted on the meter body senses the passage of each blade tip and generates a sine wave output. Because the output from the pickup coil is digital pulses representing volume, they are an excellent match for electronic output devices; no analog to digital conversion is required. On all but the 2-in-wafer flowmeter, multiple coils can be added for redundancy or flow direction sensing.

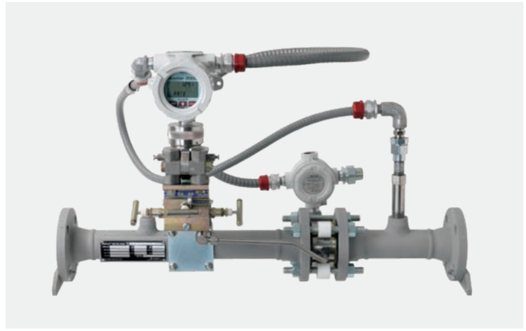
The pickup coil can drive a variety of instruments, including totalizers, preamplifiers, flow computers, or remote terminal units (RTUs).

Preamplifiers transmit the coil signal over extended distances to remote instruments. All turbine instruments can be installed in any orientation, mounted directly to the turbine (subject to temperature limits) or remote mounted, and are available with intrinsically safe, explosion-proof, flame-proof, or weatherproof approvals.

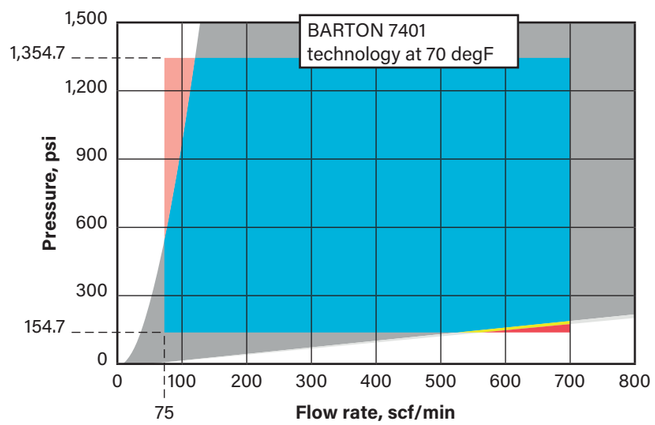
Standard volume, mass, or energy may be determined by pairing the meter with a Sensia MC Series* flow totalizer when pressure and temperature are constant or with a Sensia Scanner flow computer when they are dynamic.

Sensia offers a sizing tool to assist in determining the performance characteristics of the turbine metevrs in individual applications. The tool can be accessed on the Sensia website.

BUNDLED SOLUTIONS
Save time and money by ordering a comprehensive meter system. The meter, companion electronics, and meter run are factory assembled, configured, and shipped to you ready for installation.



Preassembled explosion-proof NUFLO Scanner 2000 flow computer bolt-in system



Sensia tool sizing chart. Report from sizing software provides clear indication of meter suitability to specific applications.

BARTON Series 7400 Gas Turbine Flowmeter

BARTON Series 7400 flowmeters are designed for gas service in a wide range of industrial, commercial, pipeline, and aerospace applications.

BARTON Series 7400 gas turbine flowmeter

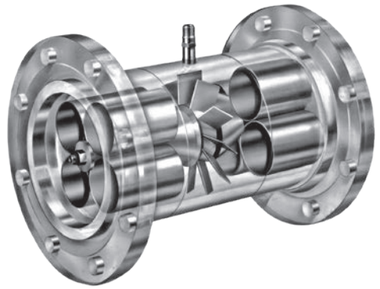
FEATURES

+ **High accuracy:** Custody-transfer-quality measurements with ±0.2% flow rate repeatability and a single K-factor linearity of better than ±1.0% reading over flow range
+ **Wide application**: Gas meters from oxygen to ethylene for natural gas production, gas transmission, petrochemical, transport, aerospace, and petroleum production and refining industries
+ **Responsiveness:** Rotor response in milliseconds for precision, even in rapidly changing environments
+ **Wide range:** Depending on the flowing gas density, the meter often provides a turndown ratio greater than 10:1; range extended with the addition of optional linearizing electronics
+ **Symmetrical bidirectional design:** Ideal for reverse flow applications in which flow capacities are the same in either direction; electronic options provide instantaneous flow direction sensing
+ **Compactness and efficiency:** Accommodation of large flow rates in a small meter and at a lower pressure drop; use with reduced-diameter block valves and meter runs saves on installation costs
+ **Low maintenance requirements:** Sealed, self-lubricating bearings enable maintenance-free operation for up to 10 years
+ **Unibody construction:** 4-in and smaller nominal pipe size bodies are machined from solid material, including the flange shape as applicable, eliminating pressure-retaining welds and related integrity concerns
+ **Integral pressure tap:** Precisely positioned to accommodate pressure measurement at the turbine meter

