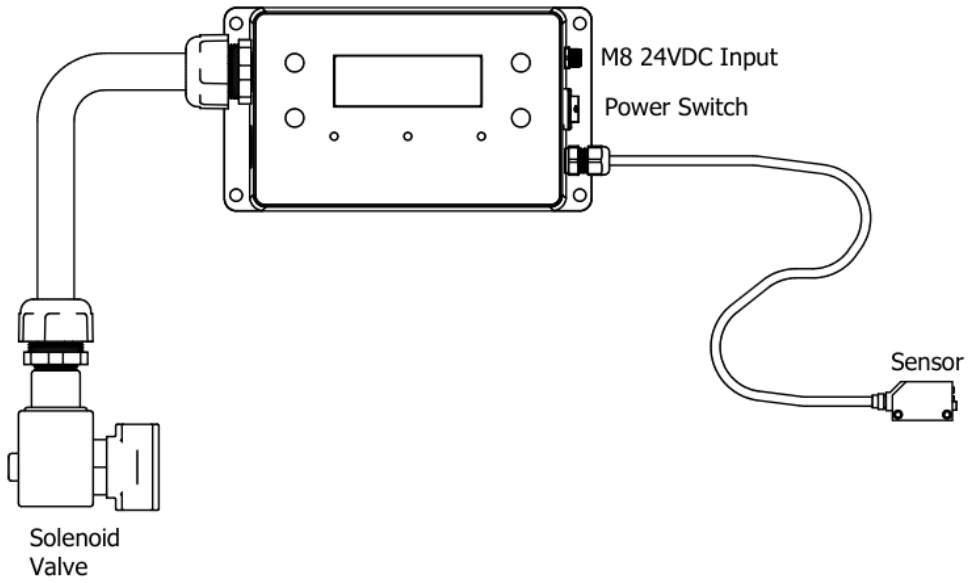
EFC™
ELECTRONIC FLOW CONTROL FOR COMPRESSED AIR
INSTALLATION AND MAINTENANCE



EFC Ratings

Power Supply Input: 24 VDC 1.5 Amps LPS or Class 2
Sensor: 24VDC input, consumes 30 mA
Sensing Range: Diffuse retro-reflective to 1 meter
Enclosure Rating: UL IP65
Temperature Rating: -13°F to 140°F (-25°C to 60°C)
Solenoid Valve Pressure Rating: 5-275 PSI (0.34-18.96 Bar)
Max Fluid Temp: 150°F (66°C)
Valve Compatible Fluids: Air, Inert Gases, Water, No. 2 Oil or lighter.
Model 92025/92125 (1/4 NPT) (up to 40 SCFM/ 1133 SLPM)
Model 92050/92150 (1/2 NPT) (up to 100 SCFM/ 2832 SLPM)
Model 92075/92175 (3/4 NPT) (up to 200 SCFM/ 5663 SLPM)
Model 920100/921100 (1 NPT) (up to 350 SCFM/ 9911 SLPM)

THE CONTROLLER SHOULD NOT BE USED IN AN EXPLOSIVE OR FLAMMABLE AREA. PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED IF USED WITH ACCESSORIES NOT PROVIDED OR RECOMMENDED BY EXAIR, OR IS USED IN A MANNER NOT SPECIFIED BY EXAIR LLC.

EXAIR's EFC is an electronic flow control for compressed air that provides precise "on/off" timing control of the compressed air supplied to the EXAIR products. The EFC permits the critical timing adjustment needed to operate the EXAIR products as efficiently as possible, turning on the compressed air only when it is needed. This control system provides flexibility by sensing distance as well as providing three selectable operating modes with adjustable timing. The EFC is applicable to many different manufacturing lines and environments. The sensor is compact which makes it simple to install in tight spaces.

