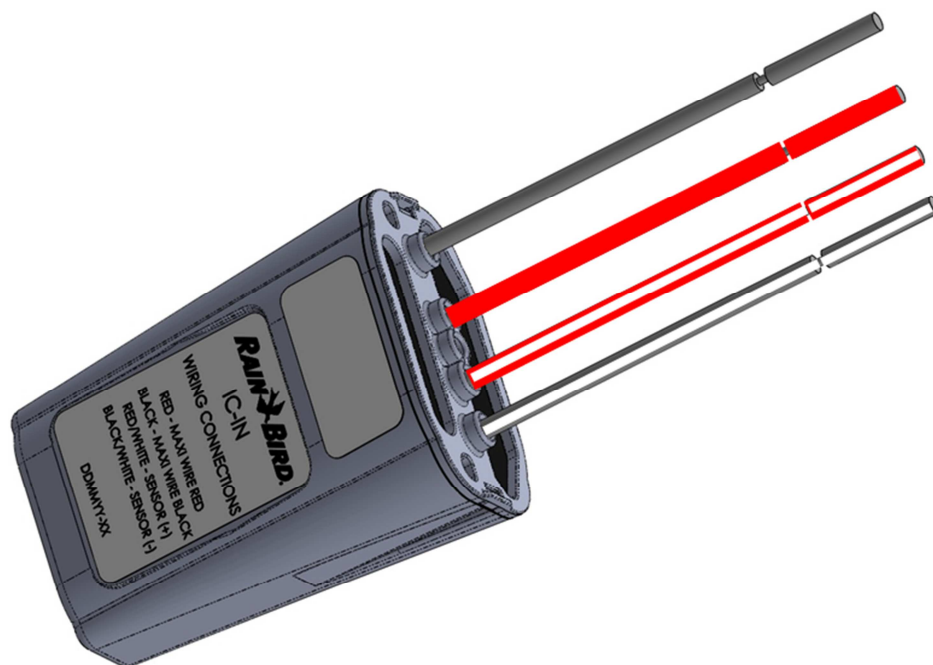




Rain Bird® IC-IN Integrated Control Sensor Input Device Installation Guide





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IMPORTANT NOTES: INSTALLING THE IC-IN – Integrated Control Sensor Input Device

This section explains how to install and configure the IC-IN device.



NOTE: The IC-IN device must be installed in compliance with all electrical codes.



NOTE: The IC-IN device **does not** provide power for sensor devices. The IC System™ wire path **MAY NOT** be used to power sensor devices. Sensor devices requiring power must be connected to a suitable power source separate from the IC System™ wire path.



NOTE: The installation of the IC-IN device should be performed with the IC System™ wire path **powered off**.



NOTE: For the first two minutes after the wire path has been reactivated, there will not be any operation or response from the field IC-IN devices.



WARNING: Field wire paths must be kept separate from other wire paths. Do not connect the field wires together from different output (group) wire paths on the ICI - Integrated Control Interface



WARNING: This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.



WARNING: Children should be supervised to ensure that they do not play with the appliance.

Compliance Information



This device complies with Part 15 of the FCC rules subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

This Class B digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations.



EN61000-6-1 (1997) Class B:

EN61000-3-2

EN61000-3-3

EN61000-6-3 (1996):

EN61000-4-2

EN61000-4-3

EN61000-4-4

EN61000-4-5

EN61000-4-6

EN61000-4-8

EN61000-4-11

EN 60335-1: 2010 Safety of household and similar electrical appliances



Installation Checklist

The checklist below should be followed in order to properly install the IC-IN device. For your convenience, a check-off box has been provided for each step.

- Verify Compatible Rain Bird Central Control Software is Installed
- Verify the contents of the packing box.
- Verify Central Control is version 8.1.0 or higher
- Choose a location to install the IC-IN. It is advisable for serviceability to install the IC-IN in a valve box near the target sensor or immediately adjacent to the sensor.
- Gather installation tools
- Connect sensor source device
- Connect IC System™ field wiring
- Complete the installation
- Configure Rain Bird Central Control Software

Verify Compatible Rain Bird Central Control Software is Installed

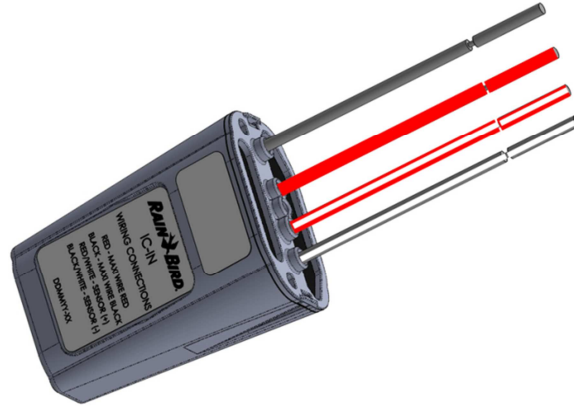
1. Verify Central Control software (Cirrus, Nimbus II, Stratus II or Stratus LT) is version 8.1.0 or higher. Attempting to use older software will result in unexpected operation.
2. Open the Central Control software and click on the “Rain Bird” icon in the front office.