BARTON Series 7400 Gas Turbine Flowmeter Specifications

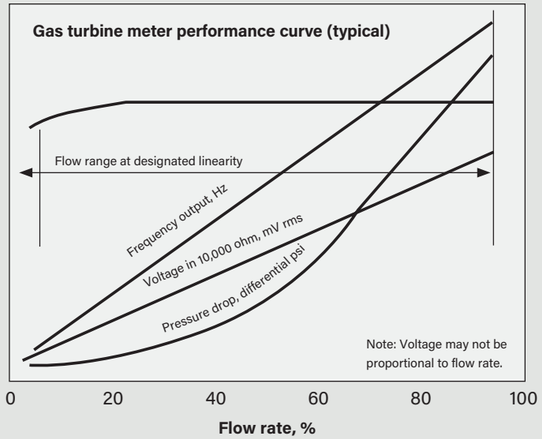
Compliances	Canadian Standards Association (CSA) certified for hazardous areas Class I, Division I, Group B,C,D; Class II, E,F,G; Class III, Enclosure 4 waterproof to USA National Electric Code (NEC) and Canadian Electrical Code (CEC) standards	
	Explosive atmosphere (ATEX) certified, EEx d IIC	
	Compliant to ANSI 12.27.01-2003 single-seal requirements	
	Measurement Canada Custody Transfer Certification G-0210	
	Canadian Registration Number 0F0123.2C	
	Available with CE mark for Pressure Equipment Directive (PED) 97/23/CE	
	Supplied with companion electronics for Class I/Zone 1 explosion-proof, flame-proof, or intrinsic-safety rating	
Pressure rating†, psi [MPa]	Threaded meters	
	Connection size, in [mm]	
	<1 [< 25]	5,000 [34.5]
	1 [25]	4,400 [30.3]
	1.50 [40]	3,200 [22.0]
	2 [50]	2,650 [18.3]
	Flanged meters	
	Pressure ratings for flanged meters are based on standard ASME B16.5 (Material Group 1.1 for carbon steel, Material Group 2.2 for stainless steel)	
Meter sizes, in [mm]	Threaded	0.75–2 [20–50]
	Flanged	0.75–12 [20–300]
End connections	Threaded	British standard pipe (BSP); national pipe thread (NPT) taper; others by special order
	Flanged	ASME B16.5 [BS EN 1759] DIN [BS EN 1092]
Materials	Rotor blades	430 stainless steel
	Bearings	440C stainless steel with dry-lubricant-impregnated Rulon® ball separators
	Body flanges	316 stainless steel
	Internals	316 stainless steel; others by special order
Process specifications	Temperature range, degF [degC]‡	Standard: –20 to 302 [–29 to 150] Optional: –320 to 302 [–196 to 150]
	Pressure drop, psi [MPa]	1.8 [0.01] at maximum flow rate (based on air with density of 1.0 lbm/ft³ [16 kg/m³]); for specific flow rate values, see "Model Selection" section
	Gas density, lbm/ft³ [kg/m³]	0.08 to 4.5 [1.25 to 73]; other densities available
Output	Type	Sine wave
	Voltage	Varies with meter size and flow rate (typically 20 mV to 5 V peak to peak)
	Frequency	Proportional to flow

† Pressure ratings for standard 316 stainless steel threaded meters. For higher pressure ratings, contact the factory.
‡ This range is based on the temperature rating of meter bearings. Observe the temperature rating of companion electronics where applicable. Use remote mount electronics or electronics with temperature extensions to avoid temperature extremes.



BARTON Series 7400 gas turbine flowmeter (internal view)

BARTON Series 7400 gas turbine flowmeter (end view)



PERFORMANCE AND CALIBRATION

The average K-factor for each turbine is determined at the factory by using water as the calibration media. Performed at six different flow rates, this multipoint calibration verifies linearity and repeatability over a limited range of the meter capacity. The average K-factors derived in water (compared with those derived in gas) are within 1% deviation of each other. A water calibration is also an effective method to validate a meter in the field. Consult the factory for field water calibration procedures.

Gas calibrations can be valuable

+ when verifying the low-end capacity of the meter as would be required to implement electronic linearization
+ for testing of upper-end capacity of the meter (full capacity testing can rarely be performed on water due to pressure drop issues).

Gas calibration should be performed on a gas density similar to the process fluid density.

