# Optimization

"Go Green" with Intelligent Compressed Air® Products!

It's a worldwide problem. Compressed air leaks and inefficient blowoffs can waste thousands of dollars of electricity per year, affecting your company's production costs and bottom line. For many plants, the leakage alone accounts for up to 30% of the total compressed air cost.

EXAIR can help your company "go green" with six easy to follow steps. It's as simple as finding the leaks, making the repairs, controlling the air use, and upgrading to efficient blowoffs. EXAIR's Intelligent Compressed Air® products can help you accomplish these steps so your compressed air system becomes more efficient, along with the benefit of drastically lowering your energy costs.

Six Steps To Optimizing Your Compressed Air System

1 Measure the air consumption to find sources that use a lot of compressed air.

2 Find and fix the leaks in your compressed air system.

3 Upgrade your blowoff, cooling and drying operations using engineered compressed air products.

4 Turn off the compressed air when it isn't in use.

5 Use intermediate storage of compressed air near the point of use.

6 Control the air pressure at the point of use to minimize air consumption.
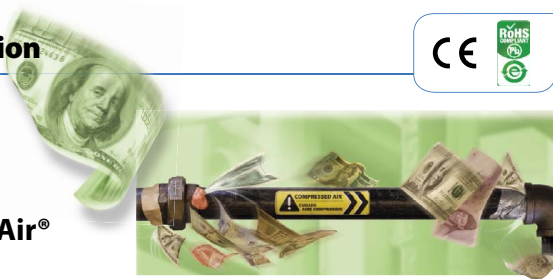
1 EXAIR's **Digital Flowmeter™** and the new **Digital Flowmeter™ with wireless capability** accurately measure compressed air usage and monitor waste. Trends can be monitored to find excessive air use. Detect leaks at compressed air fittings when the machinery is off. Regular monitoring can detect leaks that develop as the machinery ages.
- Easy to install - No adjustments or calibrations needed
- Digital readout displays actual airflow through pipe

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2 EXAIR's **Ultrasonic Leak Detector** can help you identify costly leaks in your compressed air system. Leaks can account for 30% of total compressor output! In many cases, finding one small leak can quickly pay for the leak detector.
- Detects leaks up to 20' (6.1m) away
- Accurate in noisy industrial environments

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3 EXAIR's engineered **Super Air Knives™**, **Super Air Amplifiers™**, and **Super Air Nozzles™** dramatically reduce air consumption and noise. EXAIR's **Digital Sound Level Meter™** can identify and isolate the source of the noisy blowoffs.
- Low cost - replaces noisy blowers
- Improves blowoff performance and safety

Pages 18, 44, 50, 15

4 EXAIR's **EFC™** is an electronic flow control that minimizes compressed air use by turning off the compressed air when no part is present. For use on blowoff, drying, cooling, conveying and static elimination operations.
- Easy hook up; 100-240 VAC with eight function timer
- Photoelectric sensor withstands water and dust

Page 7

5 An EXAIR 60 gallon **Receiver Tank** can be installed at the point of high demand so there is an additional supply of compressed air available for a short duration. Meets ASME pressure vessel code.
- Eliminates fluctuations in pressure and volume
- Vertical, space saving design

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6 EXAIR **Pressure Regulators** permit easy selection of an operating pressure that will allow the air product to work properly without using excessive amounts of compressed air. Reducing the air pressure from 100 PSIG to 80 PSIG reduces energy use by almost 20%.
- Modular design
- Many sizes available
- Pressure gauge included

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For Technical Assistance, Call An EXAIR Application Engineer 1-800-903-9247
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An INTELLIGENT COMPRESSED AIR® Product

EFC™

Electronic Flow Control minimizes compressed air use for blow off, drying, cooling, conveying and static elimination operations!

Dramatically reduces compressed air costs by turning off the air when no part is present!

Plant Engineering PRODUCT of the YEAR 2006

What Is The EFC?

EXAIR's EFC is a user-friendly electronic flow control for compressed air that is designed to minimize compressed air use on blow off, drying, cooling, conveying and static elimination operations. The EFC combines a photoelectric sensor with a timing control that limits compressed air use by turning it off when no part is present. The timing control permits easy tuning to the application requirements while providing flexibility in sensing distance. The EFC also has eight programmable on and off modes.

Why The EFC?

For most companies, the air compressor uses more electricity than any other type of equipment. One simple operation that uses compressed air can easily waste thousands of electricity dollars per year if not properly controlled. The EFC has been designed to improve efficiency by minimizing compressed air use and, as a result, reduce compressed air costs. It turns on the air only when a part is present and provides just enough air to complete a specific task or operation.