3. If the software version is less than **8.1.0**, (as viewed below) contact your Rain Bird distributor for options to acquire new software. Rain Bird distributors and / or Rain Bird GSP can assist with software updates.



Verify Contents of the Packing Box



IC-IN Device

Choose Installation Location

Choose a location minimizing wiring length between the IC-IN and the target sensor. Ideally the IC-IN should connect directly to the sensor output leads.

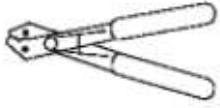
Choose a location with easy access to the IC System™ wire path.

Choose a location with easy access to external sensor power needed by your sensor, if any.

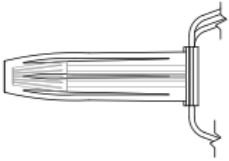


NOTE: This device must be installed in compliance with all electrical codes.

Gather Installation Tools



Wire strippers



Rain Bird DBRY splice kits (4 total splices)

Installation Step #1 - Connect Sensor Source

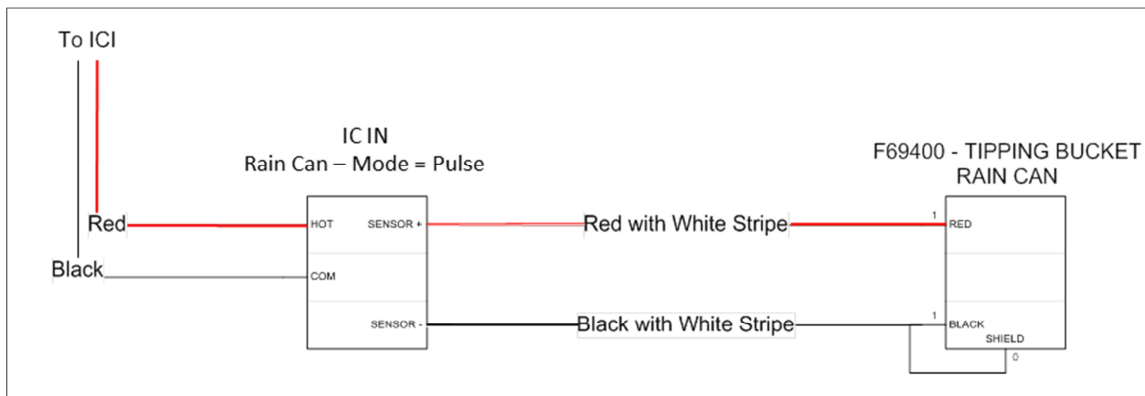
The IC-IN device monitors the state of an external sensor of a certain type. The sensor state or value can be used in Rain Bird central control software to adjust irrigation, report flow, etc. Although various types of sensors may be connected, the connections are made through the same two IC-IN inputs, SENSOR + and SENSOR -.



CAUTION: All electrical wiring connections and wiring runs must be made according to local building codes.

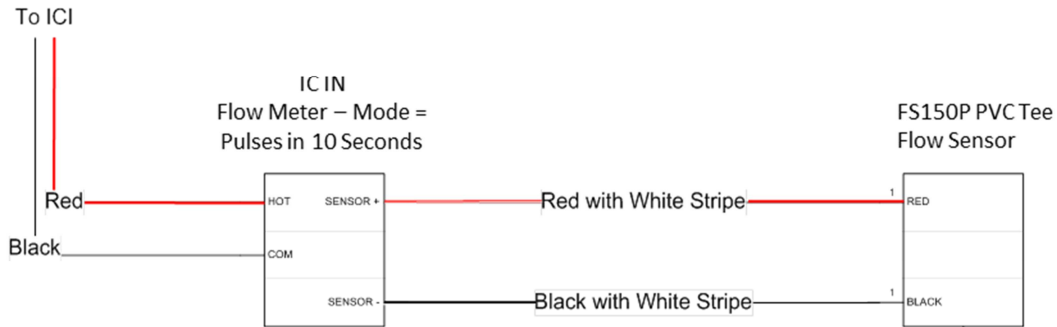
Rain Can Application:

The drawing below shows a typical IC-IN application for Rain Can sensing. The SENSOR + and SENSOR - inputs are connected to the Rain Can outputs.



