



## Digital Flowmeter



# Digital Flowmeter™

## Monitor compressed air usage and waste!

### What is the Digital Flowmeter?

Anyone serious about lowering their energy consumption, operating an efficient plant or optimizing their compressed air system knows that measuring compressed air consumption is the first step toward efficiency. EXAIR's Digital Flowmeter is the easy way to monitor compressed air consumption and waste! The digital display shows the exact amount of compressed air being used, making it easy to identify costly leaks or inefficient air products. Many companies install the Digital Flowmeter on each major leg of their air distribution system to constantly monitor and benchmark compressed air usage.

### Why the Digital Flowmeter?

The Digital Flowmeter has an LED display that directly indicates the SCFM or m<sup>3</sup>/hr volume of airflow through that pipe. Models from 1/2" to 4" iron pipe are in stock. Each Digital Flowmeter is calibrated for the pipe size to which it is mounted. The Digital Flowmeter is designed for permanent or temporary mounting to the pipe. It requires the user to drill two small holes through the pipe using the included drill bit and locating fixture. The two flow sensing probes of the flowmeter are inserted in these holes. The unit seals to the pipe once the clamps are tightened. No cutting, welding, adjustments or calibration are ever required. If the unit needs to be removed, block-off rings are available. NEMA Type 4 (IP66) meters available. Consult the factory for NEMA 4 meters.

### How it Works?

These flowmeters measure flow by maintaining a temperature differential between the two probes inserted into the compressed air pipe. One probe is kept warmer than the other and mass flow rate is determined by the amount of heat required to maintain the temperature differential. The flow rate, in SCFM or m<sup>3</sup>/hr, is shown on the large four-digit display. A 4-20 mA output and pulse output permit remote display of the flow value and data collection.

### Advantages

All EXAIR Digital Flowmeters are available in four fundamental versions and offer these advantages over traditional flowmeters.

- No moving parts
- Summing Remote Display and Data Logger available
- Optional RS-485 output serial communication board available
- Sensitive at low flows
- No calibration or set up required
- Includes all components for installation
- Models from 1/2" to 4" Schedule 40 iron pipe in stock
- Models are available for sizes 1/2" to 8" in iron pipe
- Models are available for sizes 3/4" to 4" in copper pipe
- Models are available for sizes 25mm through 101mm in aluminum pipe
- Easy to install



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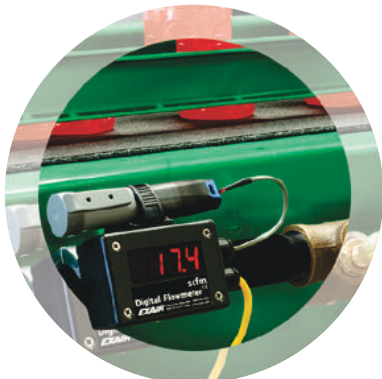
FINALISTS



# Digital Flowmeter Versions

## Flowmeter Versions

These four versions of digital flowmeter can be used on Schedule 40 iron pipe, Type L copper pipe, or the nominal pipe sizes listed on Page 13.



**Standard** The original Digital Flowmeter provides accuracy and an easy to read display of current compressed air consumption, daily consumption or cumulative consumption. Digital Flowmeter with optional Data Logger shown at left.



**Wireless** Transmit the compressed air data wirelessly over a ZigBee mesh network! A radio module within each meter transmits data to an Ethernet connected gateway. Using the ZigBee mesh network protocol, data can be passed from meter to meter to extend the distance over which the wireless system can operate. Each meter has a range of 100' (30 meters). Setup is simple and consists of installing a meter, installing EXAIR's wireless-to-Ethernet gateway and running the no-charge graphing software available from our website. 128 bit encryption is in place for secure wireless transmissions and they are configured to prevent unwanted joining upon the network.



**Hot Tap** This meter allows for installation under pressure, eliminating the need to isolate and remove pressure from the pipe it is being installed upon. It incorporates two valves that the probes pass through and a muffler that collects chips from the drilling process. It takes an equally short amount of installation time as the standard meters. Available on 2" and 50mm or larger flowmeters.