The EFC has an easy electrical connection for voltages from 100 to 240VAC, 50/60Hz making it suitable for applications throughout the world. The compact photoelectric sensor has a sensitivity adjustment and detects objects up to 3' (1m) away. The sensor has superior immunity to noise and inductive loads that are common to industrial environments and installs easily in tight spaces with the supplied mounting bracket. The control system provides flexibility with numerous valve operating modes and timing delays. The polycarbonate enclosure is suitable for use in a wide range of applications including those located in wet environments.

Applications
- Auto body blowoff
- Package cleaning
- Part drying after wash
- Dust removal
- Scrap removal
- Filling operations
- Cooling hot parts
- Neutralizing static
- Cleaning molded parts

Advantages
- Easy electrical hook-up; 100-240VAC, 50/60Hz
- NEMA 4/IP66 environments
- Compact sensor for mounting in tight spaces
- Eight function analog timer for on/off, pulsing and delay control
- Timer setting from 0.10 sec. to 120 hrs.
- Sensor withstands water and dust for accurate readings
- Sensor has superior immunity to noise and inductive loads
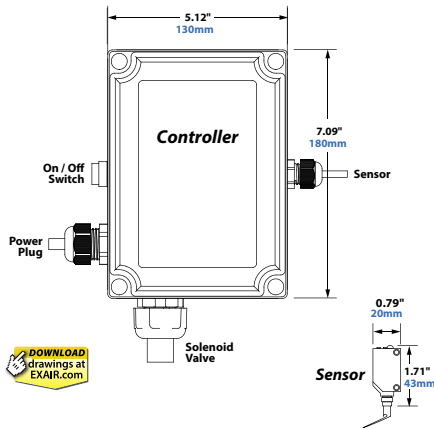- Sensor has long distance sensing up to 3 feet (1m)

Photoelectric sensor withstands water and dust.

Electronic Flow Control	
Model #	Description
9055	EFC Electronic Flow Control, 40 SCFM (1,133 SLPM), solenoid valve, 1/4 NPT
9056	EFC Electronic Flow Control, 100 SCFM (2,832 SLPM), solenoid valve, 1/2 NPT
9057	EFC Electronic Flow Control, 200 SCFM (5,664 SLPM), solenoid valve, 3/4 NPT
9064	EFC Electronic Flow Control, 350 SCFM (9,911 SLPM), solenoid valve, 1 NPT

Models controlling two solenoid valves are available. Contact EXAIR for details.

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5.12"
130mm

Controller

7.09"
180mm

On / Off
Switch

Sensor

Power
Plug

0.79"
20mm

Solenoid
Valve

Sensor

1.71"
43mm

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drawings at
EXAIR.com

The timing control unit and the photoelectric sensor are equipped with a 9' (2.74m) power cord. The timing control unit is housed in a polycarbonate NEMA 4 / IP66 water tight enclosure. There are four models of the EFC. Each includes the timing control unit and photoelectric sensor with a choice of solenoid valve sizes of 40, 100, 200 and 350 SCFM (1,133, 2,832, 5,664 and 9,911 SLPM).

Specifications	
Power Supply Input	100-240VAC, 50/60Hz, 0.25 - 0.45A
Power Supply Output (To Sensor)	24VDC at 0.65A
Sensor	12-24VDC input, consumes 30mA
Sensing Range	Diffuse reflective to 3' (1 meter)
Enclosure Rating	NEMA 4 / IP66
Temperature Rating	-13˚F to 131˚F (-25˚C to 55˚C)
RoHS Compliant	Yes
CE Compliant	Yes

Models controlling two solenoid valves are available. Contact EXAIR for details.

$2,045.22 Annual Air Savings On A Flat Panel Display Blowoff

A flat panel display manufacturer runs 3 shifts. It takes a 40 second cycle to produce one fully assembled display. Prior to packaging, they use EXAIR's 12" (305mm) Super Ion Air Knife at 40 PSIG (2.8 BAR) to blow across the display to remove any static electricity, dust, debris and plastic flash from the panel surface. The air ran constantly. The displays are under the airflow only 10 seconds. Thirty seconds pass until the next display is in position. They manufacture 675 displays per shift (7.5 hrs.) for a total of 2,025 displays manufactured per day.

The timer was set to the "interval" setting when detecting the flat panel displays. The sensor was mounted 1" (25mm) prior to the Super Ion Air Knife blowoff station. When it detected the flat panel, it turned the air on immediately and started the 10 second timing sequence for closing the valve (shutting the air off). In the event the conveyor stopped, the air would no longer cycle on again until the next flat panel was detected.

Old Method
EXAIR's 12" (305mm) Super Ion Air Knife was supplied at 40 PSIG to clean the displays.