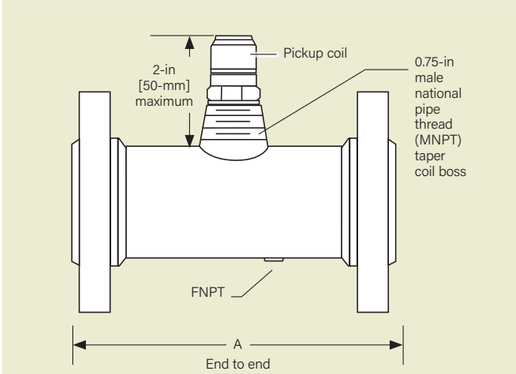
Meter performance specified in this bulletin is based on historical gas calibration performed at independent world-class calibration facilities using gas media. Not included in our accuracy statement is any systemic bias the calibration lab may have. Repeatability is limited by gas laboratory precision; in water it is typically ± 0.02%.

Linearity indicates that no data point will exceed the average of all the data points within the linear meter capacity (normally 10%–100% capacity) as per International Society of Automation (ISA) standard RP31.1. Installation with straight pipe per American Gas Association Report 7 is required to achieve the specified linearity.

Meters should be installed with upstream filtration to isolate the meter from contamination and damage from liquids or solids.

DIMENSIONS

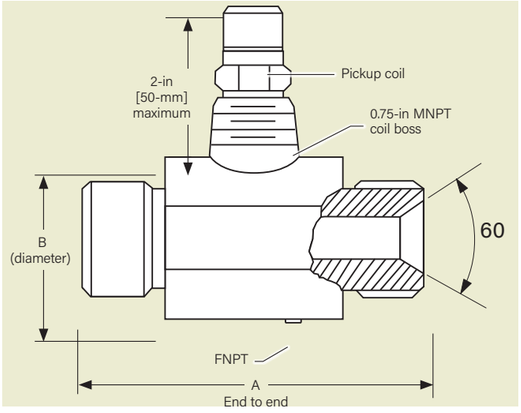
Rating	Face-to-Face Dimension A		
BSEN 1759, ASME	**Up to ASME 600**	**ASME 900 and 1500**	**ASME 2500**
BSEN 1092, DIN	**Up to PN 64**	**PN 100 and 160**	**PN 250 and 320**
Model	in [mm]	in [mm]	in [mm]
7486	5.50 [140]	7 [178]	7 [178]
7450	5.50 [140]	8 [203]	8 [203]
7475	5.50 [140]	8 [203]	8 [203]
7401	5.50 [140]	8 [203]	8 [203]
7446	6 [152]	9 [229]	9 [229]
7402	6.50 [165]	9 [229]	9 [229]
7403	10 [254]	10 [254]	11 [279]
7404	12 [305]	12 [305]	12 [305]
7406	14 [356]	14 [356]	16 [406]
7408	16 [406]	16 [406]	18 [457]
7410	20 [508]	20 [508]	22 [559]
7412	24 [610]	24 [610]	24 [610]



Flanged meters

Model	Thread (BSP or NPT)	Dimension A in [mm]	Dimension B in [mm]
7486	0.75	3.75 [83]	1.25 [32]
7450	1	3.50 [89]	1.25 [32]
7475	1	3.50 [89]	1.50 [40]
7401	1	3.50 [89]	2.25 [57]
7446	1.50	4.38 [111]	2.75 [70]
7402	2	4.75 [121]	5.50 [140]

Integral Pressure Tap	
Nominal pipe sizes, in [mm]	**Female NPT (FNPT) taper tap size, in**
0.75–2.50 [20–65]	0.13
3–8 [75–200]	0.125
10 and 12 [250 and 300]	0.50