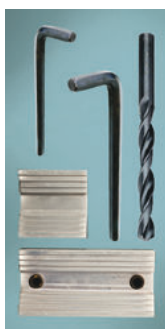
**Pressure Sensing** Digital Flowmeters monitor pressure and flow. A pressure sensor is mounted between the two flow sensing probes. The pressure signal is provided as a second milliamp output. The display can be configured to show pressure or flow. The pressure signal is also available through wired or wireless serial outputs. The pulse output is replaced with a transistor output configured as a low-pressure alarm when the pressure drops below 50 PSIG. Available on 2" and 50mm or larger flowmeters.



# Digital Flowmeter Accessories

## Need an EXAIR Drill Guide?

Basic kits for EXAIR's Digital Flowmeters include all of the components for installation, which are: a drill guide to locate the holes for the sensing probes accurately, a drill bit so the holes are the proper size and a hex wrench for installing the pipe clamp securely. If you have purchased a Digital Flowmeter in the past and have these components for the same sized flowmeter, you can order the flowmeter without a drill guide kit by adding the "-DG" suffix to the model number. (Model Number Configurator on Page 13). Drill guides can also be ordered separately.



EXAIR's Drill Guide for Digital Flowmeter.

## Drill Guides

Model #	Description
900817	Drill Guide Kit Only, 1/2", 3/4", 1", 1-1/4", 1-1/2" Schedule 40 and Type L Copper (double ring mount)
901281	Drill Guide Kit Only, 2" and 2.5" Schedule 40 and Type L Copper (single ring mount)
900939	Drill Guide Kit Only, 3" Schedule 40 and Type L Copper
900871	Drill Guide Kit Only, 4" Schedule 40 and Type L Copper
900872	Drill Guide Kit Only, 5" Schedule 40 and Type L Copper
901151	Drill Guide Kit Only, 6" Schedule 40 and Type L Copper
902098	Drill Guide Kit Only, 8" Schedule 40 and Type L Copper
901994	Drill Guide Kit Only for 2" and Up Aluminum Compressed Air Pipe

## What is the Summing Remote Display?

EXAIR's Summing Remote Display for the Digital Flowmeter has a four-digit LED display that makes it easy to monitor compressed air consumption from a convenient location. With the push of a button, the display cycles to show the current air consumption, usage for the previous 24 hours, and total cumulative usage. The Summing Remote Display shows that flow measurement, the daily and cumulative usage and is frequently used when the Digital Flowmeter is in an obscure, hard to read location. Regular monitoring of the air usage of a machine, process or department makes it possible to save thousands of dollars per year in compressed air waste by identifying the costly leaks or inefficient air products. The Summing Remote Display is CE and RoHS compliant

## Summing Remote Display

Model #	Description
9150	LED Readout displays SCFM
9150-M3	LED Readout displays m <sup>3</sup> /hr

It is pre-wired with 50' (15.2m) of cable and is powered by the Digital Flowmeter. Mounting hardware is included.



EXAIR's Summing Remote Display for the Digital Flowmeter.

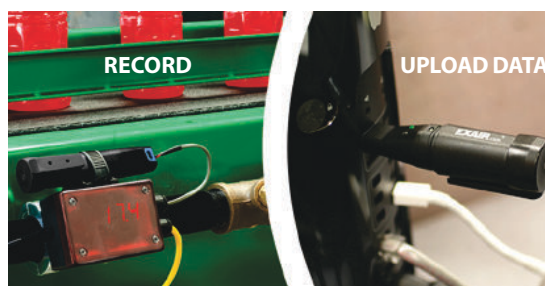
## What is the USB Data Logger?

EXAIR's award-winning Model 9147 USB Data Logger connects directly to your Digital Flowmeter and is simple to use. Download the software to configure the Data Logger to record your flow rate from once a second (about nine hours of data) up to once every 12 hours (over 2 years!).

When the Data Logger is removed from the Digital Flowmeter and plugged into a computer, the data can be viewed in the software or exported directly into Microsoft Excel®. The Data Logger is available pre-installed on the Digital Flowmeter. Data Loggers can be added to your Digital Flowmeter by adding a suffix to the model number (Model Number Configurator on Page 13). They can also be ordered separately.

## USB Data Logger

Model #	Description
9147	USB Data Logger for Digital Flowmeter



EXAIR's USB Data Logger for the Digital Flowmeter.

## What are Block-Off Rings?

Block-Off rings are used to safely cover and seal any holes which were drilled for the Digital Flowmeters. They allow for moving a Digital Flowmeter to multiple locations in your piping system.