At 40 PSIG, EXAIR's 12" (305mm) Super Ion Air Knife consumes 20.4 SCFM (577 SLPM)

Non-stop blowing of 1,440 minutes (24 hours) per day x 20.4 SCFM = 29,376 SCF (831,341 SL) air usage per day.

EFC Solution
The EFC was installed to shut off the compressed air for 30 seconds of the 40 second cycle. (Turns air off for 75% of the cycle.)

Cost Difference
Most large plants know their air cost. If the actual cost is unknown, $0.25 per 1,000 SCF (28,329 SL) is reasonable.

Before the EFC installation:
29,376 SCF/1,000 = 29.38 x $0.25 = $7.34 air cost per day.

With the EFC installed:
The EFC shut the air off during the three 30 minute shift changes. Upon sensing the display, the timer turned on the compressed air for only 10 seconds of each 40 second cycle (25% of the time).

1,440 minutes per day – 90 minutes between shifts =
1,350 minutes of operation per day.
1,350 minutes x 25% = 337.5 minutes of air per day
337.5 minutes x 20.4 SCFM = 6,885 SCF (194,846 SL) air usage per day.
6,885 SCF/1,000 = 6.89 x $0.25 = $1.72 air cost per day
$7.34 (old air cost) – $1.72 (new air cost) =
$5.62 savings per day x 7 days a week =
$39.33 savings per week x 52 weeks a year =
$2,045.22 savings per year.

$5,012.28 Annual Air Savings For Pre-Paint Bumper Cleaning

A manufacturer of car bumpers installed a 60" (1524mm) Super Ion Air Knife in the down draft cleaning area prior to their paint booth. The bumpers enter that area in the same orientation as they would when mounted to the auto-mobile, moving at 10' (3m) per minute with a 12" (305mm) space between bumpers. The bumpers are under the blow off for 10 seconds. 6 seconds pass with no bumper in the ionized airflow. The operation runs around the clock with three shifts.
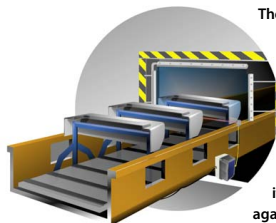
The timer was set to "interval" and the sensor mounted next to the Super Ion Air Knives. When it detected a bumper,

it immediately turned on the air for 10 seconds. If the conveyor stopped, it would not turn the air on again until it detected the next bumper.

Old Method

EXAIR's 60" (1524mm) Super Ion Air Knife was supplied at 40 PSIG to clean the bumper.

At 40 PSIG, EXAIR's 60" (1524mm) Super Ion Air Knife consumes 102 SCFM (2,887 SLPM).

Non-stop blowing of 1,440 minutes (24 hours) per day x 102 SCFM = 146,880 SCF (4,156,704 SL) air usage per day.

EFC Solution

The EFC was installed to shut off the compressed air for the 6 seconds where no bumper was present - an on cycle reduction of 37.5%. 1,440 minutes x 37.5% = 540 minutes of off time per day

Cost Difference

Most large plants know their air cost. If the actual cost is unknown, $0.25 per 1,000 SCF (28,329 SL) is reasonable.

Before the EFC installation:
146,880 SCF/1,000 = 146.88 x $0.25 = $36.72 air cost per day.
With EFC installed: 146,880 SCF x 62.5% on cycle = 91,800 SCF/1,000 = 91.8 x $0.25 = $22.95 air cost per day.
$36.72 (old air cost) − $22.95 (new air cost) =
$13.77 savings per day x 7 days per week =
$96.39 savings per week x 52 weeks per year =
$5,012.28 savings per year.

$3,393 Annual Air Savings On A Tank Blowoff Operation

A company that refurbishes large tanks runs the tanks through an oven on a conveyor line to burn off old paint. Only one tank at a time can be processed and each takes 6 minutes to complete the journey. Super Air Knives are used for blowoff at the exit of the oven.

However, the tank travels through the oven for 5 minutes before it reaches the knives for blowoff. At 80 PSIG (5.5 BAR), the four knives consume 348 SCFM (9,854 SLPM). Once the tanks have been blown off, the conveyor stops, the air is shut off, and a new tank is loaded at the other end. The operation runs 30 tanks per day, 5 days a week.

The timer was set to "on/off delay". The sensor was mounted at the oven exit (1 minute away from the blowoff station). When the sensor detected a tank, the timer turned the air on for one minute, just as the next tank reached the blowoff station.

Old Method

It takes 6 minutes to complete the process.

6 minutes x 348 SCFM=

2,088 SCF (59,090 SL)
2,088 SCF x 30 tanks =
62,640 SCF (1,772,712 SL)

EFC Solution

The EFC was installed to shut off the compressed air for the 5 minutes where no tank was present (one minute of air on).