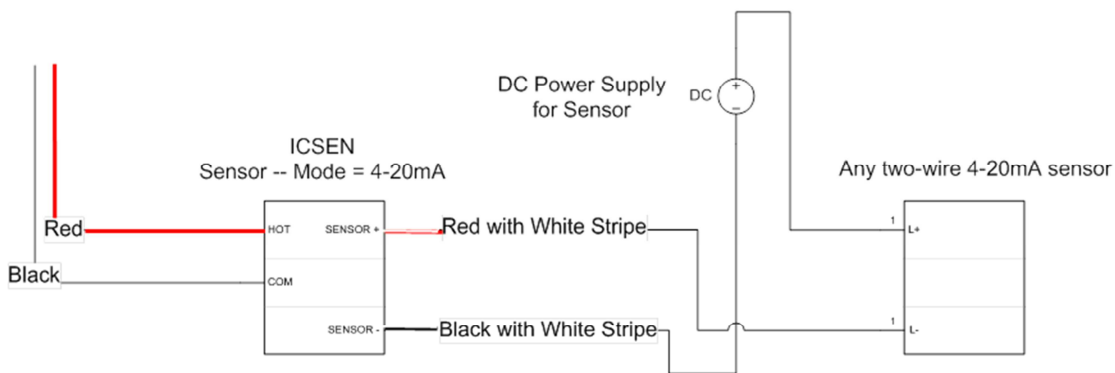
Flow Sensing Application:

The drawing below shows a typical IC-IN application for flow sensing. The SENSOR + and SENSOR – inputs are connected to the flow sensor outputs.



4 to 20mA industrial sensor Applications:

The drawing below shows a typical IC-IN application for 4 to 20mA sensing. This connection might apply to pressure transducers and other industrial sensors with 4 to 20mA outputs. The SENSOR + and SENSOR – inputs are connected to the sensor and to the external power supply required to operate these sensors. Refer to sensor documentation for correct power supply parameters.

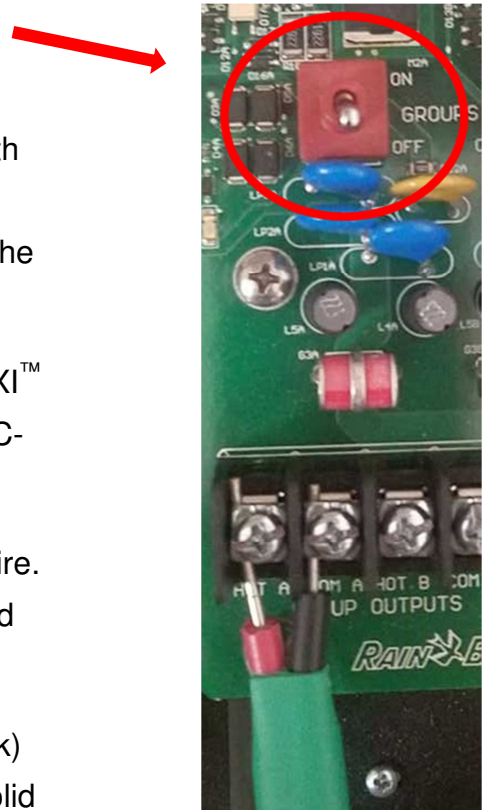




4. The IC-IN device should arrive from the factory with wire ends stripped. If not, strip approximately 1" of insulation from each wire. Take care not to score the copper strands.
5. Strip approximately 1" of insulation from each external connection wire to be spliced with IC-IN. Take care not to score copper conductors.
6. Connect the IC-IN (red-with-white-stripe) SENSOR + wire to appropriate sensor output wire. Connect the IC-IN (black-with-white stripe) SENSOR – wire to appropriate sensor output wire.
7. Add suitable protection to the splices using a Rain Bird DBRY splice kit for the red-red and black-black splices just made.
8. Secure each splice with the wire nut then insert the splice completely into the grease cap. Note that grease caps are single-use; **do not attempt to reuse them.**

Installation Step #2 - Connect IC System™ Field Wiring

1. Assure the IC wire path that the IC-IN will be connected to is powered OFF.
2. The IC-IN device should arrive from the factory with wire ends stripped. If not, strip approximately 1" of insulation from each wire. Take care not to score the copper strands.
3. Strip approximately 1" of insulation from each MAXI™ wire (IC System™ field wiring) to be spliced with IC-IN. Take care not to score copper conductor.
4. Connect the IC-IN (red) wire to the MAXI™ (red) wire. The IC-IN to MAXI™ connection should be solid red on both sides of the splice.
5. Connect the IC-IN (black) wire to the MAXI™ (black) wire. The IC-IN to MAXI™ connection should be solid black on both sides of the splice.
6. Add suitable protection to the splices using a Rain Bird DBRY splice kit for the red-red and black-black splices just made.
7. Secure each splice with the wire nut then insert the splice completely into the grease cap. **Note that grease caps are single-use; do not attempt to reuse them.**



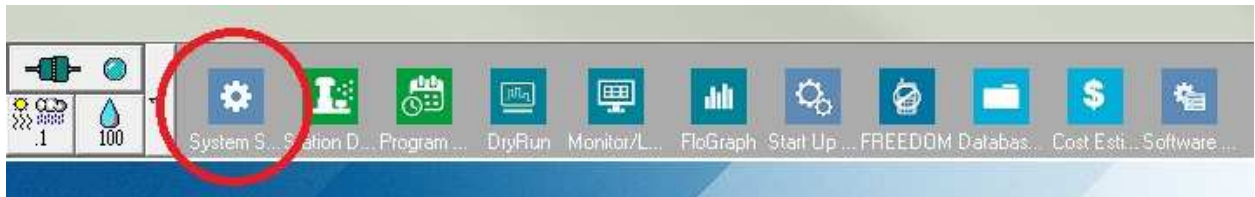
Installation Step #3 - Complete Field Installation

1. Double-check safety of all connections. Assure that all electrical codes have been followed and that no exposed wire ends are present.
2. Assure that all connections are suitably protected from surrounding environment.
3. Apply power to the IC System™ wire path.
 - a. **Allow two (2) minutes** for all IC System™ devices on the wire path to power-up before performing operations.