## Block-Off Rings

Model #	Description
901327	Block-Off Rings for 9090 or 9090Z
901328	Block-Off Rings for 9091 or 9091Z
901329	Block-Off Rings for 9092, 9092-M3 or 9092Z
901331	Block-Off Rings for 9094, 9094-M3 or 9094Z

Model #	Description
901332	Block-Off Rings for 9095, 9095-M3 or 9095Z
901333	Block-Off Rings for 9096, 9096-M3 or 9096Z
901334	Block-Off Rings for 9097, 9097-M3 or 9097Z
901335	Block-Off Rings for 9098, 9098-M3 or 9098Z
902099	Block-Off Rings for 90100 or 90100Z

## Digital Flowmeter Model Numbering

1. Choose the **Version** of Digital Flowmeter using one of these prefixes:

### Version

Standard or Wireless	No Prefix
Hot Tap DFM (available on 2" and 50mm or larger)	H
Pressure Sensing DFM (available on 2" and 50mm or larger)	P

2. Choose the **Size** of your compressed air pipe:

### Size

Model #	Pipe Size	Model #	Pipe Size
9090	1/2"	9099	5"
9091	3/4"	90100	6"
9092	1"	90101	8"
9093	1-1/4"	91025	for nominal pipe 25mm
9094	1-1/2"	91040	for nominal pipe 40mm
9095	2"	91050	for nominal pipe 50mm
9096	2-1/2"	91063	for nominal pipe 63mm
9097	3"	91076	for nominal pipe 76mm
9098	4"	91101	for nominal pipe 101mm

3. Choose the **Configuration** you want by picking one suffix below:

### Configuration

Model #	Configuration
-DG	... removes Drill Guide
-DAT	... includes Data Logger w/ Drill Guide
-DG-DAT	... includes Data Logger, removes Drill Guide
Z	... Wireless w/ Drill Guide
Z-DG	... Wireless, removes Drill Guide
ZG	... Wireless and Gateway w/ Drill Guide
ZG-DG	... Wireless and Gateway, removes Drill Guide

CU	... for Copper Pipe w/ Drill Guide
CU-DG	... for Copper Pipe, removes Drill Guide
CU-DAT	... for Copper Pipe includes Data Logger w/ Drill Guide
CU-DG-DAT	... for Copper Pipe, includes Data Logger, removes Drill Guide
CUZ	... for Copper Pipe, Wireless w/ Drill Guide
CUZ-DG	... for Copper Pipe, Wireless, removes Drill Guide
CUZG	... for Copper Pipe, Wireless and Gateway w/ Drill Guide
CUZG-DG	... for Copper Pipe, Wireless and Gateway, removes Drill Guide

-M3	... Metric (displays m <sup>3</sup> /hr) w/ Drill Guide
-M3-DG	... Metric (displays m <sup>3</sup> /hr), removes Drill Guide
-M3-DAT	... Metric (displays m <sup>3</sup> /hr) includes Data Logger w/ Drill Guide
-M3-DG-DAT	... Metric (displays m <sup>3</sup> /hr), includes Data Logger, removes Drill Guide

## Configuration Samples

Version	Size	Configuration	Summary
	9090	-DG	Model 9090-DG Standard 2" DFM without a Drill Guide
H	9098	CU	Model H9098CU Hot Tap 4" DFM for Copper Pipe w/Drill Guide
P	9095	ZG	Model P9095ZG Pressure Sensing 2" DFM, Wireless Gateway w/Drill Guide
	91025	CUZ	Model 91025CUZ 25mm Nominal Pipe DFM for Copper Pipe, Wireless with Drill Guide



# Digital Flowmeter

EXAIR's Digital Flowmeter is a product designed to monitor compressed air consumption and flow, offering an easy solution for tracking these metrics. Equipped with a digital display, it provides the precise amount of compressed air being used. This feature allows for the identification of costly leaks or inefficient air products. The device is easy to install, sensitive at low flows, requires no calibration or setup, and includes all components necessary for installation.