1 minute x 348 SCFM =

348 SCF x 30 tanks =
10,440 SCF (295,452 SL)

Cost Difference

Most large plants know their air cost. If the actual cost is unknown, $0.25 per 1,000 SCF (28,329 SL) is reasonable.

Before the EFC installation:
62,640 SCF/1,000 = 62.64 x $0.25 = $15.66 air cost per day.

With the EFC installed:
10,440 SCF/1,000 = 10.44 x $0.25 =
$2.61 air cost per day.
$15.66 (old air cost) − $2.61 (new air cost) =
$13.05 savings per day x 5 days per week =
$65.25 savings per week x 52 weeks per year =
$3,393 savings per year.

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Digital Flowmeter with wireless capability

CE RoHS COMPLIANT

Digital Flowmeter™ with wireless capability

Monitor compressed air usage and waste!

What is the Digital Flowmeter with wireless capability?

EXAIR's Digital Flowmeter with wireless capability is available as a built in option for EXAIR digital flowmeters. The easy way to monitor compressed air consumption and waste can now be done 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 graphing software available from our website. 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 with wireless capability?

The Digital Flowmeter with wireless capability includes a wireless output flowmeter and a wireless-to-Ethernet gateway for new installations. They are also available without a gateway if adding a meter to a gateway already existing in your plant. EXAIR simplifies the process by configuring each gateway to communicate with the flowmeter(s) to provide the necessary communication for monitoring your system. 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 large digital display shows air use in either SCFM or Cubic Meters per hour.

The Digital Flowmeter with wireless capability 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, blocking rings are available. NEMA Type 4 (IP66) meters available. Consult the factory.

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.

Advantages
- Provides wireless monitoring of EXAIR flowmeters throughout a plant
- Configured to prevent unwanted joining upon the network
- Monitoring software provided at no charge
- Utilizes mesh networking protocol to relay data from remote meters
- Transmits current air usage and cumulative air usage data
- 128 bit encryption for wireless transmissions
- Identify areas with high compressed air use
- Models from 1/2" to 4" Schedule 40 iron pipe in stock
- Models are also available for 5" and 6" in iron pipe
- Models are available for sizes 3/4" to 4" in copper pipe
- Easy to install

Digital Flowmeter with Wireless Capability and Gateway

Model #	Pipe Size	Range*	Drill Guide Kit
9090ZG	1/2" (Schedule 40 iron)	1–90 SCFM (2-153 m3/hr)	Yes
9090ZG-DG	1/2" (Schedule 40 iron)	1–90 SCFM (2-153 m3/hr)	No
9091ZG	3/4" (Schedule 40 iron)	1–120 SCFM (2-204 m3/hr)	Yes
9091ZG-DG	3/4" (Schedule 40 iron)	1–120 SCFM (2-204 m3/hr)	No
9092ZG	1" (Schedule 40 iron)	1–160 SCFM (2-272 m3/hr)	Yes
9092ZG-DG	1" (Schedule 40 iron)	1–160 SCFM (2-272 m3/hr)	No
9094ZG	1-1/2" (Schedule 40 iron)	2–200 SCFM (3-340 m3/hr)	Yes
9094ZG-DG	1-1/2" (Schedule 40 iron)	2–200 SCFM (3-340 m3/hr)	No
9095ZG	2" (Schedule 40 iron)	4–400 SCFM (7-680 m3/hr)	Yes
9095ZG-DG	2" (Schedule 40 iron)	4–400 SCFM (7-680 m3/hr)	No
9096ZG	2-1/2" (Schedule 40 iron)	5-500 SCFM (8-850 m3/hr)	Yes
9096ZG-DG	2-1/2" (Schedule 40 iron)	5-500 SCFM (8-850 m3/hr)	No
9097ZG	3" (Schedule 40 iron)	12-1200 SCFM (20-2039 m3/hr)	Yes
9097ZG-DG	3" (Schedule 40 iron)	12-1200 SCFM (20-2039 m3/hr)	No
9098ZG	4" (Schedule 40 iron)	20-2000 SCFM (34-3398 m3/hr)	Yes
9098ZG-DG	4" (Schedule 40 iron)	20-2000 SCFM (34-3398 m3/hr)	No

Digital Flowmeter with Wireless Capability (Gateway not included)

