

BCU Series

Clamp-on Ultrasonic Flow Meter for Liquids with Integrated EtherNet/IP

Engineered for modern bioprocessing, BCU Series clamp-on ultrasonic flow meters deliver accurate, real-time flow monitoring across both upstream and downstream operations—without ever touching the process fluid. Designed for ease of integration and long-term reliability, BCU Series is compact, making it ideal for applications ranging from media preparation and perfusion to chromatography and final fill.

With native EtherNet/IP connectivity, the meter integrates easily into automated skids and control platforms, giving OEMs a digital-ready solution with minimal engineering effort. For end users, it offers the flexibility to move between lines, the accuracy to support GMP decisions, and the speed needed to monitor dynamic processes in real time—right out of the box.



Features

Benefits

Clamp-On, Non-Invasive Design	No risk of contamination; simplifies validation and eliminates cleaning.
No Moving Parts or Consumables	Reusable flow meter with disposable tubing only—reduces waste versus fully single-use technologies; minimizes maintenance and total cost of ownership.
Factory Calibrated with Field Calibration Option	Delivers $\pm 1\%$ accuracy of rate with real-time performance across a wide turndown; enhanced accuracy achievable using actual tubing.
Native EtherNet/IP Connectivity	Seamless integration with modern PLCs and SCADA systems—no converters needed.
Advanced In-situ Flow Alarms, Diagnostics and Trending	Predictive maintenance and faster troubleshooting decreases downtime, increases reliability and process yield
Integrated Web-based Interface	Easy in-situ commissioning, configuration & troubleshooting

Product Specifications

Performance

Full-Scale Flow Range	Tube OD 1/4": 0 - 1,000 ml/min Tube OD 3/8": 0 - 4,000 ml/min Tube OD 1/2": 0 - 5,000 ml/min Tube OD 3/4": 0 - 15,000 ml/min Tube OD 1-3/8": 0 - 80,000 ml/min
Flow Accuracy ^{1,2}	Tube OD 1/4": ±1% of rate (<150 ml/min ±1.5 ml/min) Tube OD 3/8": ±1% of rate (<300 ml/min ±3 ml/min) Tube OD 1/2": ±1% of rate (<500 ml/min ±5 ml/min) Tube OD 3/4": ±1% of rate (<1,000 ml/min ±10 ml/min) Tube OD 1-3/8": ±1% of rate (<6,000 ml/min ±60 ml/min)
Zero Stability	Device output at zero flow shall not shift by more 0.2% of the device full scale per year
Temperature Coefficient	Zero : <0.1% of F.S. per °C Span: <0.2% of S.P. per °C
Attitude Sensitivity	Accuracy and performance shall not be affected by changes in device orientation when fluid is 100% liquid.
Sensor Materials	Measuring channel: ABS, Housing: anodized aluminum, polyamide, M8/M12: nickel plated brass
Tubing Materials	Recommended: Silicone, TPE Tygon, PE (flexible)

Dimensions

Dimensions	66mm x 66mm x [variable]
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Ratings

Operating Temperature Range	0 to 60°C
Ingress Protection	IP66 rated, ensuring complete dust protection and resistance to powerful water jets from all directions

Electrical

Electrical Connection	1x M8 Power 5-pin B Coded Connector 14-27 Vdc
Digital Communications	2x M12 Ethernet IP 4-pin D coded
Diagnostic	Embedded web-based interface for easy configuration, communications and troubleshooting

¹ Accuracy depends on tubing, tubing variations, temperature, fluid properties, clamping and other conditions.

