

GT1600 Series

Industrial, Glass Tube Variable Area Flow Meters
(Rotameter) for Liquids & Gases

The GT1600 Series glass tube VA flow meters are a NEW family of meters with a rugged design for long-lasting performance with low and high-flow gas and liquid applications where process viewing is important. These versatile and economical meters are for general use in applications with moderate metering accuracy requirements — typical accuracy ranges are 1% to 10% full scale, depending on the model selected. They are ideal for purge type service, seal oil systems, bearing lubrication and cooling water indication.

The GT1600 Series flow meters are configurable to retrofit existing Brooks Instrument GT1000, GT1300 and Full-View® 1100 Series meters (models 1110, 1114, 1140, 1144).



Features

316/316L dual certified stainless steel process fittings, 316 stainless steel frame, polycarbonate safety shield. Design compliant to ASME B31.1 & B31.3

High and low flow alarms

Device can be vertically rotated 360° for adjustable viewing angle

Flanged or threaded connections, available horizontal and vertical. Panel and wall mount options.

Clean or replace tube and float without removal from process piping

Adjustable scale

Optional integral needle valve

Benefits

Premium materials of construction ensure safety, indoor and outdoor durability, and a 180° viewing window

Monitor critical flow conditions. Can be added at time of order or as add-on in the field

Easy installation and viewing at any angle

Meets a variety of current or new process connections and mounting options

Easy in-situ maintenance

Compensate for process variation

Minimizes connections reducing leak points

Product Specifications

Performance

Flow Accuracy	Standard: $\pm 10\%$, $\pm 5\%$, $\pm 2\%$ Full Scale, Class 2.5 acc VDI/VDE Optional: $\pm 1\%$ Full Scale, Class 1.6 acc VDI/VDE
Repeatability	$\leq 0.5\%$ Full Scale
Capacities and Pressure Drops	See Capacities
Scales	Transparent scale. Adjustable Nominal Lengths: 75mm, 127mm and 250mm Choice of direct reading units, millimeter or percentage of maximum flow with factor tag
Ambient Temperature Limits	-4°F to 125°F -20°C to 52°C
Operating Fluid Temperature Limits	33 to 250°F 1°C to 121°C
Mounting Options	In line Panel mount (see Dimensions) Wall mount (see Dimensions)

Process Connections

	NPT Threaded	Flanged ANSI 150# RF
	Horizontal IN / OUT	Horizontal IN / OUT
	Vertical IN / OUT	Vertical IN / OUT
	Horizontal IN / Vertical OUT	Horizontal IN / Vertical OUT
	Vertical IN / Horizontal OUT	Vertical IN / Horizontal OUT

Pressure Ratings

	Maximum Operating Pressure at Fluid Temperature			
Tube Size	Threaded Process Connections		Flanged Process Connections	
	psi	bar	psi	bar
*02	500	34.5	240	16.5
*06	450	31.0	240	16.5
07	300	20.7	240	16.5
08	250	17.0	240	16.5
09	200	13.8	200	13.8
10	175	12.1	175	12.1

Materials of Construction

Metering Tube (Wetted)	Borosilicate Glass
Process Fittings (Wetted)	316/316L (Dual Certified Stainless Steel)
Float (Wetted)	Sizes 2 & 6: Carboloy® or 316/316L (Dual Certified Stainless Steel) Sizes 7 - 10: 316/316L (Dual Certified Stainless Steel)
Float Stops (Wetted)	Teflon®
O-Rings (Wetted)	Viton®, Buna-N, Kalrez®, EPDM
Housing	316 Stainless Steel
Window & Safety Shield	Polycarbonate with UV Inhibitor
Hardware	316 Stainless Steel

Alarms

Tube Size 02 & 06	Ring Initiator High / Low Alarm
Tube Size 07 - 10	Reed Switch High / Low Alarm
Hazardous Area Approvals	Zone 1 / Zone 2 (ATEX/IECex) - Gas/Dust Protection Method Ex m (No Barrier) Div1 (UL) - Gas/Dust Protection Method I.S.

Valve

	Optional Integral Needle Valve
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Certifications

	International Calibration Certificate
	Material Certification to DIN 3.1
	Declaration of Compliance 2.1 Oxygen Service

*Pressure rating for tube sizes 02 & 06 are limited 20.7 bar (300 psi) when an alarm is included for threaded process connections.

WARNING

Glass metering tubes are designed for operation up to the maximum operating pressures and temperatures as specified herein. Due to the inherent brittle characteristics of glass and conditions beyond our control, tube breakage could result below specified operating conditions. Do not use glass tube meters with fluids that are toxic, or chemically react with glass such as water above 140°F (60°C), steam, alkalis, fluorine, hydrofluoric acid, or molten metal. Failure to heed warning can result in serious personal injury and/or damage to the equipment.