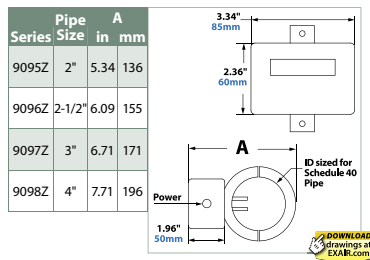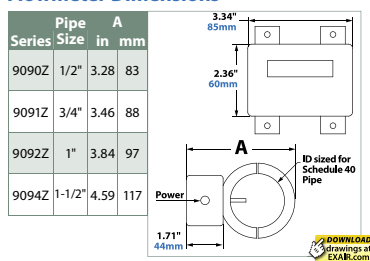| Model #	Pipe Size	Range*	Drill Guide Kit
9090Z	1/2" (Schedule 40 iron)	1–90 SCFM (2-153 m3/hr)	Yes
9090Z-DG	1/2" (Schedule 40 iron)	1–90 SCFM (2-153 m3/hr)	No
9091Z	3/4" (Schedule 40 iron)	1–120 SCFM (2-204 m3/hr)	Yes
9091Z-DG	3/4" (Schedule 40 iron)	1–120 SCFM (2-204 m3/hr)	No
9092Z	1" (Schedule 40 iron)	1–160 SCFM (2-272 m3/hr)	Yes
9092Z-DG	1" (Schedule 40 iron)	1–160 SCFM (2-272 m3/hr)	No
9094Z	1-1/2" (Schedule 40 iron)	2–200 SCFM (3-340 m3/hr)	Yes
9094Z-DG	1-1/2" (Schedule 40 iron)	2–200 SCFM (3-340 m3/hr)	No
9095Z	2" (Schedule 40 iron)	4-400 SCFM (7-680 m3/hr)	Yes
9095Z-DG	2" (Schedule 40 iron)	4-400 SCFM (7-680 m3/hr)	No
9096Z	2-1/2" (Schedule 40 iron)	5-500 SCFM (8-850 m3/hr)	Yes
9096Z-DG	2-1/2" (Schedule 40 iron)	5-500 SCFM (8-850 m3/hr)	No
9097Z	3" (Schedule 40 iron)	12-1200 SCFM (20-2039 m3/hr	Yes
9097Z-DG	3" (Schedule 40 iron)	12-1200 SCFM (20-2039 m3/hr	No
9098Z	4" (Schedule 40 iron)	20-2000 SCFM (34-3398 m3/hr)	Yes
9098Z-DG	4" (Schedule 40 iron)	20-2000 SCFM (34-3398 m3/hr)	No

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

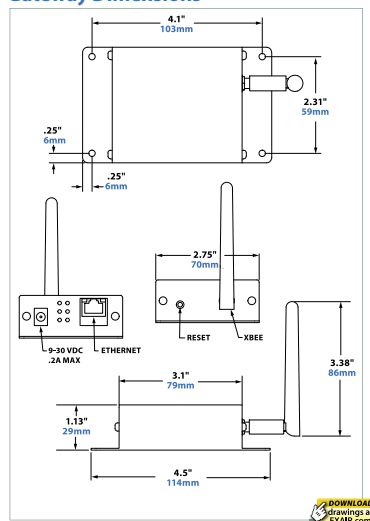### Specifications for Digital Flowmeter with wireless capability

Accuracy	5% of reading, plus 1% of full scale for air temperatures between 40° to 120°F (4° to 49°C)
Operating Pressure	30 to 140 PSIG for best accuracy - 200 PSIG max.
Input Power	250 mA at 24 VDC / Power Adapter included 100-240VAC
Wetted Materials	Stainless steel, gold, thermal epoxy and Viton (seal)
Ring Material	Aluminum
Display	Four-digit LED display
Compliance	CE and RoHS

Note: For use with compressed air and nitrogen only.

Flowmeter Dimensions**

Series	Pipe Size	A in	mm
9090Z	1/2"	3.28	83
9091Z	3/4"	3.46	88
9092Z	1"	3.84	97
9094Z	1-1/2"	4.59	117

Series	Pipe Size	A in	mm
9095Z	2"	5.34	136
9096Z	2-1/2"	6.09	155
9097Z	3"	6.71	171
9098Z	4"	7.71	196

Gateway Dimensions

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

Digital Flowmeter™

Monitor compressed air usage and waste!

What Is The Digital Flowmeter?

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 m³/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, blocking rings are available. NEMA Type 4 (IP66) meters available. Consult the factory.