Threaded meters

MODEL SELECTION GUIDELINE

7400 Model Selection Actual Flow Rate (Actual)

Model Number	Body Size	Minimum Repeatable			Nominal Max.	Extended Range	Nominal Meter Output, ±0.5%		
	in [mm]	0.25 lbm/ft² [4 kg/m³] ft³/min [m³/h]	0.5 lbm/ft² [8 kg/m³] ft³/min [m³/h]	2.0 lbm/ft² [32 kg/m³] ft³/min [m³/h]	ft³/min [m³/h]	ft³/min [m³/h]	Pulses/ft³	Pulses/m³	Rated Maximum Frequency, Hz
7486	0.75 [20]	1.4 [2.37]	1.0 [1.69]	0.5 [0.85]	6.7 [11.3]	7.4 [12.5]	21,600	762,800	2,400
7450	1 [25]	2.7 [4.58]	1.9 [3.22]	1.0 [1.69]	15 [25.5]	17 [28.0]	10,700	377,900	2,675
7475	1 [25]	3.2 [5.42]	2.3 [3.90]	1.25 [2.12]	22 [37.4]	24 [40.7]	7,400	261,300	2,715
7401	1 [25]	4.8 [8.14]	3.5 [5.93]	1.7 [2.88]	50 [85]	55 [93.4]	3,350	118,300	2,790
7446	1.50 [40]	12.5 [21.19]	8.5 [14.41]	4.2 [7.12]	125 [212]	138 [234]	1,700	60,000	3,540
7402	2 [50]	19 [32.20]	14.5 [24.58]	6.7 [11.36]	200 [340]	220 [374]	740	26,100	2,465
7403	3 [80]	55 [93.22]	39 [66.10]	18.7 [31.69]	560 [950]	616 [1,045]	190	6,000	1,770
7404	4 [100]	82 [138.9]	59 [100.0]	31 [52.54]	850 [1,445]	935 [1,590]	80	3,000	1,130
7406	6 [150]	215 [364.4]	158 [267.8]	73 [123.7]	2,200 [3,740]	2,420 [4,110]	22	1,000	800
7408	8 [200]	340 [576.3]	243 [411.9]	117 [198.3]	3,500 [5,950]	3,850 [6,540]	9	400	525
7410	10 [250]	550 [932.2]	390 [661.0]	193 [327.1]	5,800 [9,855]	6,380 [10,840]	5	180	500
7412	12 [300]	850 [1,440.7]	610 [1,033.9]	300 [508.5]	9,000 [15,290]	9,900 [16,820]	3	105	450

† Operating continuously in the extended range will reduce the bearing life by approximately 25%.

NUFLO Measurement Technology: 2-in-Wafer Gas Turbine Flowmeter

NUFLO technology includes solutions that provide consistent, reliable gas flow measurement in a 2-in nominal pipe size.

Features

+ Low-pressure-loss design with low-friction bearings and a rotor weighing less than 0.005 lbm [2.4 g] for challenging low-pressure, low-gas-density flow measurement applications, including vapor recovery, fuel gas measurement, and combustion air flow
+ Durable nonlubricated tungsten carbide "V" bearings and a high-pressure stainless steel body for dirty sour production gas (avoid the use of damaging liquid slugs)
+ Up to 30:1 flow rate turndown (depending on range selected) by operating the meter at twice the upper published capacity for short periods
+ Compact installation with ability to mount between raised-faced flanges in any orientation
+ Facilitation of large changes in the application flow rate with meter body that can accept any of three different flow range cartridges

NUFLO technology 2-in-wafer gas turbine flowmeter

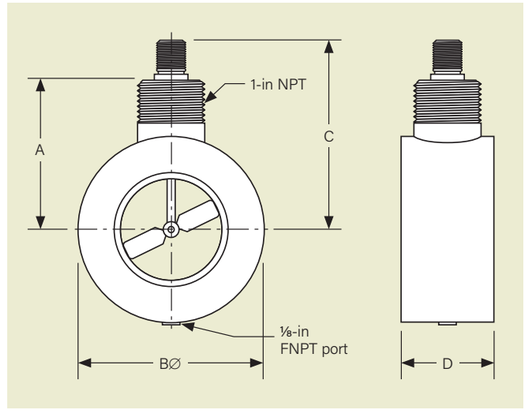
NUFLO Technology 2-in-Wafer Gas Turbine Flowmeter Specifications		
Size, in [mm]	2 [50]	
Flow range	10:1 to 15:1	
End connections	Installs between two raised face flanges	
Working gauge pressure†, psi [MPa]	0 to 3,705 [0 to 25.5]	
Test pressure (gauge), psi [MPa]	5,557 [38.3]	
Output frequency, Hz	0 to 440 (nominal)	
Minimum output voltage at 5-Hz voltage, mV	30 peak to peak	
Pressure drop, in [mm] water column	Less than 1 [24.5] at maximum flow rate	
Linearity, %	±2 of reading	
Repeatability, %	±0.5 of reading	
Factory calibration	A single average K-factor indicating the number of pulses per actual cubic foot is supplied with each meter and each replacement cartage. The signal K-factor is derived from the average of 10 K-factors acquired from different flow rates across a turndown not less than 4.5:1. The K-factors are determined by using a flow nozzle with compressed air at a nominal pressure of 20 or 30 psi. All instruments are traceable to the National Institute of Standards and Technology (NIST).	
	The 10-point calibration record or a custom calibration is available upon special request. This data may be used in NUFLO MC-III flow totalizers or Scanner flow computers to remove linearity error.	
Temperature, degF [degC]	-29 to 250 [-34 to 120]	The meter will operate at -55 degF [-67 degC] and may be fully qualified with optional Charpy verification of the body material
		To extend the maximum operating temperature to 450 degF [232 degC], order the additional part number 2350369-01 to receive a high-temperature pickup coil. The temperature limitations of connected instrumentation should also be considered.
Pickup connector	Mates with AN3106A-10SL-4P	
Conduit connection, in [mm]	1 [25] NPT	
Pressure tap, in [mm]	1/8 [3] NPT	