Product Specifications

Capacities

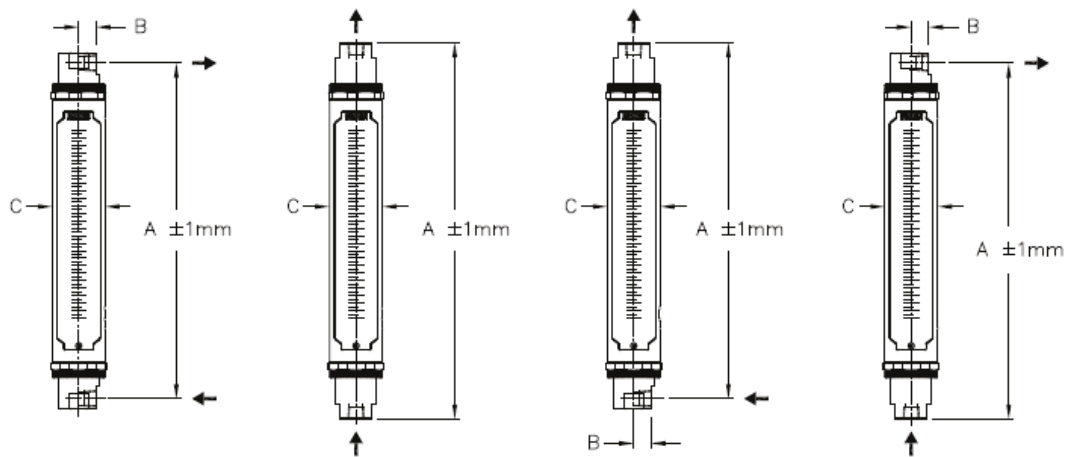
Capacities		Full Scale - Water						Full Scale - Air			
Tube Size		Tube	Float	cc/min	l/h	Pressure Drop inch W.C./kPa	V.I.C. cSt	SLPM ⁽¹⁾	In/h ⁽²⁾	Pressure Drop inch W.C./kPa	Alarm Type
127- Low Flow	Size 02	R-2-127-AAAAT	316SS	1.9	0.11	0.7 / 0.17	1.0	0.11	6.7	0.8 / 0.19	Ring Initiator
			Carbology	3.7	0.22	1.1 / 0.27	1.0	0.2	12	1.2 / 0.3	
		R-2-127-AAT	Carbology	6.1	0.36	1.2 / 0.29	1.0	0.32	19	1.5 / 0.37	
			R-2-127-DT	316SS	16	1	0.9 / 0.22	1.0	0.71	42	
		Carbology		28	1.7	1.5 / 0.38	1.0	1	63	1.7 / 0.42	
			R-2-127-AT	316SS	39	2.3	1.1 / 0.27	1.0	1.4	85	
		Carbology		58	3.5	1.9 / 0.47	1.0	2	120	2.1 / 0.52	
			R-2-127-BT	316SS	110	6.8	1.8 / 0.45	1.0	3.9	230	
	Carbology	170		10	3.0 / 0.75	1.0	5.7	340	3.3 / 0.83		
		Size 06	R-2-127-CT	Carbology	280	17	6.1 / 1.51	1.0	9.5	570	
	R-6-127-AT			316SS	410	25	6.1 / 1.53	1.0	14	840	
			Carbology	620	37	10.5 / 2.61	1.0	20	1200	11.6 / 2.9	
R-6-127-BT	316SS			1000	65	30.1 / 7.5	1.0	35	2100	33.3 / 8.3	
	Carbology	1500	95	57.8 / 14.4	1.0	49	2900	64.2 / 16			
Tube Size		Tube	Float	GPM	l/h	Pressure Drop inch W.C./kPa	V.I.C. cSt	SCFM ⁽¹⁾	m³n/h ⁽²⁾	Pressure Drop inch W.C./kPa	Alarm Type
250- High Flow	Size 07	R-7M-25-1FT	7-XV-11A-A	0.48	100	8 / 2	1.0	1.8	3.1	10 / 2.5	Reed Switch
			7-XS-23-A	0.77	170	16 / 4.0	1.0	3.3 (5.7)*	5.5 (9.6)*	17 / 4.2	
	Size 08	R-8M-25-4FT	8-XV-8-A	1.00	240	5 / 1.5	3.7	4.4	7.5	5 / 1.3	
			8-XV-14-A	1.40	320	8 / 2	5.4	5.8	9.9	8 / 2	
			8-XV-31-A	2.00	460	16 / 4	7.0	8.1 (14)*	13.7 (24)*	17 / 4.3	
	Size 09	R-9M-25-3FT	9-XS-33-A	3.20	730	4 / 1	2.3	13	22	8 / 2	
			9-XV-87-A	3.90	890	14 / 3.5	17	16.1 (28)*	27.5 (48)*	16 / 4	
			9-XS-87-A	5.10	1100	18 / 4.5	3.5	20.7 (36)*	35.5 (62)*	19 / 4.8	
	Size 10	R-10M-25-3FT	10-XV-64-A	6.20	1400	12 / 3	15	25	43	14 / 3.5	
			10-XS-64-A	7.80	1700	16 / 4	3.7	32	54	18 / 4.5	
			10-XS-138-A	10.00	2400	30 / 7.5	5.5	45.9 (80)*	74.4 (130)*	36 / 9	
			10-XJ-238-A	21.00	4800	104 / 26	1.0	86.1 (150)*	154.6 (270)*	16 / 4	
127- High Flow	Size 07	R-7M-127-1FT	7-XV-11A-A	0.41	93	8 / 2	1.0	1.8	3	10 / 2.5	N/A
			7-XS-23-A	0.66	150	16 / 4.0	1.0	2.7 (4.7)*	4.6 (8.1)*	17 / 4.2	
	Size 08	R-8M-127-4FT	8-XV-8-A	0.99	220	5.0 / 1.25	3.7	4	6.8	6.0 / 1.5	
			8-XV-14-A	1.3	310	8.0 / 2	5.4	5.3	9	10 / 2.5	
			8-XV-31-A	1.7	400	24 / 6	7.0	6.3 (11)*	11.4 (20)*	28 / 7	
	Size 09	R-9M-127-4FT	9-XS-33-A	3.0	690	7.0 / 1.7	2.3	12	21	8.0 / 2.0	
			9-XV-87-A	3.6	830	14 / 3.5	17	14.9 (26)*	25.2 (44)*	16 / 4.0	
			9-XS-87-A	4.5	1000	17 / 4.2	3.5	18.4 (32)*	31.5 (55)*	20 / 5.0	
	Size 10	R-10M-127-3FT	10-XV-64-A	6	1300	9 / 2.25	15	24	41	10 / 2.5	
			10-XS-64-A	7.4	1600	12 / 3	3.7	30	52	13 / 3.25	
			10-XS-138-A	9.8	2200	29 / 7.25	5.5	39 (68)*	63 (110)*	33 / 8.25	
			10-XJ-238-A	20	4700	104 / 26	1.0	80.4 (140)*	143.2 (250)*	16 / 4	
075- High Flow	Size 08	R-8M-75-1	8-XV-8-A	0.82	180	8 / 2	N/A	3.3	5.6	9 / 2.25	
			8-RJ-10	1.5	340	9 / 2.25		6.3	10	11 / 2.7	
			8-RJ-23	2.4	540	13 / 3.25		9.9	16	15 / 3.7	
			8-RJ-30	3.1	710	19 / 4.8		13	22	22 / 5.5	
			8-RJ-39	4.7	1000	34 / 6		N/A			
	Size 10	R-10M-75-3	10-RJ-80	10	2200	18 / 4.5		N/A			
			10-RJ-180	21	4900	71 / 17.6		N/A			
			10-RJ-37	N/A				24	40	18 / 4.5	
			10-RJ-83					36	62	35 / 8.7	
			10-RJ-90					43	73	71 / 17.6	

