# BL-IDFS-25 through BL-IDFS-200

## Indoor Flow Sensor Installation

Baseline's BL-IDFS Indoor Flow Sensors have clamp-on mounting brackets that fit nominal pipe sizes from ¼" up to 2". These ultrasonic flow sensors send real-time flow data to Baseline irrigation controllers and to BaseManager and BACnet Manager. BaseManager stores hourly summation of flow data for reporting.

The flow sensor mounting bracket size has been set at the Baseline factory to fit the pipe size specified by the part number.

This document covers installation for all sizes of IDFS indoor flow sensors.

| Baseline Part # | Nominal Pipe Size | Outside Diameter | Baseline Part # | Nominal Pipe Size | Outside Diameter |
|---|---|---|---|---|---|
| BL-IDFS-25 | ¼" | 13 - 16 mm | BL-IDFS-100 | 1" | 28 - 37 mm |
| BL-IDFS-37 | ⅜" | 16 - 18 mm | BL-IDFS-125 | 1¼" | 37 - 44 mm |
| BL-IDFS-50 | ½" | 18 - 23 mm | BL-IDFS-150 | 1½" | 44 - 52 mm |
| BL-IDFS-75 | ¾" | 23 - 28 mm | BL-IDFS-200 | 2" | 52 - 64 mm |

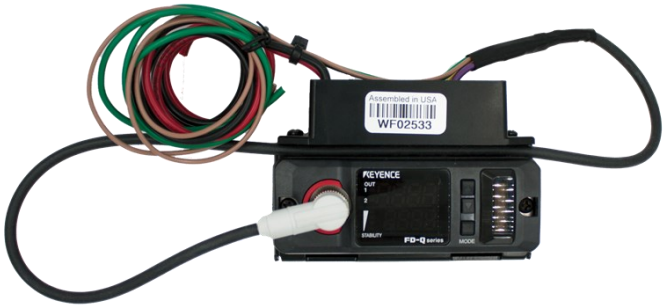
### Pre-Configured Settings

To ensure accuracy, the Keyence flow sensors have the following pre-configured settings:

- Pipe size
- Schedule 40 copper pipe
- Left-to-right flow direction
- Flow sensor K-value (60.1)

Refer to the included Keyence documentation to find instructions for changing the settings.

Baseline's IDFS indoor flow sensor is a customized product made up of an integrated Baseline BL-5309 Flow biCoder, a Keyence FD-Q series clamp-on flow sensor, and a 30V power supply.




Keyence FD-Q Series Flow Sensor with attached BL-5309 biCoder


View of the clamp-on mounting bracket

30V DC Power Supply

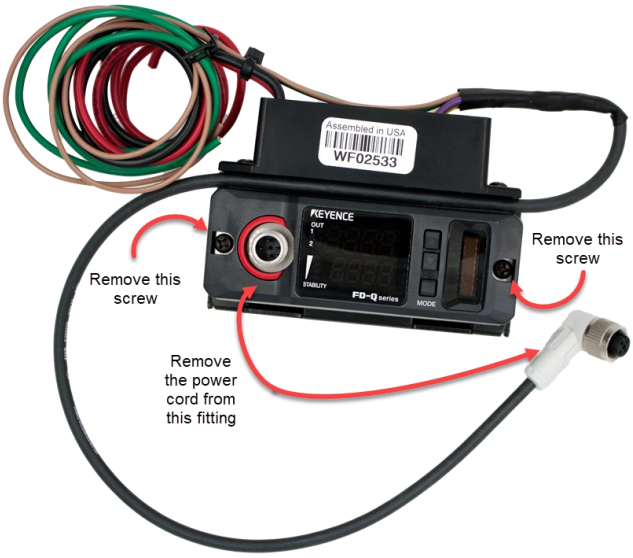
## Indoor Flow Sensor Installation Instructions

Before you begin the installation, review the Keyence safety precautions found on pages 4 - 6 of this installation guide. You do not need to adjust the base bracket for your pipe size. The bracket size has been set at the Baseline factory to fit the pipe size specified by the part number.