† For compliance to the CRN or the secondary seal qualification or for use above 2,500 degF [1,200 degC], the maximum pressure must be limited to 2,220-psi [15.3-MPa] gauge pressure.

NUFLO Technology 2-in-Wafer Gas Turbine Flowmeter Specifications		
Nominal calibration factor, pulses/ft³ [pulses/m³]	Low range	325 [11,477]
	Standard range	125 [4,415]
	High range	70 [2,472]
Materials of construction	Body and cartridge	Grade 316L stainless steel
	Bearing mounts	Grade 304 stainless steel
	Bearings	Tungsten carbide, "V" type
	Rotor	Grade 455 stainless steel, two bladed
	Rotor shaft	Tungsten carbide
	Snap rings	Grade 316 stainless steel
	Set screws	Grade 304 stainless steel
	Pressure port plug	Grade 304 stainless steel
Compliances	Hazardous locations	
	Explosion proof (standard)	
	cCSAus CEC and NEC	
	Class I, Div. 1, Groups A, B, C, D	
	ANSI 12.27.01 single seal	
	Flame proof (optional)	
	ATEX and IEC	
	II 1/2G	
	Ex d IIC Ga/GbD	
	Intrinsically safe as defined by the connected equipment	
Pressure boundary	CRN 0F0123.2C	
	PED (special order)	
NACE	Optional certification by Sensia in compliance with prequalified materials of NACE MR0175/ISO 15156	

DIMENSIONS

Dimensions, in [mm]			
A	B	C	D
3.32 [84]	3.60 [91]	3.12 [79]	1.80 [46]



ORDER NUMBERS

Flow Range	Complete Meter Part Number	Replacement (Internal Set Only)†
Low	9A-100003397	9A-100005113
Standard	9A-100003398	9A-100003517
High	9A-100003399	9A-100005134

† Compatible with Badger Meter® Blancett QuikSert® gas flowmeter. Meter includes centering rings for ANSI 150-600 as standard. Pickup extension not needed.

Studs, Nuts, and Gasket Kits		
ANSI Class	Part Number	Gasket Type
150	9A-100005100	Synthetic fiber with nitrile binder
300/600	9A-100005101	
900/1500	9A-100079906	Stainless steel wound

Studs and nuts are plated B7 and 2H grade or equivalent.
900/1500 class kit includes a pickup extension and centering rings.

GAS METER FLOW RANGES

Flow rates are at standard conditions of 14.73 psi absolute pressure and 60 degF and are based on 100% methane gas at 0.6 specific gravity.

To determine the minimum capacity for other gases use:

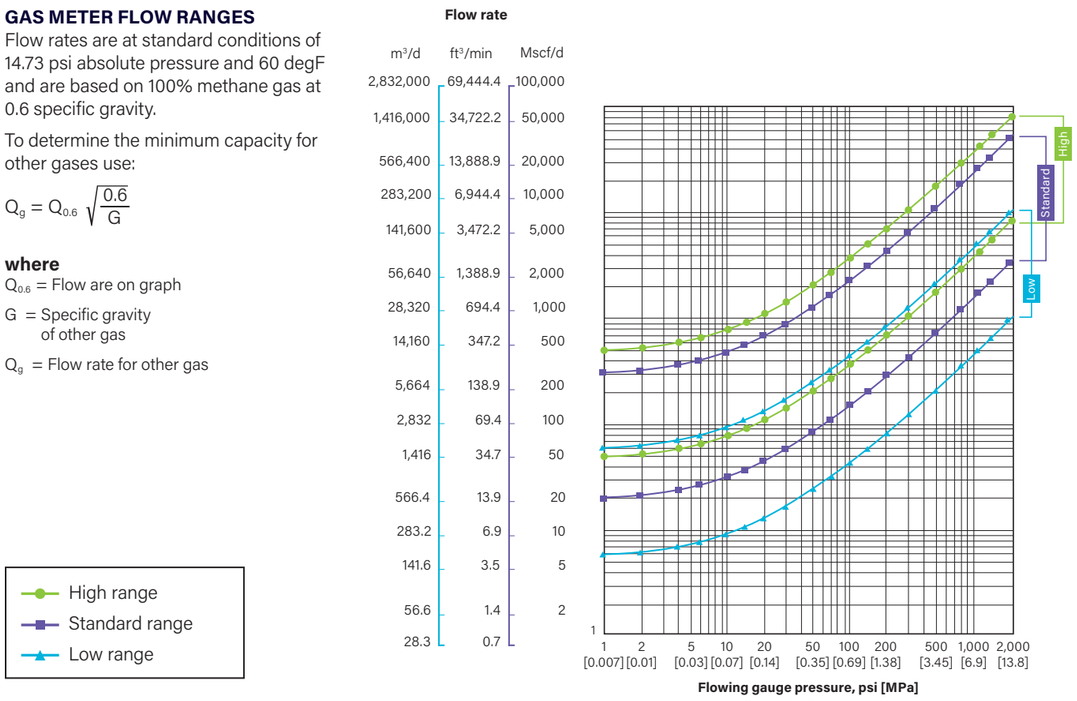
$$Q_g = Q_{0.6}\sqrt{\frac{0.6}{G}}$$

where

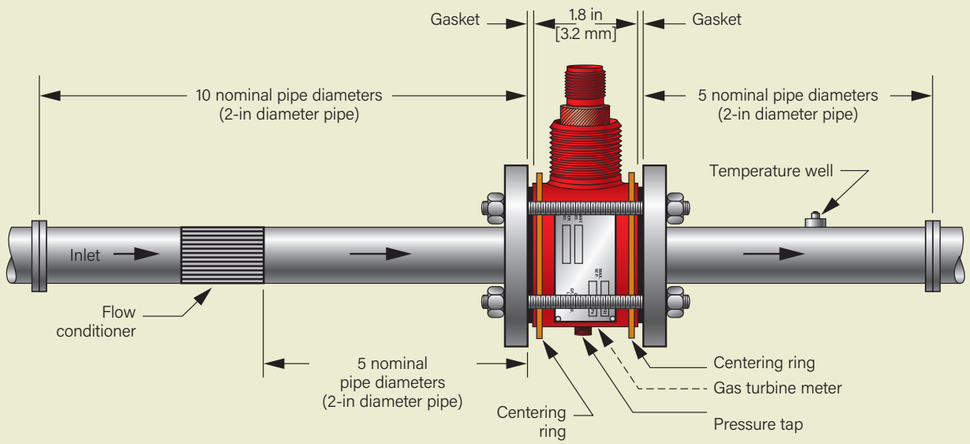
$Q_{0.6}$ = Flow are on graph

G = Specific gravity of other gas

Q_g = Flow rate for other gas

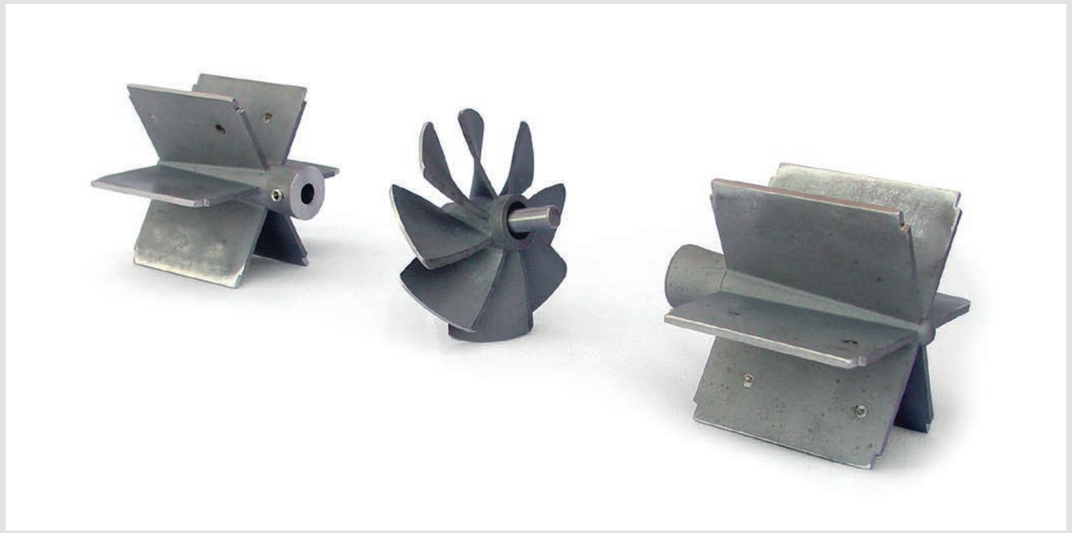


Gas meter flow ranges.