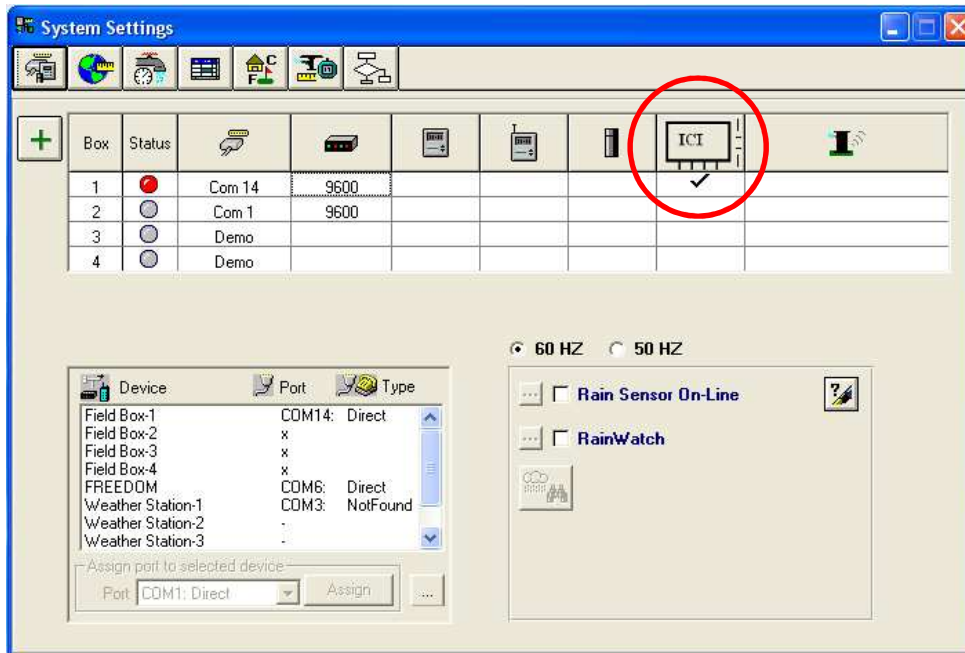


Installation Step #4 - Configure Rain Bird Central Control Software

1. Activate Rain Bird Central Control software (version 8.1.0 or higher) on the central control pc, then select System Settings to check the Integrated Control Interface (ICI) configuration:



2. Verify the System Settings dialog box shows a configured ICI interface (as shown below; the port number and box number are not critical but the ICI should be selected with a checkmark and the port should not be "Demo"):



If no ICI is configured, refer to the IC System™ Installation instructions to complete this step.

3. There are three “classes” of sensors that you may wish to add to Rain Bird central control: programmable sensors (including flow, level, contact closure, or voltage), Flo-Watch™ sensors, and Rain Watch™ sensors.

Programmable sensors can be used for monitoring applications and to trigger central control events like starting a program.

Rain Watch™ sensors are used specifically to monitor for rainfall and pause or stop irrigation based on detected rain.

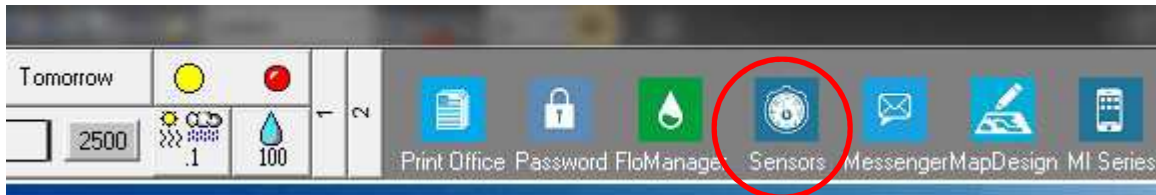
Flo-Watch™ sensors are used for flow monitoring and can be used to detect excessive flow conditions due to pipe breaks or other faults.



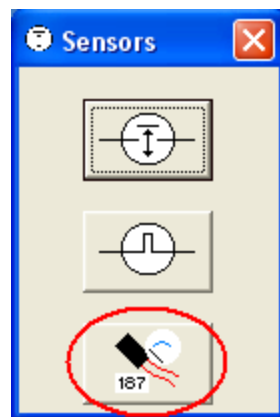
NOTE: A single IC-IN should **not** be configured for multiple sensor classes. Doing so will cause operational problems.