Advantages

- Easy to install - 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 setup required
- Includes all components for installation
- Models from ½" to 4" Schedule 40 iron pipe in stock
- Models are available for sizes ½" to 6" in iron pipe
- Models are available for sizes ¾" to 4" in copper pipe

Watch the install video!
www.exair.com/dfm-install.htm

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

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Digital Flowmeter

Digital Flowmeter

| Model #	Pipe Size	Range*
9090	1/2" (Schedule 40 iron)	1-90 SCFM
9090-M3	1/2" (Schedule 40 iron)	2-153 m³/hr
9090-DAT	1/2" (Schedule 40 iron)	1-90 SCFM
9090-M3-DAT	1/2" (Schedule 40 iron)	2-153 m³/hr
9091	3/4" (Schedule 40 iron)	1-120 SCFM
9091-M3	3/4" (Schedule 40 iron)	2-204 m³/hr
9091-DAT	3/4" (Schedule 40 iron)	1-120 SCFM
9091-M3-DAT	3/4" (Schedule 40 iron)	2-204 m³/hr
9092	1" (Schedule 40 iron)	1-160 SCFM
9092-M3	1" (Schedule 40 iron)	2-272 m³/hr
9092-DAT	1" (Schedule 40 iron)	1-160 SCFM
9092-M3-DAT	1" (Schedule 40 iron)	2-272 m³/hr
9094	1-1/2" (Schedule 40 iron)	2-200 SCFM
9094-M3	1-1/2" (Schedule 40 iron)	3-340 m³/hr
9094-DAT	1-1/2" (Schedule 40 iron)	2-200 SCFM
9094-M3-DAT	1-1/2" (Schedule 40 iron)	3-340 m³/hr
9095	2" (Schedule 40 iron)	4-400 SCFM
9095-M3	2" (Schedule 40 iron)	7-680 m³/hr
9095-DAT	2" (Schedule 40 iron)	4-400 SCFM
9095-M3-DAT	2" (Schedule 40 iron)	7-680 m³/hr
9096	2-1/2" (Schedule 40 iron)	5-500 SCFM
9096-M3	2-1/2"(Schedule 40 iron)	8-850 m³/hr
9096-DAT	2-1/2" (Schedule 40 iron)	5-500 SCFM
9096-M3-DAT	2-1/2" (Schedule 40 iron)	8-850 m³/hr
9097	3" (Schedule 40 iron)	12-1200 SCFM
9097-M3	3" (Schedule 40 iron)	20-2039 m³/hr
9097-DAT	3" (Schedule 40 iron)	12-1200 SCFM
9097-M3-DAT	3" (Schedule 40 iron)	20-2039 m³/hr
9098	4" (Schedule 40 iron)	20-2000 SCFM
9098-M3	4" (Schedule 40 iron)	34-3398 m³/hr
9098-DAT	4" (Schedule 40 iron)	20-2000 SCFM
9098-M3-DAT	4" (Schedule 40 iron)	34-3398 m³/hr

Note: DAT models have the Data Logger installed.
*Calibrated range. Usable range higher. Please consult factory.

Dimensions*
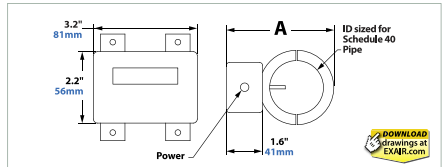
Series	Pipe Size	A in	A mm
9090	1/2"	3.00	76
9091	3/4"	3.25	83
9092	1"	3.63	92
9094	1-1/2"	4.38	111
9095	2"	4.88	124
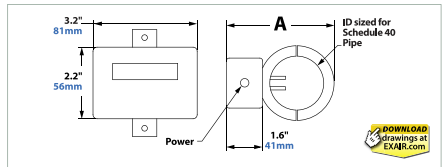
Series	Pipe Size	A in	A mm
9096	2-1/2"	5.75	146
9097	3"	6.38	162
9098	4"	7.38	187

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

Each Digital Flowmeter includes an 24 VDC power supply with plug adapters, 3/16" drill bit and hole locating fixture.

Specifications for Digital Flowmeter	
Accuracy	5% of reading, plus 1% of full scale for air temperatures between 40° to 120°F (4° to 49°C)
Operating Pressure	30 to 140 PSIG for best accuracy - 200 PSIG max.
Input Power	250 mA at 24 VDC/ Power Adapter included 100-240VAC
Wetted Materials	Stainless steel, gold, thermal epoxy and Viton (seal)
Ring Material	Aluminum
Display	Four-digit LED display
Compliance	CE and RoHS

Note: For use with compressed air and nitrogen only.

Digital Flowmeter Accessories
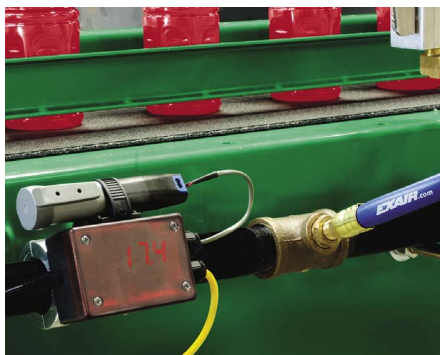
CE   RoHS COMPLIANT

What is the Summing Remote Display?