Note (1): Air flow rates in standard units are at 70°F & 14.7 psia. Reference conditions 70°F 1 atm.

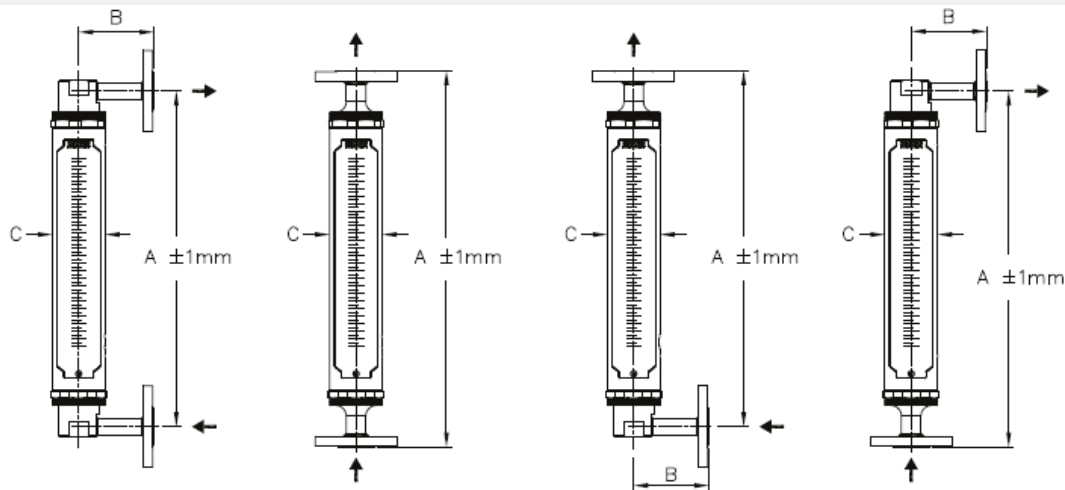
Note (2): Air flow rates in normal units are at 1.013 bar & 20°C. Reference conditions 20°C 1 atm.