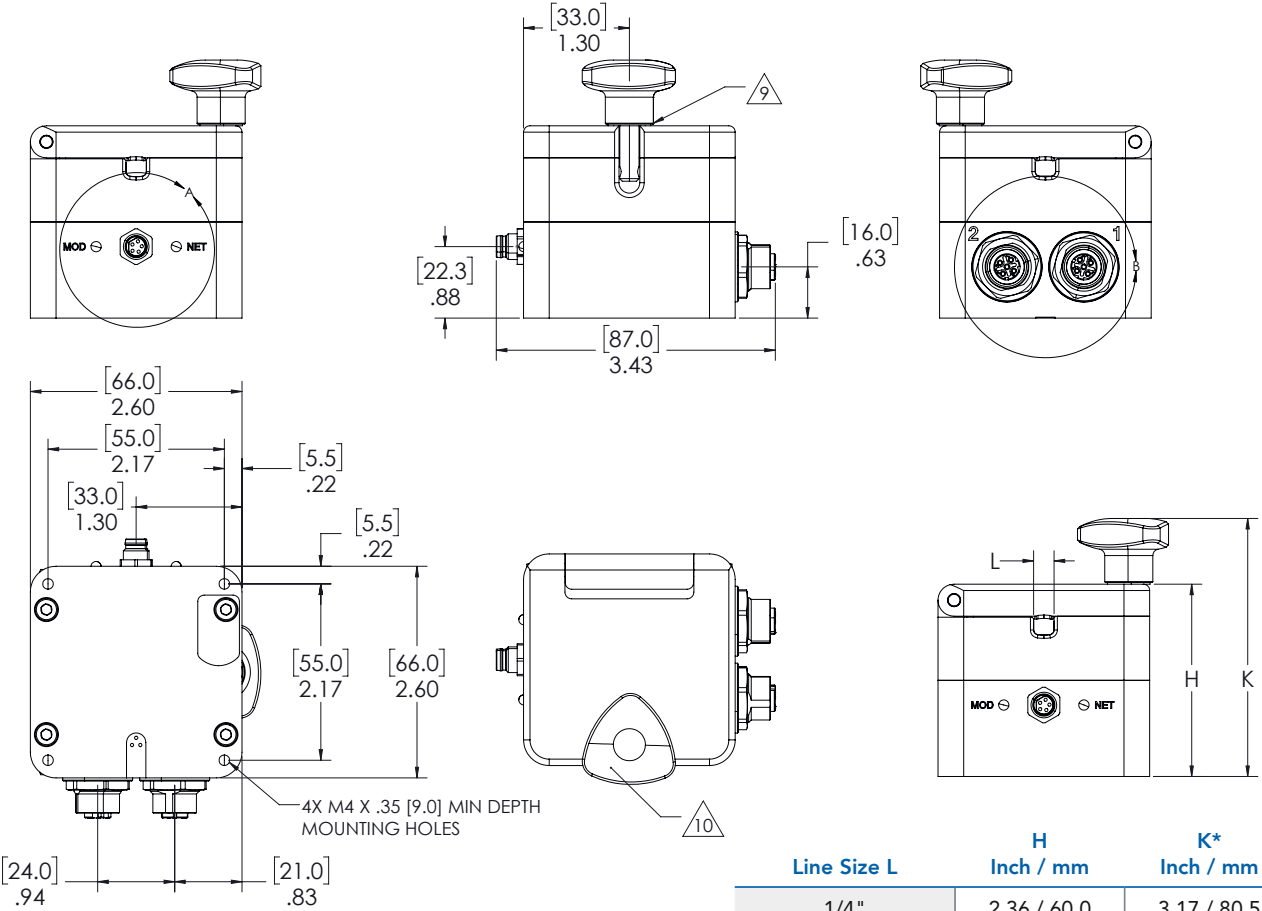
² Standard Calibration Conditions: Water at 23°C ± 2K; Warm up: at least 30 min; Zero calibration after clamp-on; Open tube outlet (pressure close to zero)

Tubing Size Chart

Masterflex™ LS/IP	Watson Marlow	Tube OD* (in)	Tube ID (in)	Tube OD* (mm)	Tube ID (mm)	Base Model
16	16	1/4 (0.250)*	1/8 (0.125)	6.35*	3.18	BCU0250
-	119	1/4 (0.250)	1/16 (0.060)	6.35	1.60	BCU0250
15	15	3/8 (0.375)	3/16 (0.188)	9.60	4.80	BCU0375
17	17	3/8 (0.375)*	1/4 (0.250)	9.60*	6.35	BCU0375
35	35	1/2 (0.500)	5/16 (0.313)	12.80	8.00	BCU0500
26	26	1/2 (0.500)*	1/4 (0.250)	12.70*	6.35	BCU0500
82	-	3/4 (0.750)*	1/2 (0.500)	19.05*	12.70	BCU0750
-	86	3/4 (0.756)	3/8 (0.375)	19.20	6.35	BCU0750
-	374	1-3/8 (1.375)*	1	34.93*	25.40	BCU1375

*Size used for standard factory calibration – Masterflex™ PCS for sizes up to 3/4" OD, C-Flex® 374 for 1-3/8" OD.