EXAIR's Summing Remote Display for the Digital Flow-meter 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. 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 Digital Flowmeter (sold separately) has a four digit LED display that directly indicates the SCFM (standard cubic feet per minute) or m3/hr (cubic meters per hour) of airflow through the pipe it is mounted upon. The Summing Remote Display shows that flow measure-ment, the daily and cumulative usage and is frequently used when the Digital Flowmeter is in an obscure, hard to read location. The accuracy of the displayed measurement is within 5% of the reading when the air temperature is 40-120°F (4-49°C) and air pressure is between 30-140 PSIG (2-10 BAR). No adjustments or calibration are ever required. The Summing Remote Display is CE and RoHS compliant.

It is prewired with 50' (15.2m) of cable and is powered by 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 two 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.

Summing Remote Display

Model #	Description
9150	LED Readout displays SCFM
9150-M3	LED Readout displays m³/hr

Block-Off Rings

Model #	Pipe Size
901327	Block-Off Rings for 9090, 9090-M3 or 9090Z
901328	Block-Off Rings for 9091, 9091-M3 or 9091Z
901329	Block-Off Rings for 9092, 9092-M3 or 9092Z
901331	Block-Off Rings for 9094, 9094-M3 or 9094Z
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, 9097-M3 or 9097Z

USB Data Logger

Model #	Description
9147	USB Data Logger for Digital Flowmeter

EXAIR's Summing Remote Display for the Digital Flowmeter.

EXAIR® Corporation   For Technical Assistance, Call An EXAIR Application Engineer 1-800-903-9247
Toll Free FAX (866) 329-3924 · E-mail: techelp@exair.com · www.exair.com
blog.exair.com   @EXAIR

Digital Sound Level Meter™

Prevent worker-related hearing loss!

What Is The Digital Sound Level Meter?

EXAIR's Model 9104 Digital Sound Level Meter is an easy to use instrument that can measure and monitor the sound level pressure in a wide variety of industrial environments. The source of loud noises can be quickly identified and isolated so corrective measures can be taken to reduce or eliminate the problem. For compressed air noise, it is often as simple as replacing the existing inefficient blowoffs with EXAIR's engineered compressed air products such as the Super Air Knife, Super Air Amplifier or Super Air Nozzles. In many cases, the EXAIR products can reduce noise levels by 10 dBA which is perceived as cutting the sound volume in half.

Why The Digital Sound Level Meter?

Hearing loss induced by high noise in the workplace is a common problem. Exposure to high noise levels for an extended period of time can lead to permanent hearing loss for workers not wearing proper hearing protection. The Digital Sound Level Meter can help employers protect workers by monitoring noise levels so they don't exceed the limits shown in OSHA Standard 29 CFR – 1910.95(a). Failure to comply can result in hefty fines.

The Sound Level Meter identifies a potential source of hearing loss.

OSHA Maximum Allowable Noise Exposure							
Hours per day (constant noise)	8	7	4	3	2	1	0.5
Sound level dBA	90	91	95	97	100	105	110

OSHA Standard 29 CFR - 1910.95 (a)

Accurate and responsive, the Digital Sound Level Meter measures the decibels of the sound and displays the reading on the large LCD display that has a backlight button for easier viewing. An "F/S" response time button provides a choice of slow response measurements for comparatively stable noise measurement or fast for varying noise. The "Max Hold" setting will measure the maximum noise level of sounds and updates continuously if a louder sound is detected. Certification of accuracy and calibration traceable to NIST (National Institute of Standards and Technology) is included.

Model 9104 Digital Sound Level Meter comes complete with removable wind screen, battery and a protective case.

Advantages

- Measures sound level range from 35 dB - 130 dB (Low: 35 to 100; High: 65 to 130 dB)
- Frequency range 31.5Hz - 8kHz
- A and C weightings (check compliance with safety regulations and acoustic analysis)
- Slow (1 sec) and fast (125ms) response settings to check peak and average noise levels
- Maximum hold feature to measure peak sound levels
- Accuracy is ± 1.5 dB
- NIST Certification included

- Four digit LCD display in 0.1 dB steps with backlight
- Battery life is 50 hours (typical) with low battery alert
- Automatic power off after 15 minutes of non-use
- Meets CE, ANSI and IEC Type 2 SLM standards
- Tripod mounting ideal for taking long term measurements (tripod not included)
- Removable windscreen for use in windy conditions to reduce misreads
- Includes protective carrying case, 9V battery, instruction manual and removable windscreen

An **INTELLIGENT COMPRESSED AIR®** Product

Ultrasonic Leak Detector

CE RoHS COMPLIANT

Ultrasonic Leak Detector

Locate costly leaks in your compressed air system!