*These codes require a back pressure of 30 psig / 2.069 bar. Flow rates in parenthesis are when this back pressure is applied.

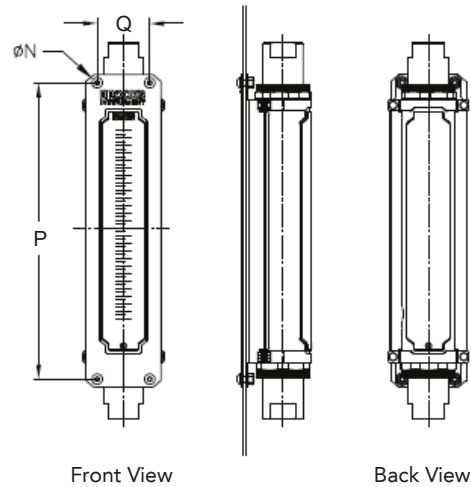
Front View Threaded Connection



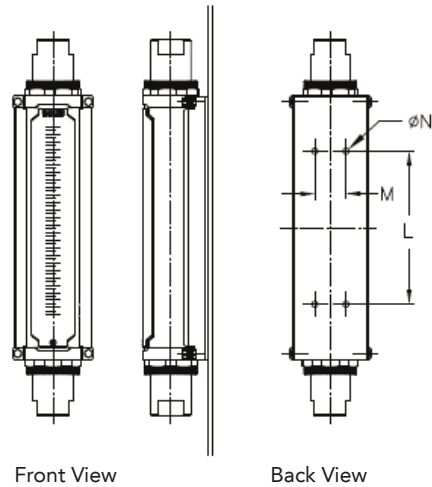
Front View Flanged Connection



Back of Panel (Flush) Mounting
(Rectangular Panel Cut-Out + 4 Mtg. Holes)



Front of Panel (Wall) Mounting
(4 Mounting Holes)



Product Dimensions

Meter Type	Tube Size	Process Connection	Orientation H(orizontal) V(ertical)	Notes	Retro-fit	Model	Dimension																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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127- Low Flow	Size 02 Size 06	NPT-F	H-IN / H-OUT	Standard Dimensions ⁽³⁾	GT1000	1020	8.59	218.3	0.63	16.0	2.13	54.0	4.00	101.6	1.00	25.4	0.22	5.5	7.24	184	1.48	37.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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			H-IN / V-OUT			1026	9.22	234.1	0.63	16.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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			H-IN / H-OUT	Retrofit Only ⁽⁴⁾	Full-View	1110	8.59	218.3	0.63	16.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
			V-IN / V-OUT			1114	9.63	244.5	-	-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
			H-IN / V-OUT			1140	9.11	231.4	0.63	16.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
			V-IN / H-OUT			1144	9.11	231.4	0.63	16.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
		Flanged 150lbs RF	H-IN / H-OUT	Standard Dimensions ⁽³⁾	GT1000	1020	8.59	218.3	2.95	75.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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			V-IN / V-OUT			1144	14.88	377.8	-	-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
			H-IN / V-OUT			1146	11.73	298.1	3.5	88.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
			V-IN / H-OUT			1147	11.73	298.1	3.5	88.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
250- High Flow	Size 07 Size 08 Size 09 Size 10	NPT-F	H-IN / H-OUT	Standard Dimensions ⁽³⁾	GT1000	1020	17.50	444.5	0.83	21.0	2.97	75.5	8.00	203.2	1.63	41.3	0.35	9.0	15.49	393.5	2.74	69.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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			H-IN / H-OUT #7/8 H-IN / H-OUT #9/10	Retrofit Only ⁽⁴⁾	Full-View	1110	16.50 17.50	419.1 444.5	0.83	21.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
			V-IN / V-OUT #7/8 V-IN / V-OUT #9/10			1114	17.00 17.25	431.8 438.2	-	-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
			H-IN / V-OUT #7/8 H-IN / V-OUT #9/10			1116	16.75 17.38	425.5 441.3	0.83	21.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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			V-IN / V-OUT			GT1307	1307	16.94	430.2	-													-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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				H-IN / V-OUT #7/8 H-IN / V-OUT #9/10			1026	18.59	472.3	3.94 4.72													100.0 120.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
		V-IN / H-OUT #7/8 V-IN / H-OUT #9/10		1027			18.59	472.3	3.94 4.72	100.0 120.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
		H-IN / H-OUT #7/8 H-IN / H-OUT #9/10		Retrofit Only ⁽⁴⁾	Full-View	1140	16.5 17.50	419.1 444.5	3.50 4.00	88.9 101.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
		H-IN / V-OUT #7/8 H-IN / V-OUT #9/10				1144	22.88 22.50	581.0 571.5	-	-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
		V-IN / H-OUT #7/8 H-IN / V-OUT #9/10				1146	19.69 20.00	500.0 508.0	3.50 4.00	88.9 101.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
		V-IN / H-OUT #7/8 V-IN / H-OUT #9/10				1147	19.69 20.00	500.0 508.0	3.50 4.00	88.9 101.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					

Note (3): Standard dimension are for new installations.