## Digital Flowmeter

(Add specific Configuration from Page 13)

Model #	Pipe Size	Flow Range*
9090	1/2"	1-90 SCFM (2-153 m <sup>3</sup> /hr)
9091	3/4"	1-120 SCFM (2-204 m <sup>3</sup> /hr)
9092	1"	1-160 SCFM (2-272 m <sup>3</sup> /hr)
9093	1-1/4"	2-150 SCFM (3.6-252 m <sup>3</sup> /hr)
9094	1-1/2"	2-200 SCFM (3-340 m <sup>3</sup> /hr)
9095	2"	4-400 SCFM (6.6-678 m <sup>3</sup> /hr)
9096	2-1/2"	5-500 SCFM (8.4-846 m <sup>3</sup> /hr)
9097	3"	12-1200 SCFM (19.8-2040 m <sup>3</sup> /hr)
9098	4"	20-2000 SCFM (34.2-3396 m <sup>3</sup> /hr)
9099	5"	20-2500 SCFM (34.2-4248 m <sup>3</sup> /hr)
90100	6"	50-5000 SCFM (85.2-8496 m <sup>3</sup> /hr)
90101	8"	100-6000 SCFM (169.8-10194 m <sup>3</sup> /hr)

## Digital Flowmeter Type L Copper Pipe

(Add specific Configuration from Page 13)

Model #	Pipe Size	Flow Range*
9091CU	3/4"	1-120 SCFM (2-204 m <sup>3</sup> /hr)
9092CU	1"	1-160 SCFM (2-272 m <sup>3</sup> /hr)
9093CU	1-1/4"	2-150 SCFM (3.6-252 m <sup>3</sup> /hr)
9094CU	1-1/2"	2-200 SCFM (3-342 m <sup>3</sup> /hr)
9095CU	2"	3-350 SCFM (4.8-594 m <sup>3</sup> /hr)
9096CU	2-1/2"	5-500 SCFM (8.4-846 m <sup>3</sup> /hr)
9097CU	3"	7-700 SCFM (12-1188 m <sup>3</sup> /hr)
9098CU	4"	15-1500 SCFM (25.2-2544 m <sup>3</sup> /hr)

\* Calibrated range.  
Usable range higher.  
Please consult factory.

Note: Flow ranges for all Digital Flowmeters in top 3 tables except for Hot Tap Digital Flowmeters, shown below.

## Digital Flowmeter - Nominal Pipe Size - Millimeters

(Add specific Configuration from Page 13)

Model #	Pipe Size	Flow Range*
91025	25mm	1-150 SCFM (2-254 m <sup>3</sup> /hr)
91040	40mm	2-200 SCFM (3.6-342 m <sup>3</sup> /hr)
91050	50mm	3-350 SCFM (4.8-594 m <sup>3</sup> /hr)
91063	63mm	5-500 SCFM (8.4-846 m <sup>3</sup> /hr)
91076	76mm	7-700 SCFM (12-1188 m <sup>3</sup> /hr)
91101	101mm	15-1500 SCFM (25.2-2544 m <sup>3</sup> /hr)



EXAIR's Digital Flowmeter family is available in many sizes from stock.

## Hot Tap Digital Flowmeter – Schedule 40 Iron Pipe

(Add specific Configuration from Page 13)

Model #	Pipe Size	Flow Range*
H9095	2"	4-400 SCFM or 7-680 m <sup>3</sup> /hr
H9096	2-1/2"	5-500 SCFM or 8-850 m <sup>3</sup> /hr
H9097	3"	12-1200 SCFM or 20-2039 m <sup>3</sup> /hr
H9098	4"	20-2000 SCFM or 34-3398 m <sup>3</sup> /hr
H90100	6"	50-5000 SCFM or 85-8495 m <sup>3</sup> /hr
H90101	8"	100-6000 SCFM or 169-10194 m <sup>3</sup> /hr

## Hot Tap Digital Flowmeter – Type L Copper Pipe

(Add specific Configuration from Page 13)

Model #	Pipe Size	Flow Range*
H9095CU	2"	3-350 SCFM or 5-595 m <sup>3</sup> /hr
H9096CU	2-1/2"	5-500 SCFM or 8-850 m <sup>3</sup> /hr
H9097CU	3"	7-700 SCFM or 12-1189 m <sup>3</sup> /hr
H9098CU	4"	15-1500 SCFM or 25-2548 m <sup>3</sup> /hr
H90100CU	6"	50-5000 SCFM or 85-8495 m <sup>3</sup> /hr

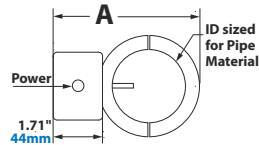
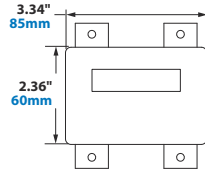
### Digital Flowmeter Specifications