What Is The Ultrasonic Leak Detector?

The Ultrasonic Leak Detector (ULD) is a hand-held, high quality instrument that can locate costly leaks in a compressed air system. A person using the ULD need only aim it in the direction of a suspected leak. When a leak is present, an audible tone can be heard with the use of the headphones, and the LED display will light. Testing the various unions, pipes, valves and fittings of a complete installation can be done quickly and effectively at distances up to 20' (6.1m) away!

Why The Ultrasonic Leak Detector?

Plants that aren't maintained can easily waste **up to 30%** of the compressor output through leaks that go undetected. Compressing air is an expensive operation. Saving the wasted compressed air reduces overall operating costs. In large plants, the cost of a small air leak may be insignificant, but many small leaks when located and repaired can amount to huge energy savings.

What is Ultrasound?

Pressure → Turbulence → Ultrasonic Sound

Ultrasonic sound is a range of sound that is above human hearing capacity. Most people can hear frequencies from 20 Hz to 20 kHz. Sound from 20 kHz to 100 kHz can not be heard and is called "ultrasonic". The Model 9061 Ultrasonic Leak Detector converts ultrasonic sound emissions to a range that is audible to people. (The sound generated by the ULD is 32 times lower in frequency than the sound that is received.)

Advantages

• Detects any pressurized air leak up to 20 feet (6.1m) away
• Converts ultrasound to an audible frequency
• LED display confirms the leak location
• Detects leaks in noisy industrial environments
• Sensitivity controls provide accurate detection
• Not affected by contaminants or windy conditions
• Includes accessories to detect leaks in hard to reach areas
• Rugged carrying case
• Meets ASTM standards

Applications

• Locates leaks in air, steam and non-flammable gas systems including pipes, fittings, valves, cylinders and pressure vessels
• Finds the source of bearing and gear wear
• Locates arcing in an electrical system
• Detects refrigeration and air conditioning system leaks
• Locates leaks in brake systems, tubes, tires and radiators
• Senses cracks in moving rubber v-belts
• Detects leaks in vacuum systems
• Checks condition of engine seals

LED indicators on the Ultrasonic Leak Detector show the exact source of the leak or problem.

For Technical Assistance, Call An EXAIR Application Engineer 1-800-903-9247
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Ultrasonic Leak Detector

In a plant where loud noise levels exist, it is very difficult to locate leaks by merely listening for them. Most plant noises are in the normal audible range of human hearing, while air escaping from a small orifice is ultrasonic. The ULD can be adjusted to filter out background noise using the three sensitivity settings of X1, X10 and X100 along with an "on/off" thumb wheel for fine sensitivity adjustment. The parabola or tubular extension *(shown below)* can also be attached to the ULD to mask out intense background noise. The ULD detects only the ultrasonic sounds that are generated.

Parabola	Tubular Adaptor	Tubular Extension	Headphones

Ultrasound is directional in transmission and is loudest at the source. Turbulence created by the air forced through a small orifice generates ultrasonic sound. This emitted sound is called "white noise" and occurs when the air moves from a high pressure area such as a pipe or vessel and escapes to a low pressure area such as the room. The Ultrasonic Leak Detector converts the turbulent flow to a frequency that can be heard using the headphones. As the ULD moves closer to the leak, more LEDs on the display light to confirm the source of the leak.

The Model 9061 Ultrasonic Leak Detector quickly pinpoints a costly leak in a noisy industrial environment.

In some cases, the suspected leak is in a hot area and/or close to moving parts. The tubular extension and parabola make it possible to probe these difficult locations from a distance to isolate the leak.

The Model 9061 Ultrasonic Leak Detector comes complete with a hard-shell plastic case, headphones, parabola, tubular adaptor, tubular extension and 9 volt battery.

Find One Leak -
Pay For Your Ultrasonic Leak Detector

Consider one small leak that is equivalent to a 1/16" (1.6mm) diameter hole. At 80 PSIG (5.5 BAR), it consumes 3.8 SCFM or 108 SLPM.

Most large plants know their air cost. If you don't know your actual cost per 1,000 SCF, a reasonable average is $0.25 per 1,000 SCF (28,329 SL).

Dollars consumed per hour = SCFM consumed x 60 minutes x cost/1,000 SCF

= 3.8 x 60 x $0.25/1,000

= $0.06 per hour

= $1.44 per 24 hour period

= $10.08 per week

= $524.16 per year

ORDER ONLINE at EXAIR.com