## Attach the Keyence Flow Sensor to the Pipe

**Note:** When attaching the flow sensor to the pipe, you do not need to cut or modify the pipe in any way.

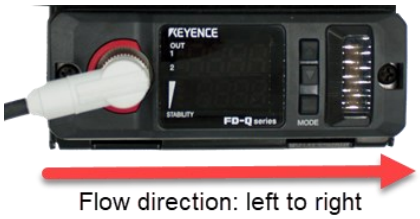
1. Unscrew the retaining nut and remove the power cord connector from the top of the Keyence flow sensor.
2. Using a Phillips head screw driver, remove the two screws at either end of the Keyence flow sensor. Set these screws carefully aside because you will reuse them later. Set the sensor aside.
3. Using the Phillips head screw driver, loosen the four securing screws on the mounting bracket until the pieces of the bracket separate from each other.
4. Position one piece of the mounting bracket on one side of the pipe and the other piece on the other side. Realign the four securing screws and tighten them enough to hold the mounting bracket in place.




**Note**: Refer to the Keyence Precautions for Installation found on page 5 of this installation guide for important information about positioning the sensor on the pipe.

5. When you have the mounting bracket in the correct position, tighten all four screws to prevent the bracket from slipping.
6. Taking the flow direction into consideration, reposition the sensor on the mounting bracket and realign the mounting holes. Replace the screws on either end of the sensor. Firmly tighten the screws.

**Note**: The sensor can be attached to the mounting bracket in either orientation. However, if the pre-configured left-to-right flow direction does not fit your application, you can change the setting on the Keyence flow sensor. Call Baseline Support for assistance.



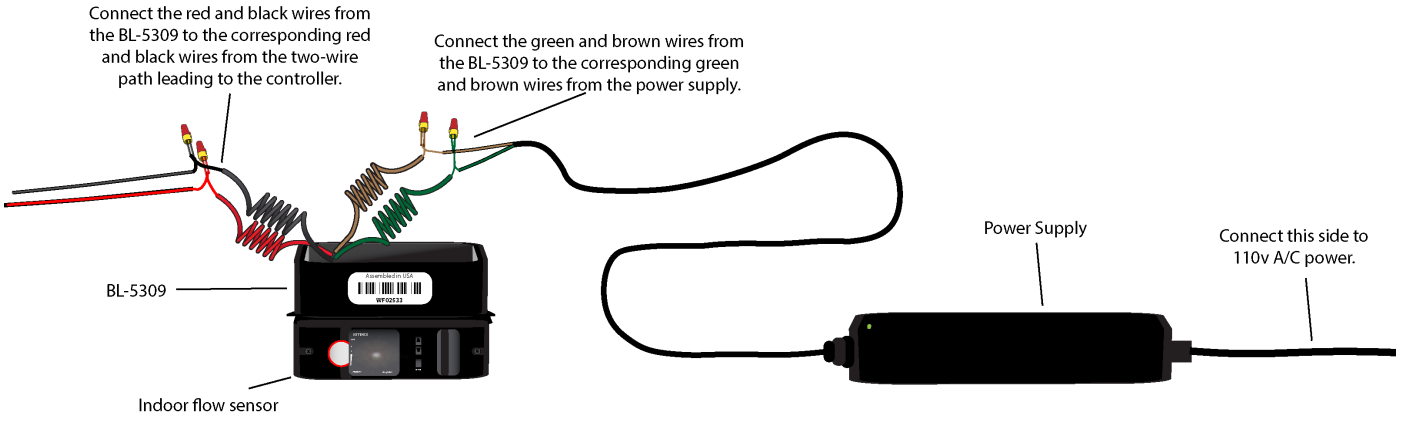

7. Reattach the power cord to the connector on the top of the sensor. Firmly tighten the connector in order to protect the sensor electronics from moisture.

## Connect the BL-5309 Flow biCoder to the Two-Wire Path

1. Power off the two-wire during the installation of any two-wire device.
2. Unwrap the wire bundle that is attached to the BL-5309 biCoder.
3. Connect the red and black wires from the BL-5309 Flow biCoder to the red and black wires from the two-wire path. Be sure to maintain polarity by connecting red to red and black to black. Use wire nuts on all connections.

## Connect the Flow Sensor Power Supply

1. Find the brown and green wires in the wire bundle that is attached to the BL-5309 biCoder.
2. Find the corresponding brown and green wires exposed at the end of the power supply cord.
3. Be sure to maintain polarity by connecting green to green and brown to brown. You can extend the distance between these connections up to 2500 ft with additional wire.
4. Attach the plug in end of the power cord to the power supply.
5. Plug the power cord into a 110V electrical outlet.