Note (4): Retrofit dimensions are for replacement of GT10xx, GT130x and Full-View meters in existing installation. Not for use in new installations.

Product Dimensions

Meter Type	Tube Size	Process Connection	Orientation H(orizontal) V(ertical)	Notes	Retro-fit	Model	Dimension											
							A		B		C		L		M		N	
							inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
127- High Flow	Size 07 Size 08 Size 09 Size 10	NPT-F	H-IN / H-OUT	Standard Dimensions ⁽³⁾	---	-	12.31	312.7	0.83	21	2.97	75.5						
			V-IN / V-OUT			-	14.50	368.2	-	-								
			H-IN / V-OUT			-	13.41	340.5	0.83	21								
			V-IN / H-OUT			-	13.41	340.5	0.83	21								
			H-IN / H-OUT #7/8 H-IN / H-OUT #9/10	Retrofit Only ⁽⁴⁾	Full-View	1110	11.50 12.50	292.1 317.5	0.83	21								
			V-IN / V-OUT #7/8 V-IN / V-OUT #9/10			1114	12.00 12.25	304.8 311.2	-	-								
			H-IN / V-OUT #7/8 H-IN / V-OUT #9/10			1116	11.75 12.38	298.5 314.3	0.83	21								
			V-IN / H-OUT #7/8 V-IN / H-OUT #9/10			1117	11.75 12.38	298.5 314.3	0.83	21								
			V-IN / V-OUT	Retrofit Only ⁽⁴⁾	GT1306	1306	11.75	298.5	-	-								
		Flanged 150lbs RF	H-IN / H-OUT #7/8 H-IN / H-OUT #9/10	Standard Dimensions ⁽³⁾	GT1000	-	12.31	312.7	3.94 4.72	100.0 120.0								
			V-IN / V-OUT #7/8 V-IN / V-OUT #9/10			-	14.50	368.2	-	-								
			H-IN / V-OUT #7/8 H-IN / V-OUT #9/10			-	13.41	340.5	3.94 4.72	100.0 120.0								
			V-IN / H-OUT #7/8 V-IN / H-OUT #9/10			-	13.41	340.5	3.94 4.72	100.0 120.0								
			H-IN / H-OUT #7/8 H-IN / H-OUT #9/10	Retrofit Only ⁽⁴⁾	Full-View	1140	11.50 12.50	292.1 317.5	3.50 4.00	88.9 101.6								
			V-IN / V-OUT #7/8 V-IN / V-OUT #9/10			1144	17.88 17.50	454.0 444.5	-	-								
			H-IN / V-OUT #7/8 H-IN / V-OUT #9/10			1146	14.69 15.00	373.0 381.0	3.50 4.00	88.9 101.6								
			V-IN / H-OUT #7/8 V-IN / H-OUT #9/10			1147	14.69 15.00	373.0 381.0	3.50 4.00	88.9 101.6								
075- High Flow	Size 08 Size 10	NPT-F	H-IN / H-OUT	Standard Dimensions ⁽³⁾	---	-	9.02	229.1	0.85	21.0								
			V-IN / V-OUT			-	11.20	284.6	-	-								
			H-IN / V-OUT			-	10.11	256.9	0.83	21.0								
			V-IN / H-OUT			-	10.11	256.9	0.83	21.0								
			V-IN / V-OUT	Retrofit Only ⁽⁴⁾	GT1305	1305	7.75	196.9	-	-								
		Flanged 150lbs RF	H-IN / H-OUT #7/8 H-IN / H-OUT #9/10	Standard Dimensions ⁽³⁾	---	-	9.02	229.1	3.94 4.72	100.0 120.0								
			V-IN / V-OUT #7/8 V-IN / V-OUT #9/10			-	11.20	284.6	-	-								
			H-IN / V-OUT #7/8 H-IN / V-OUT #9/10			-	10.11	256.9	3.94 4.72	100.0 120.0								
			V-IN / H-OUT #7/8 V-IN / H-OUT #9/10			-	10.11	256.9	3.94 4.72	100.0 120.0								

Note (3): Standard dimension are for new installations.

Note (4): Retrofit dimensions are for replacement of GT10xx, GT130x and Full-View meters in existing installation. Not for use in new installations.