NUFLO Measurement Technology: Ball-Bearing Gas Turbine Flowmeter

The NUFLO technology ball-bearing gas turbine flowmeter is designed for high-pressure measurement of carbon dioxide or nitrogen being used in oil and gas well stimulation. Provided that the minimum flowing density requirements are met, NUFLO technology ball-bearing flowmeter can be used with nearly any gas or clean liquid. The fluid must be a liquid or gas and not a simultaneous mixture of both.



ROTORS FOR SENSIA GAS TURBINE FLOWMETERS.

FEATURES

+ Universal body selection: The calibrated internals are manufactured by modifying the standard liquid internal with ball bearings in place of the tungsten carbide sleeve bearings. As a result, the ball bearing meter can install in any same-size or -style NUFLO turbine technology body. Calibrated internal kits can be purchased with the body or refit into liquid meters that are in inventory.
+ Suitability for cryogenic gases: The NUFLO technology ball-bearing flowmeter is suitable for measuring fluids that are in a liquid or dense-vapor state because of elevated flowing pressure.
+ Rugged cast rotor
+ Standard volume, mass, or energy may be determined by pairing the meter with a NUFLO MC Series flow totalizer or Scanner flow computer. The Scanner 3100 flow computer offers the capability to correctly compute values as gases transition through dense vapor into liquid state.
+ Self-lubricating bearings impregnated with a dry powder lubricant for gas applications; in liquid applications, the bearings rely on the process for lubrication.

Ball Bearing Kits Flow Ranges (Actual) and Accuracy

Body Type	Size, in [mm]	Flow Range				Kits	Linearity, %	
		Nitrogen Gas	CO_2					
		ft^3/min	galUS/min	m^3/d	bbl/d	Part Number	Liquid	Gas
Standard (fits in threaded, flanged, 1502 bodies)†	1 [25]	1.0–10	5–50	27–270	170–1,700	9A-100061238	±1	±3
	1 1/2 [40]	3.0–30	15–180	80–1,000	515–6,000	9A-100012020	±1	±3
	2 [50]	12.5–125	40–400	210–2,100	1,300–13,000	9A-100003387	±1	±3
	3 [80]	25–250	80–800	436–4,360	2,750–27,500	9A-100012019	±1	±3
	4 [100]	–	100–1,200	540–6,500	3,400–41,000	9A-100062958	±1	±3
	6 [150]	–	200–2,500	1,100–14,000	6,800–85,680	9A-101282542	±1	±3
NUFLO EZ-IN* between-flange wafer flowmeter	6 [150]	–	200–2,500	1,100–14,000	6,800–85,680	9A-100062786	±1	±3
	8 [200]	–	350–3,500	1,900–19,000	12,000–120,000	9A-100163599	±1	±3

† Not suitable for Victaulic® systems due to pressure requirements.

Complete meter part numbers

Meter Type	Flow Size, in [mm]	End Connection Size, in	Working Pressure, psi [MPa]	Part Number
High-pressure 1502 union end	1 [25]	2 1502 wing thread	15,000 [103]	9A-100061237
	1 1/2 [40]	2 1502 wing thread		9A-101003955
	2 [50]	2 1502 wing thread		9A-100012023
	3 [80]	3 1502 thread by thread		9A-100012024
	3 [80]	3 1502 wing thread		9A-10101179
EZ-IN between-flange wafer flowmeter	6 [150]	6 BF	6,000 [41]†	9A-101212242

† Depends on flange rating.

NUFLO Technology Ball-Bearing Gas Turbine Flowmeter Specifications

Minimum density requirements	The NUFLO technology ball-bearing flowmeter requires a minimum fluid density of 4 lbm/ft^3 [64 kg/m^3]. Natural gas with relative density of 0.65 at 1,000 psi meets the minimum requirements. Flowing density is influenced by the flowing pressure, temperature, and fluid composition.	
Sizing	Consult Sensia for	
	Standard flow rates at flowing conditions	
	Output frequency	
End connections	Any; reduced-bore EZ-IN wafer flowmeter bodies are not recommended for gas service	
Working pressure	Dependent on meter body type and connections	
Minimum output voltage at 5 Hz, mV	30 peak to peak	
Pressure drop (DP) computation	DP = μ0.25 × (sg0.75 × wd)	
	μ = flowing viscosity in cP	
	sg = flowing density in kg/m^3 divided by 1,000 [flowing density in lbm/ft^3 divided by 62.4]	
	wd = pressure drop in water	
Linearity, %	±3 of reading	
Repeatability, %	±0.8 of reading	
Factory calibration	A single average K-factor indicating the number of pulses per galUS is supplied with each meter and each cartage. The signal K-factor is derived from the average of 5 K-factors acquired from different flow rates across a turndown of not less than a 10:1. The K-factors are determined by using a small volume prover and water. All instruments are NIST traceable.	
Process temperature, degF [degC]	-70 to 350 [-57 to 176]. Internals only. Body and pickup coil must be selected to match as required for the application.	
Materials of construction	Vanes and bearing support	316L stainless steel
	Bearings	430 stainless steel
	Rotor	CD4MCu duplex stainless steel