## Configure the Flow Sensor in the BaseStation Irrigation Controller

Follow the instructions in the controller's user manual to test communication and configure the flow device.

**Note**: When you configure the device, verify that 60.1 displays in the K-value field.

- In the BaseStation 1000 User Manual, refer to **Setting Up Flow biCoders**
- In the BaseStation 3200 User Manual, refer to **Searching for and Assigning Flow Meters**

## Safety Precautions for the Keyence FD-Q Series Flow Sensor

### General Cautions

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| DANGER | • Do not use the FD-Q Series out of the specification ranges. Comply with the contents described in this instruction manual when using the product.<br>• Do not use the FD-Q Series for facilities where death or serious property damage is possible, such as nuclear power generation, aircraft, railway, ship, vehicles, medical equipment, playground equipment, etc.<br>• Do not use this product for the purpose of protecting a human body or a part of human body.<br>• This product is not intended for use as an explosion-proof product. Do not use this product in a hazardous location and/or potentially explosive atmosphere. |
| WARNING | Do not modify the FD-Q Series |

### Precautions for Handling

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| CAUTION | When installing the FD-Q Series on a high-temperature pipe, the main unit can become hot. Be careful not to burn yourself. |
| NOTICE | • Do not drop the FD-Q Series, hit it against something, or apply excessive force.<br>• Do not use a sharply pointed object to press the setting keys. |

### Precautions for Detectable Fluid

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| NOTICE | • High-viscosity, high-turbidity, or sparkling fluid may cause unstable detection. Keep this in mind before using.<br>• When the fluid temperature rises or pressure is reduced, air bubbles may form in the fluid within the pipe, resulting in unstable detection. |

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**Precautions for Installation**

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| CAUTION | Do not install the FD-Q Series in locations used as footholds |
| NOTICE | • Install the FD-Q Series at a location where the inside the measuring pipe is always filled with the fluid.<br>• To prevent a situation where the FD-Q Series is affected by air bubbles or the pipe not being filled with fluid, it is recommended to secure it in a position where the display surface is perpendicular to the ground.<br>• Arrange piping so that gas does not enter it. When the fluid contains bubbles, detection performance of the FD-Q may be affected.<br>• When installing the FD-Q Series on a vertical pipe, choose the position where the fluid flows in the upward direction.<br>• To improve the detection stability, it is recommended that the sensor be installed in a location with straight sections of pipe upstream that are at least five times the length of the pipe`s inside diameter.<br>• Install the sensor on the upstream side of a flow regulating valve or similar piece of equipment.<br>• Install the FD-Q Series on a surface with no seams or rust.<br>• Do not install the FD-Q Series in a location exposed to intense light, such as direct sunlight, or radiation from a heat source.<br>• Do not install the FD-Q Series at a location where it may become submerged in a liquid.<br>• When installing the FD-Q Series at a location where vibrations occur, fix the pipe with tubes or supports as close to the main unit as possible. Excessive vibration may cause unstable operation.<br>• To avoid interference of detection signals, do not install multiple units closely in series. |

**Precautions for Wiring**

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| CAUTION | • Before wiring the FD-Q Series, check the colors of wires.<br>• Use the FD-Q Series within the rated range. The FD-Q is a product that uses a DC (direct current) power source. Do not apply AC (alternating current) or other power supplies. Do not use a load that exceeds the allowable limit.<br>• If the temperature of the pipe exceeds 80 °C, arrange the cable so it does not come in contact with the pipe. |
| NOTICE | • Use an insulated stabilizing power supply.<br>• Do not apply excessive tensile force to the cable.<br>• Ensure that the cable tip is not submerged in water during wiring work.<br>• Isolate the cable from power supply lines or power lines when wiring.<br>• Isolate the cable as far away as possible from any source of noise.<br>• Do not use a cable longer than 20m in length. |

**Other Precautions**

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| NOTICE | • When power is applied to the sensor, it enters a 6 second "start-up" process before it is ready to use. Do not use the outputs from the sensor during this period.<br>• Initial drift may occur after the power is turned on. To detect a subtle difference in the flow rate, let the FD-Q Series warm up for approx. 15 to 30 minutes before use.<br>• Do not bring a strong magnet or magnetic field close to the main body of the FD-Q Series. |

| | |
|---|---|
| IMPORTANT | The FD-Q Series cannot be used as a measuring instrument or measurement in business deals or certifications. |

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