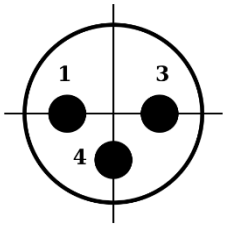
920 Series Part Numbers

The digits following 920, 921, or 922 indicate valve size (25 = 1/4 NPT, 50 = 1/2 NPT, 75 = 3/4 NPT, 100 = 1 NPT), and a "-2" suffix means two solenoid valves instead of one. The prefix indicates power: 920XX ships as controller-only (customer supplies 24 VDC, 1.5A minimum), 921XX includes an AC/DC power brick (100-240 VAC input) with a NEMA 5-15P to C13 cable, and 922XX includes the same brick with bare leads instead. All models are otherwise identical in design and function, and on two-valve models both solenoids actuate together from a single output.

POWERING THE EFC

Use a 24 VDC power supply that is at least 1.5 Amps and suited for the environment in which the unit is installed. Verify the power supply is appropriate and certified for the installation environment. For indoor use and dry location applications, a power supply is available from EXAIR.
EXAIR offers two power supply options: model 902700 with a NEMA 5-15P line cord, and model 902800 with bare leads for hard-wired installations.

Power connects to the controller through the M8 connector.
Pin 1 is +24 VDC, pin 3 is ground, and pin 4 is not connected.



M8 Power Connector
(face view)

Pin 1 +24 VDC
Pin 3 Ground (0 VDC)
Pin 4 Not connected

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INSTALLATION

1. Install EXAIR's engineered airflow product(s) such as the Super Air Knife, Air Amplifier, Air Nozzles, Spray Nozzles, etc., following the "Installation and Maintenance Sheet" that was included with that product.

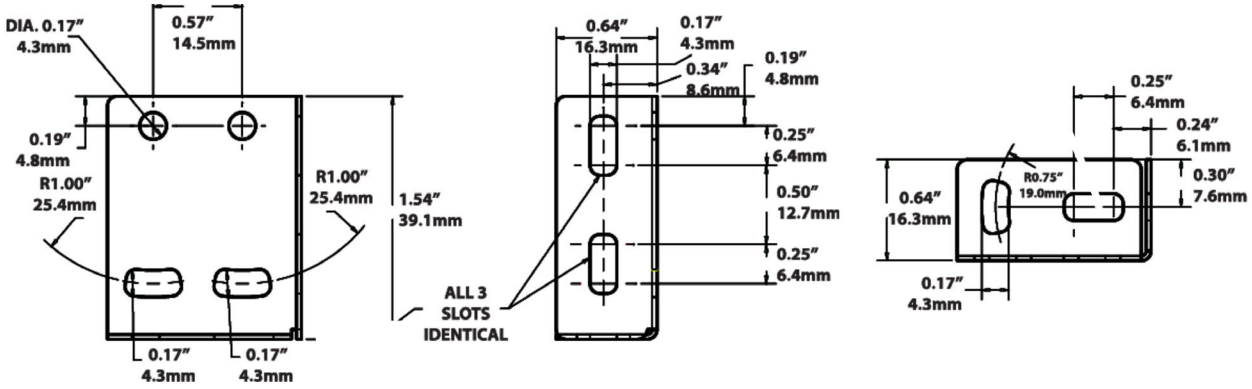
2. Connect the compressed air supply to the EFC solenoid valve, paying attention to the flow direction arrow on the brass valve body (in and out). The solenoid valve should be located downstream from a filter and before the compressed air product. For ease of connecting the solenoid valve to the compressed air pipe, the electrical coil can be detached from the valve body by using a flat blade screwdriver to remove the metal clip that holds the coil to the valve body. Connect the compressed air line to the EXAIR product(s) and re-install the electrical coil, securing it to the valve using the clip. Take care to reinstall the spring washer and retaining washer in the correct locations.

3. Prior to the electrical hook up, install the EFC controller in a location that is convenient for adjustment of the timer settings. Do not permanently wire the EFC. Do not position the EFC in a space where it is difficult to disconnect the power cord. It should not be mounted in direct sunlight. Always consider the best location that is convenient for the installation of piping air to the EXAIR product as well as connecting the unit to a power source. Mounting holes of the EFC are located on the flanges on the sides of the enclosure. It is recommended that all four holes be used (if possible) for a secure mounting that will minimize breakage.