Configure Programmable Sensors

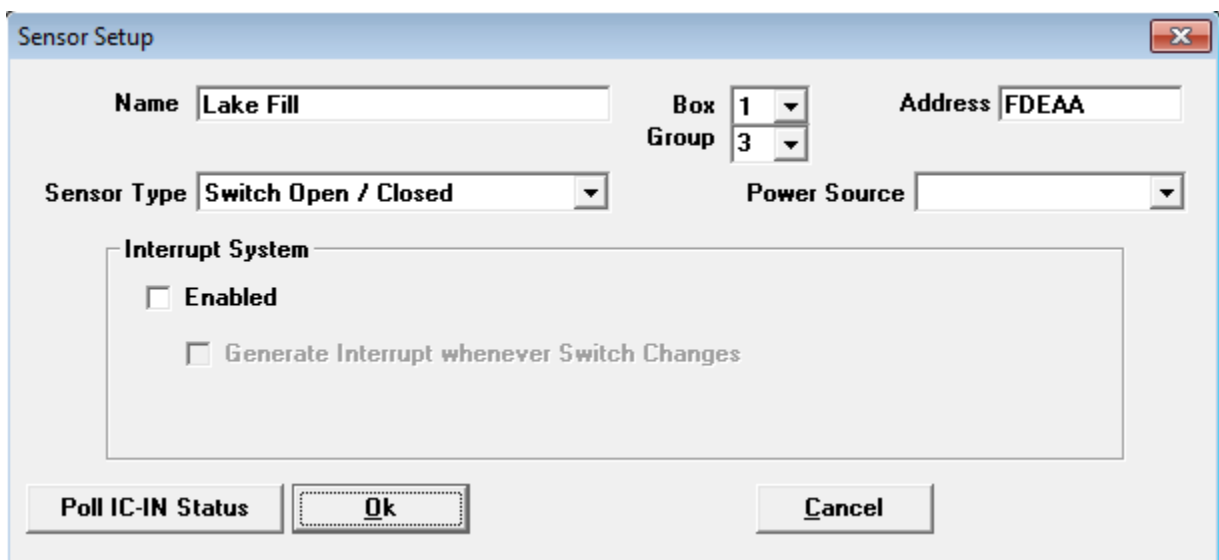
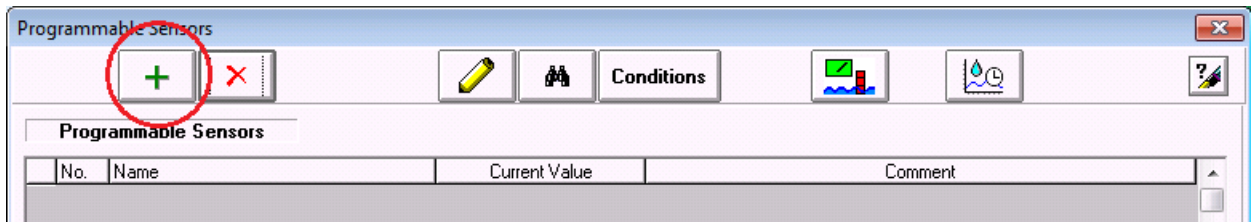
1. To add a new programmable sensor, select Sensors, then the Programmable Sensor tool as shown below:



2. Select "Programmable Sensor" from the pop-up window.

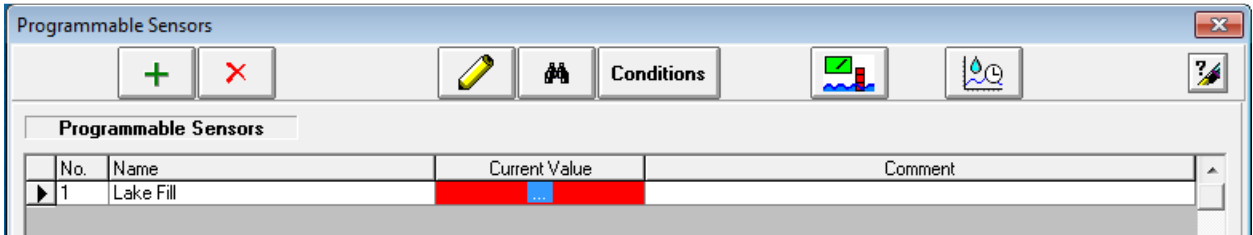


3. Click the + icon to add a new sensor through the Sensor Setup dialog, where you will enter the Name, Box (interface) number, Group, Address, and Type:



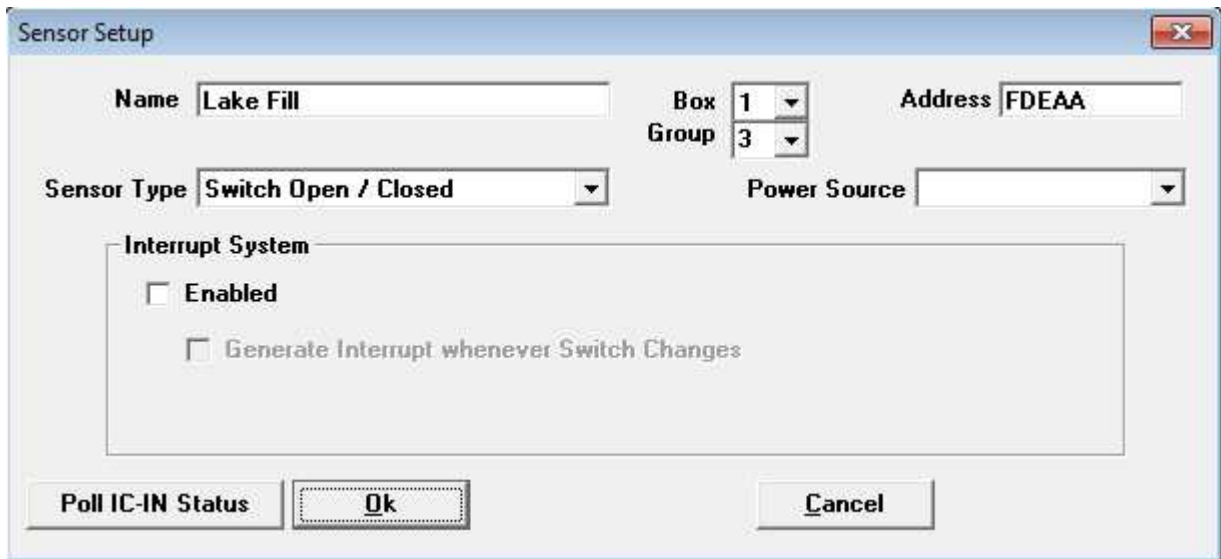
4. Complete the Sensor Setup Screen:
 - a. **Name** the sensor for easy identification.
 - b. Enter the **Address** of the IC-IN from the barcode label.
 - c. Select the **Box** number (if shown) from the dropdown and match it to the ICI box number.
 - d. Set **Group** to the wire path to which the IC-IN is attached by using the “Group” drop down box.
 - e. Set the **Sensor Type** based on the characteristics of the sensor connected to the IC-IN.
 - i. For example, a flow meter should usually be set for Number of Pulses in 10 Seconds. Correctly establishing sensor characteristic will base the flow being reported on the number of gallons or liters or cubic meters per pulse.

5. Select OK on Sensor Setup window to finalize programming.
6. The sensor just added will not be immediately visible in the “Programmable Sensors” window. Refresh the screen by closing the “Programmable Sensors” window and re-opening it from the front office as described in actions 1 & 2 above.

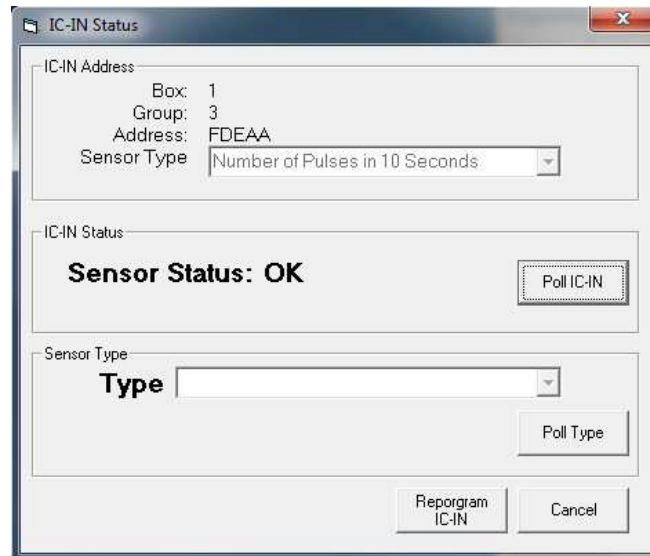



7. To Verify IC-IN Communication:

- a. Select the sensor and choose Edit  to reopen the “Sensor Setup” screen.



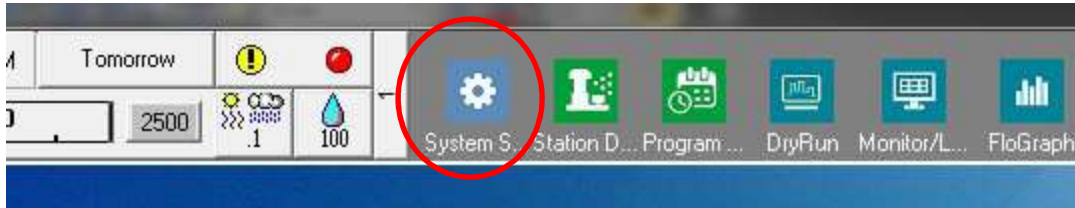
- b. Verify IC-IN communication by clicking Poll IC-IN Status .