	Wired	Wireless	Hot Tap	Pressure Sensing
Accuracy	5% of reading plus 1% of range for flows from 10% to 100% of indicated range at air temperatures between 20°F and 120°F.	5% of reading plus 1% of range for flows from 10% to 100% of indicated range at air temperatures between 20°F and 120°F.	5% of reading plus 1% of range for flows from 10% to 100% of indicated range at air temperatures between 20°F and 120°F.	PRESSURE: +/- 2 PSIG maximum. +/- 0.5 PSIG at 68°F.
Operating Pressure	200 PSIG maximum on Sch. 40 iron and on Type L Copper below 3". Consult EXAIR for other materials and higher pressures	200 PSIG maximum on Sch. 40 iron and on Type L Copper below 3". Consult EXAIR for other materials and higher pressures	130 PSIG maximum on Sch. 40 iron. Consult EXAIR for other materials and higher pressures	200 PSIG maximum on Sch. 40 iron and on Type L Copper below 3". Consult EXAIR for other materials and higher pressures
Input Power	250 mA at 24V DC	250 mA at 24V DC	250 mA at 24V DC	250 mA at 24V DC
Output resistance	600 Ohms maximum	600 Ohms maximum	600 Ohms maximum	600 Ohms maximum
Wetted Materials	Stainless Steel, Gold, Thermal epoxy, Viton	Stainless Steel, Gold, Thermal epoxy, Viton	Stainless Steel, Gold, Thermal epoxy, Viton, PTFE, Aluminum	Stainless Steel, Gold, Thermal epoxy, Viton
Ring Material	Aluminum	Aluminum	Aluminum	Aluminum
Display	Four digit LED	Four digit LED	Four digit LED	Four digit LED
Response Time	One second to 63% of change in value at flows above 30% of range	One second to 63% of change in value at flows above 30% of range	One second to 63% of change in value at flows above 30% of range	One second to 63% of change in value at flows above 30% of range
Pressure Range	N/A	N/A	N/A	0-145 PSIG operating range 200 PSIG maximum 145 PSIG full scale of mA output For best accuracy, avoid pressures above 145 PSIG
Compliance	CE and RoHS	CE and RoHS	CE and RoHS	CE and RoHS

Note: For use with compressed air and nitrogen only.

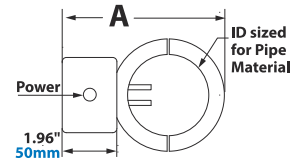
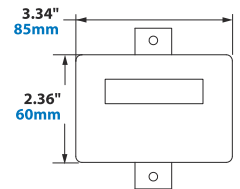
## Small Digital Flowmeter – Schedule 40 Iron Pipe\*\*

Series	Pipe Size	A	
	in	mm	
9090	1/2"	3.31	84
9091	3/4"	3.49	89
9092	1"	3.87	98
9093	1-1/4"	4.24	108
9094	1-1/2"	4.62	117



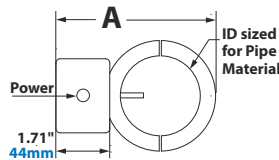
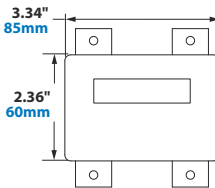
## Large Digital Flowmeter – Schedule 40 Iron Pipe\*\*

Series	Pipe Size	A	
	in	mm	
9095	2"	5.34	136
9096	2-1/2"	6.09	155
9097	3"	6.71	171
9098	4"	7.71	196
9099	5"	8.84	224
90100	6"	9.84	250
90101	8"	11.84	301



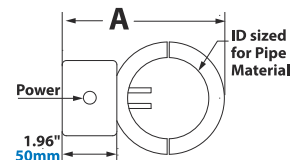
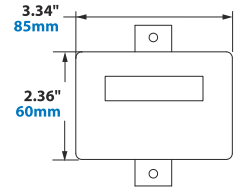
## Small Digital Flowmeter – Type L Copper Pipe\*\*

Series	Pipe Size	A	
	in	mm	
9091CU	3/4"	3.49	89
9092CU	1"	3.68	93
9093CU	1-1/4"	3.87	98
9094CU	1-1/2"	4.24	108