4. The EFC can be shipped with an AC/DC power supply and either a NEMA 5-15P to C13 cord or a bare-lead cord for easy hook up. The power supply is easy to use throughout the world as it accepts input voltages from 100V-240 VAC, and frequency of 50/60 Hz without having to change any internal connections of the controller. Always follow all necessary wiring codes along with the lockout and tagging procedure of your facility. Make sure the AC/DC power supply is suitable and rated for the environment it is being used in.

5. The sensor has a 16.5′ (5m) cable. Use a wire tie wrap (not supplied) to neatly bundle any excess cable. The sensor should be mounted in a location best suited for sensing the product, container, etc. A mounting bracket is provided.

Bracket dimensions are shown below.

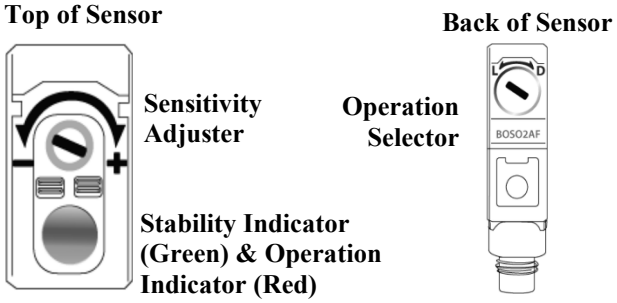


Sensor Setup

1. The operation selector screw is factory set to the "L" position ("D" for "dark sensing" and "L" for "light sensing"). "L" is used for the majority of the applications.

2. With the EFC controller mounted, apply power to the M8 Power connector, then switch power on (screen lights up when on). The green light on the sensor indicates power. The orange light indicates the sensing of an object. The sensor distance has been factory set at 12″ (305mm). To change the sensing distance (from sensor to part), put the part in its normal location, in front of the sensor. Adjust the distance by turning the sensitivity adjustment screw (- / +.).

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Controller Setup:

When the controller is powered on, three different modes will appear to choose from. Use the "+" and "-" switches to move the arrow to the desired mode. When an arrow is pointing to one of three modes, that mode can either begin operation or program the time settings.
The EFC ships without a default mode. One of the three modes must be selected before the controller will operate. Timing is adjustable in one second increments up to 100 hours.

Timed Mode:
When the arrow is next to the mode **Timed**, press "Program" to enter the timing parameters. Use the "+" and "-" switches to increase or decrease the "On Time," the length of time the solenoid stays open. Then press "Program". Next, use the "+" and "-" switches to increase or decrease the "Off Time," the length of time the solenoid stays closed. Then press "Program". The screen will go back to the main menu. Leave the arrow next to "Timed" then press "Start/Stop" to start the timer only cycle.

Sensor, Delayed Mode:
When the arrow is next to the mode **Sensor, Delayed**, press "Program" to enter the timing parameters. Use the "+" and "-" switches to increase or decrease the "Delay Time," how long the solenoid waits to open after the sensor is tripped. Then press "Program". Next, use the "+" and "-" switches to increase or decrease the "Open Time," how long the solenoid stays open once the dwell time is up. Then press "Program". The screen will go back to the main menu. Leave the arrow next to "Sensor, Delayed" then press "Start/Stop" to start the sensor delay cycle.

Sensor, On/Off Mode:
When the arrow is next to the mode **Sensor, On/Off**, press "Program" to select the parameters. Use the "+" and "-" switches to select "Sensor Mode 1" or "Sensor Mode 2". Sensor Mode 1 follows the sensor directly. The valve opens while an object is detected and closes when the object is no longer detected. Sensor Mode 2 toggles the solenoid valve on alternating detections. The valve opens when the sensor detects an object and remains open after that object leaves the beam. The valve closes when the sensor detects the next object.

TROUBLESHOOTING

Controller Indicators
The three indicators are independent. Green indicates a mode is running. Yellow indicates standby, either idle at the menu or being programmed. Red indicates the solenoid valve is open. Red appears only while green is on, and green stays on with it.