Declarations	Mark	Meter Options			Standards / Directives / Marking	Status / Certificate
		Mechanical	Reed Switch	Inductive Alarm		
EU Declaration of Conformity				✓	EMC Directive (2014/30/EU)	Declaration
			✓	✓	RoHS Directive (2011/65/EU)	Declaration
			✓	✓	ATEX Directive (2014/34/EU)	Declaration
		✓			ATEX Directive (2014/34/EU) : Non-Electrical	Declaration
			✓		EMC Directive (2014/30/EU) The equipment uses a reed switch sensor & is outside the scope of the directive since the inherent nature of the physical characteristics of which is such that: (i) it is incapable of generating or contributing to electromagnetic emissions which exceed a level allowing radio and telecommunication equipment and other equipment to operate as intended; and (ii) it operates without unacceptable degradation in the presence of the electromagnetic disturbance normally consequent upon its intended use.	
		✓	✓	✓	Pressure Equipment Directive (2014/68/EU)	Declaration
		✓	✓	✓	Canadian Registration Number (CRN)	CRN
Explosion safety "Constructional safety (c)"		✓			II 2 G Ex h IIC T6...T4 Gb II 2 D Ex h IIC T120°C Db Special conditions for safe use: Refer to IOM	TCF: 203104000-1604
Explosion safety "encapsulation (m)"			✓		II 2 G Ex mb IIC T6 Gb II 2 D Ex mb IIC T85°C Db (Standard Version) II 2 G Ex mb IIC T5 Gb II 2 D Ex mb IIC T100°C Db (With Junction box Version)	KIWA 18ATEX0013 X
			✓		Ex mb IIC T6 Gb Ex mb IIC T85°C Db (Standard Version) Ex mb IIC T5 Gb Ex mb IIC T100°C Db (With Junction box Version)	IECEx KIWA 18.0008X
					Standards used for evaluation: EN 60079-0 : 2012+A11: 2013, EN 60079-18 : 2015 IEC 60079-0 : 2011, IEC 60079-18 : 2014	
					Ambient Temperature range: -20°C to +65°C (Standard Version) -20°C to +55°C (With Junction box Version) Input Power: 30V, 250mA, 3W Special conditions for safe use: Refer to IOM	
Explosion safety "Intrinsic Safety (ia)"			✓		Reed Switch Alarms are classified as "Simple Apparatus" when used in Intrinsically Safe circuits. They comply with the requirements of EN60079-11 clause 5.7 – Simple apparatus. Ambient Temperature ratings: -20°C ≤ Tamb ≤ 65°C Input parameters: Vmax = 30V, Imax = 100mA, Ci = 0μF, Li = 0μH Special conditions for safe use: Refer to IOM	
Explosion safety "Intrinsic Safety (ia)"			✓		IS Class I, II, III, Div 1, Groups A, thru G	UL File E73889 Vol3 Sec 6
			✓		Inductive Ring Sensor Pepperl + Fuchs Model: RC10-14-N3-Y53478 Pepperl + Fuchs Model: RC15-14-N3-Y53479 <u>Non-Hazardous Locations</u> Power Supply Nominal Voltage 8V Operating Voltage 5...25V Current Consumption Active area clear: 3mA (at 8V) Active area obscured: 0.5...0.95mA (at 8V) Ambient Temperature 0°C to 40°C	
Explosion safety "Intrinsic Safety (ia)"			✓		<u>Hazardous Location</u> ATEX II 2 G Ex ia IIC T6...T1 Gb IP67 Refer to ATEX Certificate for: Input parameters, Max Ambient Temperature, Special conditions for use	Pepperl + Fuchs PTB 99 ATEX 2128 X
			✓		FM Approvals Class I, Division 1, Group A, B, C, Class II, Division 1, Group E, F, G, Class III, Division 1 Class I, Zone 0, Group IIC T6	Pepperl + Fuchs Control Drawing:116-0165G