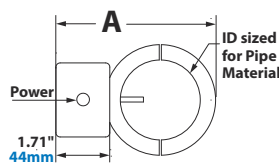
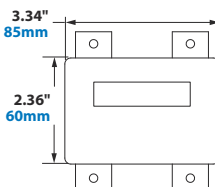
## Large Digital Flowmeter – Type L Copper Pipe\*\*

Series	Pipe Size	A	
	in	mm	
9095CU	2"	5.09	129
9096CU	2-1/2"	5.84	148
9097CU	3"	6.34	161
9098CU	4"	7.34	186



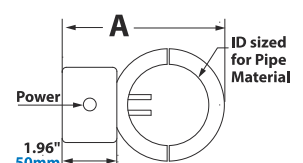
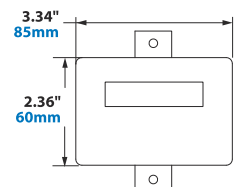
## Small Digital Flowmeter – Nominal Pipe\*\*

Series	Pipe Size	A	
	in	mm	
91025	25mm	3.49	89
91040	40mm	4.24	108



## Large Digital Flowmeter – Nominal Pipe\*\*

Series	Pipe Size	A	
	in	mm	
91050	50mm	5.1	129
91063	63mm	5.6	142
91076	76mm	6.3	161
91101	101mm	7.3	186

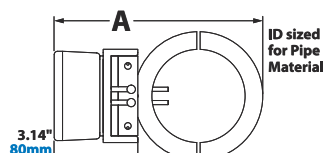
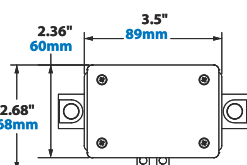


\*\* If dimensions are critical for mounting, please consult the factory

# Wired, Wireless, Hot Tap, and Gateway Flowmeter Dimensions

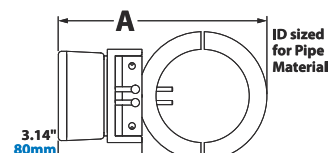
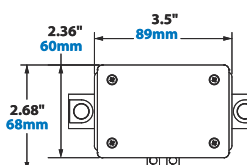
## Hot Tap Digital Flowmeter – Schedule 40 Iron Pipe

Series	Pipe Size	A in	A mm
H9095	2"	6.43	163
H9096	2-1/2"	7.20	183
H9097	3"	7.82	199
H9098	4"	8.82	224
H90100	6"	10.95	278
H90101	8"	12.95	329



## Hot Tap Digital Flowmeter – Type L Copper Pipe

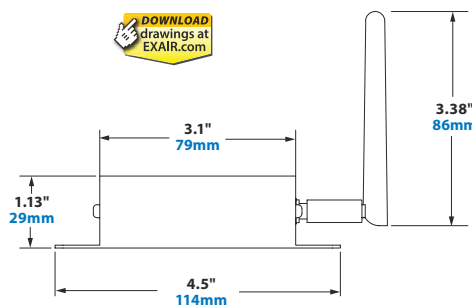
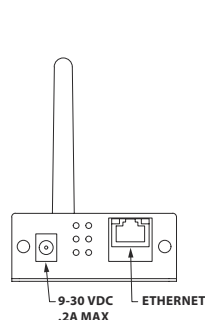
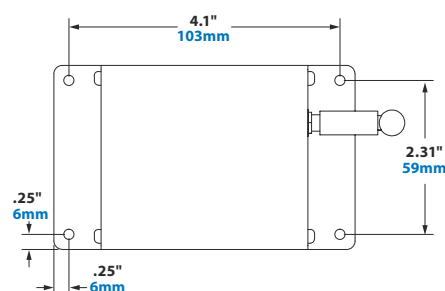
Series	Pipe Size	A in	A mm
H9095CU	2"	6.18	157
H9096CU	2-1/2"	6.95	177
H9097CU	3"	7.45	189
H9098CU	4"	8.45	215
H90100CU	6"	10.45	265



The Hot Tap Digital Flowmeters allow installation when compressed air piping is under pressure. By eliminating the need to isolate and remove pressure from the pipe, these compressed air flowmeters reduce installation time while maintaining safety.



## Gateway Dimensions



A Digital Flowmeter with wireless capability and Gateway includes a 24 VDC power supply with adapters, 3/16" drill bit, ethernet cable and hole locating fixture.