HOW TO ORDER

Sensia gas turbine flowmeters are often built to order, which gives our customers the opportunity to have optimal meter attributes for their application. The following is a guide for configuring a meter for quotation. The list includes the most popular selections. Communicate other requirements or preferences by written correspondence.
Select one choice from each group. The red font describes combination limits. Items in bold font are recommended minimum selections. Prior to order, Sensia will assign a compact part number to the agreed-upon configuration.

☐ NuFlo (EF) ☐ 7400 (TH,RF,RJ))

ıtion ☐ **CSA** ☐ ATEX Flameproof

ore Size/Flowrate

- ☐ [G21] 2" Low Range (NuFlo)
- ☐ [G22] 2" Standard Range (NuFlo)
- ☐ [G23] 2" High Range (NuFlo)
- ☐ [7486] 3/4" (7400 & TH,RF)
- ☐ [7450] 1" (7400)
- ☐ [7475] 1" (7400)
- ☐ [7401] 1" (7400)
- ☐ [7445] 1-1/4" (7400)
- ☐ [7446] 1-1/2" (7400)
- ☐ [7402] 2" (7400)
- ☐ [7425] 2-1/2" (7400 & RF,RJ)
- ☐ [7403] 3" (7400 & RF,RJ)
- ☐ [7404] 4" (7400 & RF,RJ)
- ☐ [7406] 6" (7400 & RF,RJ)
- ☐ [7408] 8" (7400 & RF,RJ)
- ☐ [7410] 10" (7400 & RF,RJ)
- ☐ [7412] 12" (7400 & RF)

nnection Size

- ☐ 1/2 Inch (7X84)
- ☐ 3/4 Inch (7486)
- ☐ 1 Inch (7401,7450,7475)
- ☐ 1-1/4 Inch (7445)
- ☐ 1-1/2 Inch (7446)
- ☐ 2 Inch (NuFlo or 7402)
- ☐ 2-1/2 Inch (7425)
- ☐ 3 Inch (7403)
- ☐ 4 Inch (7404)
- ☐ 6 Inch (7406)
- ☐ 8 Inch (7408)
- ☐ 10 Inch (7410)
- ☐ 12 Inch (7412)

e Class For Flanges (RF,RJ)

- ☐ NA
- ☐ ASME CL150 (RF)
- ☐ ASME CL300 (RF)
- ☐ ASME CL600
- ☐ ASME CL900 (3"-8")
- ☐ ASME CL1500

Material (RF,RJ) ☐ NA ☐ Stainless Steel

aterial ☐ 316 SS

e Rating (TH)

- ☐ NA
- ☐ 2650 PSI (7402)
- ☐ 3200 PSI (7445,7446)
- ☐ 4400 PSI (7450,7475,7401)
- ☐ 5000 PSI (7486)

aterial ☐ 455 SS (NuFlo) ☐ 430 SS (7400)

y (Grade)

- ☐ +/- 1.00% (7400)
- ☐ +/- 2.00% (NuFlo)

Connections

- ☐ 1 - Standard (coil included)
- ☐ 2nd pickup (coils included) (7401 or larger)

ng Temperature Range

- ☐ **-20F to 250F**
- ☐ -67F to 250F
- ☐ -20F to 450F (7400)
- ☐ -67F to 450F (7400)

quirements ☐ 10 Point Calibration

ntation / Reports

- ☐ None (NuFlo)
- ☐ Material Test Report (always required for 7400)
- ☐ NACE Certificate
- ☐ Hydrostatic Test Data (default - Data or Chart is always required for 7400)
- ☐ Hydrostatic Test Chart (not Hydrostatic Test Data)
- ☐ Flow Test Certificate
- ☐ Flow Curve

er Inspection

- ☐ **None**
- ☐ Leak Test (Hydrostatic Test Chart)
- ☐ Calibration
- ☐ Inspection

Selection guide for quotations and orders

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Rockwell Automation + Schlumberger