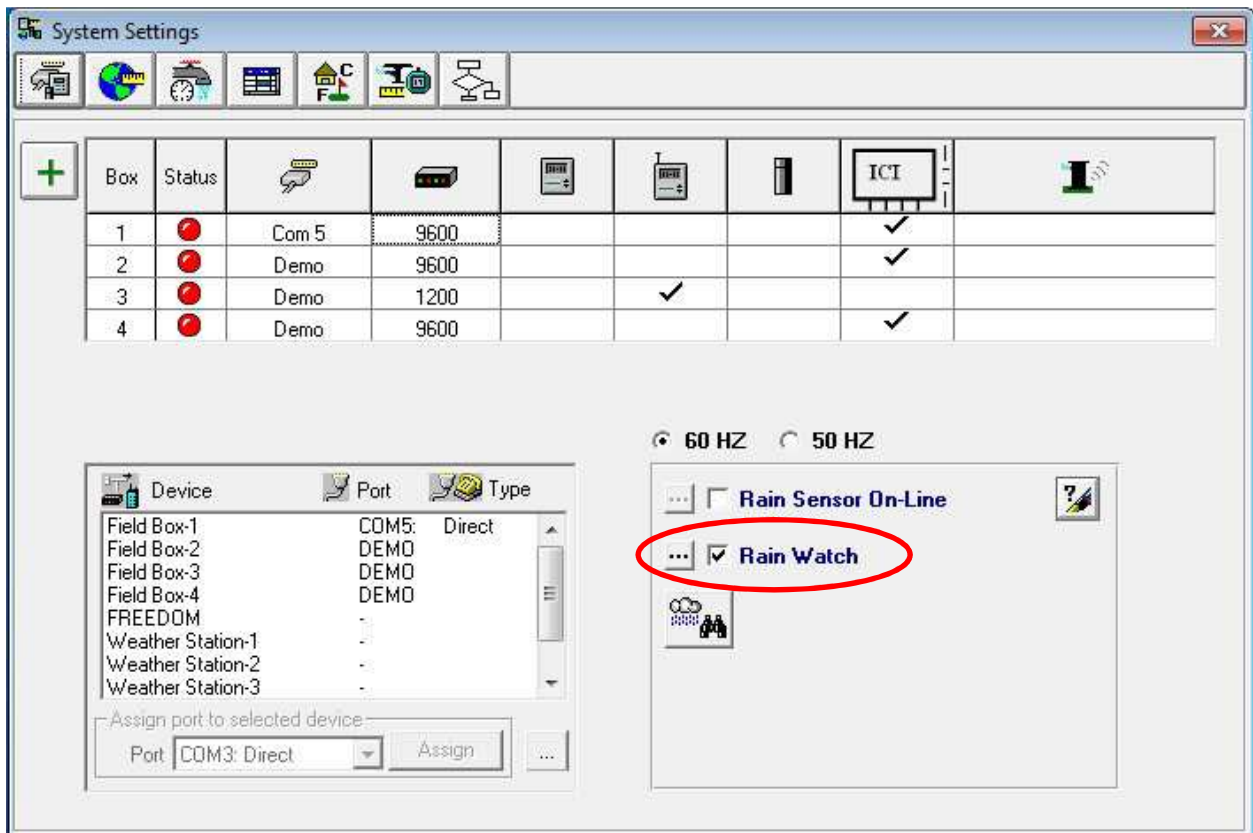
- c. Click Poll IC-IN 
- d. Status should indicate OK or No Response. If No Response, check wire path/group, address, and make sure that ICI power has been applied for two minutes before testing.


Configure Rain Watch™ Sensors

1. IC-IN Rain Watch™ sensors should be connected to contact-closure style Rain Cans. To add a new Rain Watch™ sensor, open System Settings:

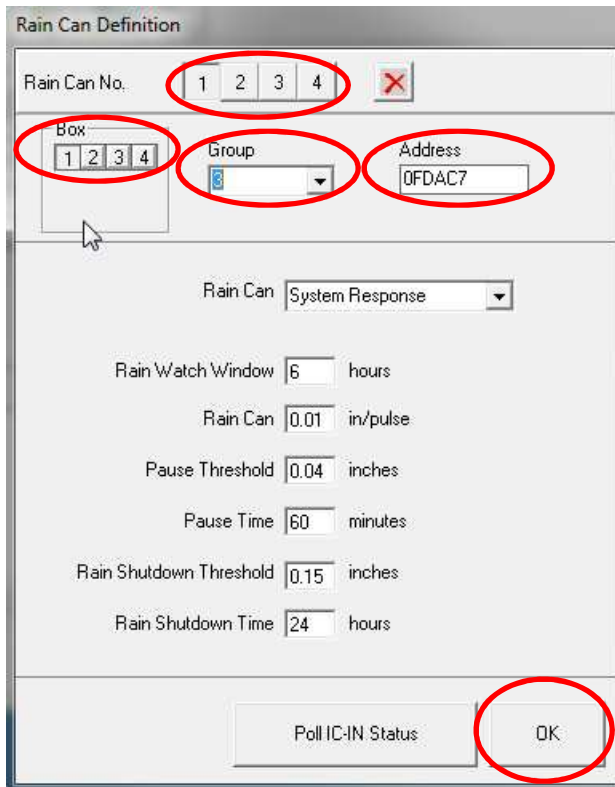


2. Check the Rain Watch checkbox:




If Rain Watch is already active, click the  button to open the Rain Can Definition dialog.