Sensor Indicators
Green indicates power. Orange indicates an object is detected.

The screen does not light. Verify the power supply and the M8 connections.

The valve does not actuate. Confirm a mode has been selected and started. In the sensor modes, verify the orange sensor indicator lights when the target is present.

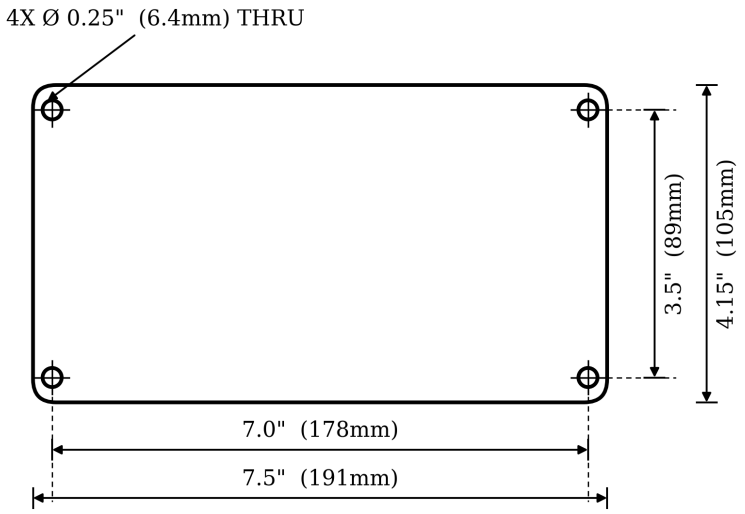
The sensor does not detect the target. Adjust the sensitivity screw or reposition the sensor. Verify the operation selector is set to "L".

Timing or sensing is inconsistent. The EFC may be located in an area with excess electronic noise. Separate the EFC controller, wiring, and sensor cable as far as possible from the noise source(s), and shield the sensor cable.

MOUNTING

To mount the EFC, position the enclosure with the flanged sides oriented vertically for mounting. **Before drilling or inserting screws, verify that no electrical wires, conduit, or other utilities are located behind the mounting surface.** Align the enclosure so that all four 1/4" holes in the flanges are accessible for fastening. Secure the enclosure using 1/4" machine screws with appropriate nuts or threaded inserts for the mounting surface, or use 1/4" self-tapping screws when mounting directly to metal panels or walls. Tighten all fasteners evenly to ensure the enclosure is firmly mounted without over-torquing, which could damage the flanges or mounting surface.

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CLEANING, MAINTENANCE AND STORAGE

Periodically inspect the EFC unit, solenoid and sensor for damage. If any damage is observed, do not use the equipment and contact EXAIR for replacement parts as applicable.

Organic solvents such as paint thinner, as well as very acidic or basic solutions can damage the outer enclosure or graphic overlay of the controller. Clean with a soft cloth or mild detergent.

When storing the EFC, make sure that the ambient temperature and humidity are within the rated values. If the EFC has been stored at an ambient temperature of -10°C or below, the unit must sit at room temperature for at least three hours before using it for the EFC to function properly.

EQUIPMENT ENVIRONMENTAL RATINGS

Installation Category II (Transient Over-voltage)
Pollution Degree 2 (Temporary conductivity caused by condensation)
Altitude Limit: 6,562 ft (2,000 m)
Humidity: 80% RH non-condensing
EFC controller is intended for indoor use only

WARRANTY

There is a one-year warranty against defects in workmanship and materials. Defective products must be returned prepaid for repair or replacement at EXAIR's option. This warranty applies under the conditions of normal use, but does not apply to defects that result from intentional damage, negligence or unreasonable use or exposure. The EFC has no serviceable parts internally. Warranty is void if there is evidence of tampering.

If you have any questions or problems, please contact an EXAIR Application Engineer at:

Toll Free: 1-800-903-9247 (US & Canada)
Toll Free Fax: 866-329-3924 (US & Canada)
E-mail: techelp@exair.com
Telephone: 513 671-3322 outside of US & Canada
Fax: 513 671-3363 outside of US & Canada
Website: www.exair.com

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