BCU Common Dimensions



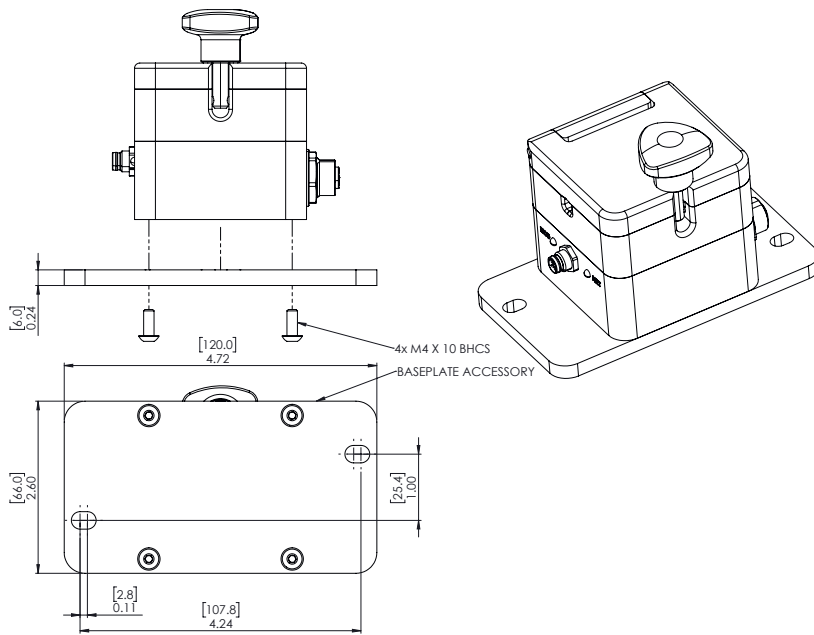
Line Size L	H Inch / mm	K* Inch / mm
1/4"	2.36 / 60.0	3.17 / 80.5
3/8"	2.36 / 60.0	3.17 / 80.5
1/2"	2.44 / 62.0	3.25 / 82.5
3/4"	2.64 / 67.0	3.44 / 87.5
1 3/8"	3.23 / 82.0	4.04 / 102.5

* Height when knob is in closed position

Cables	Length	Part No.
Power Cables (Flying Leads)	6 ft [2 m]	124X049AAA
	16 ft [5 m]	124X050AAA
Communication Cables	3 ft [1 m]	124Y392AAA
	10 ft [3 m]	124Y317AAA
	33 ft [10 m]	124Y393AAA
	39 ft [12 m]	124Y394AAA
	52 ft [16 m]	124Y395AAA
	98 ft [30 m]	124Y321AAA

Mounting Kit – 499Z037AAA Qty

Mounting Plate	1
M4 x 10 BHCS	4



Model Code

Code Description	Code Option	Option Description
I. Base Model Number	BCU	Brooks Clamp-on Ultrasonic Flow Meter
II. Line Size	0250	Tube OD: 1/4 inch (6.4mm)
	0375	Tube OD: 3/8 inch (9.5mm)
	0500	Tube OD: 1/2 inch (12.7 mm)
	0750	Tube OD: 3/4 inch (19.1 mm)
	1375	Tube OD: 1-3/8 inch (34.9 mm)
III. Device Output (Digital Communication)	E	EtherNet/IP
IV. Housing Material	A	Aluminum
V. Revision	A	Revision A
VI. Full Scale Flow Rate	XX.XL	Calibrated Full Scale Flow (Liters/Min)
VII. Calibration	AA	Standard Calibration
	ZZ	Special Calibration
VIII. Diagnostic Package	S	Standard
IX. Quality Certifications	A	Standard Calibration Certificate
	B	Calibration Certification Traceable to NIST
	C	Certificate of Conformance
	D	Calibration Certification Traceable to NIST and Certificate of Conformance
X. Customer Special Request (CSR)	XXXX	Customer Special Request

Sample Model Code

I	II	III	IV	V	VI	VII	VIII	IX	X				
BCU	-	0250	E	A	A	-	01.0L	-	AA	S	A	-	XXXX

Brooks is committed to assuring all of our customers receive the ideal flow 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.

Visit www.BrooksInstrument.com to locate the service location nearest to you.

START-UP SERVICE AND IN-SITU CALIBRATION

Brooks Instrument can provide start-up service prior to operation when required. For some process applications, where ISO-9001 Quality Certification is important, it is mandatory to verify and/or (re)calibrate the products periodically. In many cases this service can be provided under in-situ conditions, and the results will be traceable to the relevant international quality standards.

CUSTOMER SEMINARS AND TRAINING

Brooks Instrument can provide customer seminars and dedicated training to engineers, end users, and maintenance persons. Please contact your nearest sales representative for more details. Due to Brooks Instrument's commitment to continuous improvement of our products, all specifications are subject to change without notice.

TRADEMARKS

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