Code Description	Code Option	Option Description							
I.-II. Base Model Number	16	Large Glass Tube Flowmeter							
III. Body Flow/Scale Length		Body Flow	Scale Length						
	1	250-High Flow	250mm						
	2	127-High Flow	127mm						
	3	075-High Flow	75mm						
	4	127-Low Flow	127mm						
IV. Connection Orientation	0	Horizontal Inlet - Horizontal Outlet							
	4	Vertical Inlet - Vertical Outlet							
	6	Horizontal Inlet - Vertical Outlet							
	7	Vertical Inlet - Horizontal Outlet							
V. Model Revision	A	Initial release of global model code							
VI.-VII. Maximum Flowrate		250 - High Flow							
		Water		Air					
	Code	GPM	l/h	SCFM ⁽¹⁾	m³n/h ⁽²⁾	Tube		Float	
	JC	0.48	100	1.8	3.1	J	R-7M-25-1FT	C	7-XV-11A-A
	JF	0.77	170	3.3 (5.7)*	5.5 (9.6)*	J	R-7M-25-1FT	F	7-XS-23-A
	KC	1.00	240	4.4	7.5	K	R-8M-25-4FT	C	8-XV-8-A
	KF	1.40	320	5.8	9.9	K	R-8M-25-4FT	F	8-XV-14-A
	KJ	2.00	460	8.1 (14)*	13.7 (24)*	K	R-8M-25-4FT	J	8-XV-31-A
	LC	3.20	730	13	22	L	R-9M-25-3FT	C	9-XS-33-A
	LF	3.90	890	16.1 (28)*	27.5 (48)*	L	R-9M-25-3FT	F	9-XV-87-A
	LJ	5.10	1100	20.7 (36)*	35.5 (62)*	L	R-9M-25-3FT	J	9-XS-87-A
	MC	6.20	1400	25	43	M	R-10M-25-3FT	C	10-XV-64-A
	MF	7.80	1700	32	54	M	R-10M-25-3FT	F	10-XS-64-A
	MJ	10.00	2400	45.9 (80)*	74.4 (130)*	M	R-10M-25-3FT	J	10-XS-138-A
	MM	21.00	4800	86.1 (150)*	154.6 (270)*	M	R-10M-25-3FT	M	10-XJ-238-A
			127 - High Flow						
			Water		Air				
	Code	GPM	l/h	SCFM ⁽¹⁾	m³n/h ⁽²⁾	Tube		Float	
	SC	0.41	93	1.8	3	S	R-7M-127-1FT	C	7-XV-11A-A
	SF	0.66	150	2.7 (4.7)*	4.6 (8.1)*	S	R-7M-127-1FT	F	7-XS-23-A
	TC	0.99	220	4	6.8	T	R-8M-127-4FT	C	8-XV-8-A
	TF	1.3	310	5.3	9	T	R-8M-127-4FT	F	8-XV-14-A
	TJ	1.7	400	6.4 (11)*	11.4 (20)*	T	R-8M-127-4FT	J	8-XV-31-A
	UC	3	690	12	21	U	R-9M-127-4FT	C	9-XS-33-A
	UF	3.6	830	14.9 (26)*	25.2 (44)*	U	R-9M-127-4FT	F	9-XV-87-A
	UJ	4.5	1000	18.4 (32)*	31.5 (55)*	U	R-9M-127-4FT	J	9-XS-87-A
	VC	6	1300	24	41	V	R-10M-127-3FT	C	10-XV-64-A
	VF	7.4	1600	30	52	V	R-10M-127-3FT	F	10-XS-64-A
	VJ	9.8	2200	39 (68)*	63 (110)*	V	R-10M-127-3FT	J	10-XS-138-A
	VM	20	4700	80.4 (140)*	143.2 (250)*	V	R-10M-127-3FT	M	10-XJ-238-A
			075 - High Flow						
			Water		Air				
	Code	GPM	l/h	SCFM ⁽¹⁾	m³n/h ⁽²⁾	Tube		Float	
	PC	0.82	180	3.3	5.6	P	R-8M-75-1	C	8-XV-8-A
	PF	1.5	340	6.3	10	P	R-8M-75-1	F	8-RJ-10
	PJ	2.4	540	9.9	16	P	R-8M-75-1	J	8-RJ-23
	PM	3.1	710	13	22	P	R-8M-75-1	M	8-RJ-30
	PQ	4.7	1000	N/A	N/A	P	R-8M-75-1	Q	8-RJ-39
	RC	12	2700	N/A	N/A	R	R-10M-75-3	C	10-RJ-80
	RF	21	4900	N/A	N/A	R	R-10M-75-3	F	10-RJ-180
	RJ	N/A	N/A	24	40	R	R-10M-75-3	J	10-RJ-37
	RM	N/A	N/A	36	62	R	R-10M-75-3	M	10-RJ-83
	RQ	N/A	N/A	43	73	R	R-10M-75-3	Q	10-RJ-90

Note (1): Air flow rates in standard units are at 70°F & 14.7 psia. Reference conditions 70°F 1 atm.

Note (2): Air flow rates in normal units are at 1.013 bar & 20°C. Reference conditions 20°C 1 atm.

*These codes require a back pressure of 30 psig / 2.069 bar. Flow rates in parenthesis are when this back pressure is applied.

Code Description	Code Option	Option Description								
VI.-VII. Maximum Flowrate (Continued)		127 - Low Flow								
		Water		Air						
	Code	cc/min	l/h	SLPM ⁽¹⁾	In/h ⁽²⁾	Tube		Float		
	A3	1.9	0.11	0.11	6.7	A	R-2-127-AAAAT	3	316SS	
	A6	3.7	0.22	0.2	12	A	R-2-127-AAAAT	6	CARBOLOY	
	B6	6.1	0.36	0.32	19	B	R-2-127-AAT	6	CARBOLOY	
	C3	16	1	0.71	42	C	R-2-127-DT	3	316SS	
	C6	28	1.7	1	63	C	R-2-127-DT	6	CARBOLOY	
	D3	39	2.3	1.4	85	D	R-2-127-AT	3	316SS	
	D6	58	3.5	2	120	D	R-2-127-AT	6	CARBOLOY	
	E3	110	6.8	3.9	230	E	R-2-127-BT	3	316SS	
	E6	170	10	5.7	340	E	R-2-127-BT	6	CARBOLOY	
	F6	280	17	9.5	570	F	R-2-127-CT	6	CARBOLOY	
	G3	410	25	14	840	G	R-6-127-AT	3	316SS	
	G6	620	37	20	1200	G	R-6-127-AT	6	CARBOLOY	
	H3	1000	65	35	2100	H	R-6-127-BT	3	316SS	
	H6	1500	95	49	2900	H	R-6-127-BT	6	CARBOLOY	
VIII. Fitting Material	A	316 Stainless Steel								
	B	316 Stainless Steel w/ CRN								
IX. Connection Size	1	1/4"				Low Flow				
	2	1/2"				High Flow				
	3	3/4"				High Flow				
	4	1"				High Flow				
	5	1"				Vertical / 3/4" Horizontal. Size 10 only.				
X-XI. Connection Type	AA	Standard / GT1000 Retrofit				NPT - Female				
	AB	Standard / GT1000 Retrofit				ANSI #150 RF Flange				
	BA	Retrofit GT130x				NPT - Female				
	CA	Retrofit Full-View 11xx				NPT - Female				
	CB	Retrofit Full-View 11xx				ANSI 150# RF Flange				
	DC	Retrofit GT1000				Rc - Female				
XII. O-Ring Material	1	Viton® fluoroelastomer								
	2	Buna								
	3	Kalrez®								
	4	EPDM								
XIII. Scale Inscription	1	MM Scale								
	2	Percent Scale								
	3	Direct Reading Scale								
	4	Dual Scale								
XIV. Meter Accuracy	A	±10%								
	B	±5% Full Scale								
	D	±2% Full Scale								
	F	±1% Full Scale								
	G	2.5 VDI/VDE								
	H	1.6 VDI/VDE								
XV. Valve Type/Location	0	None								
	1	Valve at Inlet								
	2	Valve at Outlet								
XVI. Alarm	0	None								
	1	1 Switch/Sensor								
	2	2 Switches/Senors								
XVII. Approvals	A	None								
	B	ATEX - Zone 1 & Zone 2, non-Electrical								
	C	UL / FM - Hazardous location								
	D	ATEX - Zone 1 & Zone 2, Electrical								

Sample Standard Model Code

I-II	III	IV	V	VI-VII	VIII	IX	X-XI	XII	XIII	XIV	XV	XVI	XVII
16	1	4	A	D0	A	2	AA	1	3	D	0	0	A

* These parts and services are not part of the product model code but should be selected during product configuration.

Accessory Parts

Condulet Junction Box Assembly

16xx Model Code, Position XVI - "16"

Option Code	Description	Part Numbers for Relays
0	None	---
1	1 Switch / Sensor	203Z023AAA
2	2 Switches / Sensor	203Z023AAA

Relay

16xx Model Code, Position XVI - "16"

Alarm		Part Numbers for Relays			
Option Code	Description	110VAC 1 or 2 relay		220VAC 1 or 2 relay	24VAC 1 or 2 relay
0	None	---	-	---	---
1	1 Switch / Sensor	029G008ZZZ	or	029G010ZZZ	or 029G012ZZZ
2	2 Switches / Sensor	029G008ZZZ	or	029G010ZZZ	or 029G012ZZZ

Mounting Kits

16xx Model Code, Position III - "3"

Option Code	Flow / Scale Length		Part Numbers for Kits	
	Description		Front of panel (wall) mounting	Back of panel (flush) mounting
1	250 - High Flow	250mm	778Z019AAA	778Z021AAA
2	127 - High Flow	---	---	---
3	075 - High Flow	75mm	---	---
4	127 - Low Flow	127mm	778Z018AAA	778Z020AAA

Services

Clean for Oxygen Service 2.1

Commercial Cleaning

Declaration of Compliance 2.1

International Calibration Certificate (ICC)

Material Certification 3.1

NACE MR0175 MR0103

PMI (Positive Material Identification)

Pressure Test Certificate 2.2

Brooks is committed to assuring all of our customers receive the optimal solution for their application, along with outstanding service and support to back it up. We operate first class repair facilities located around the world to provide rapid response and support. Each location utilizes primary standard calibration equipment to ensure accuracy and reliability for repairs and recalibration and is certified by our local Weights and Measures Authorities and traceable to the relevant International Standards.

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