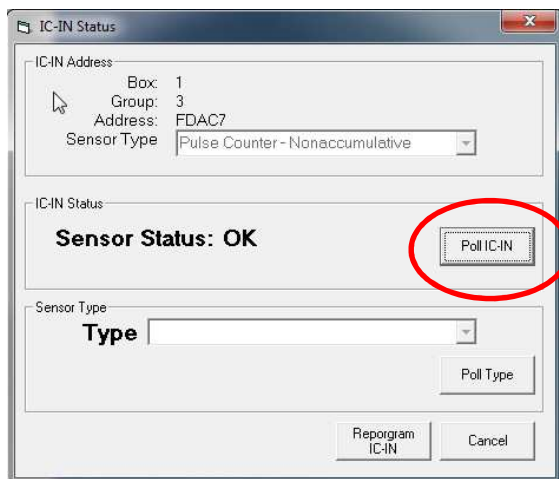
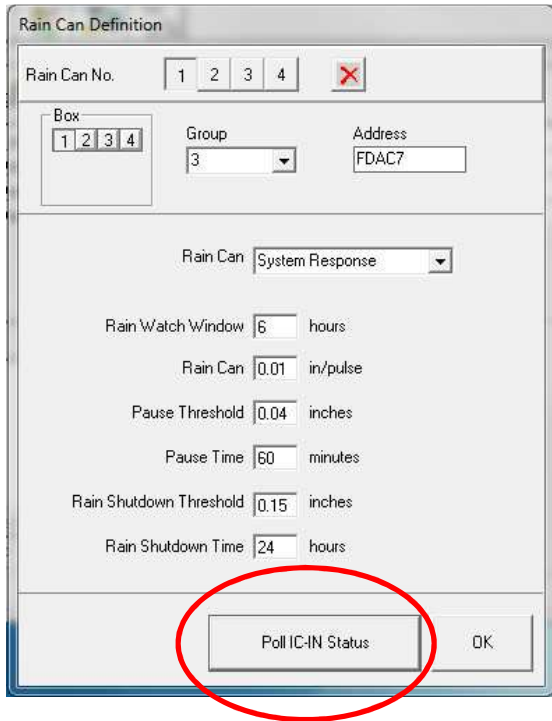
3. Use the Rain Can Definition window to select the Rain Can Number, ICI Box number, wire path Group number, and enter the IC-IN address as shown in the example below:



Up to four (4) Rain Cans may be defined in the system. Configuration of each is accomplished by:

- a. Select the Rain Can No. using the buttons at the top of the dialog.
 - b. Set Box number to the correct ICI.
 - c. Set Group number to the ICI wire path to which the IC-IN is connected.
 - d. Enter the Address from the barcode on the IC-IN device.
 - e. Other options are set as normal for the Rain Bird central control software.
4. Press OK to program the IC-IN module for RainWatch™ applications.

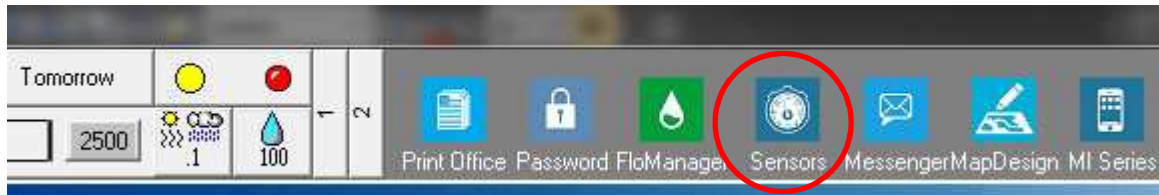
5. Verify IC-IN communication by clicking on the  button next to Rain Watch and re-opening the Rain Can Definition window.
 - a. In “Rain Can Definition”; click on Poll IC-IN Status, then click on Poll IC-IN to check the Sensor Status



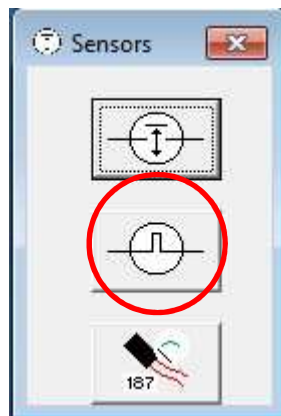
NOTE: Only Rain Can 1 may be used to provide a system wide response.

IC-IN Flo-Watch™ sensors should be connected to flow sensors producing a series of pulses at a rate proportional to flow rate. Pulse transmitters can be used to scale pulse rates appropriately for IC-IN. IC-IN can handle input pulses at a maximum rate of 1kHz, 1000 pulses/second at 50% duty cycle.

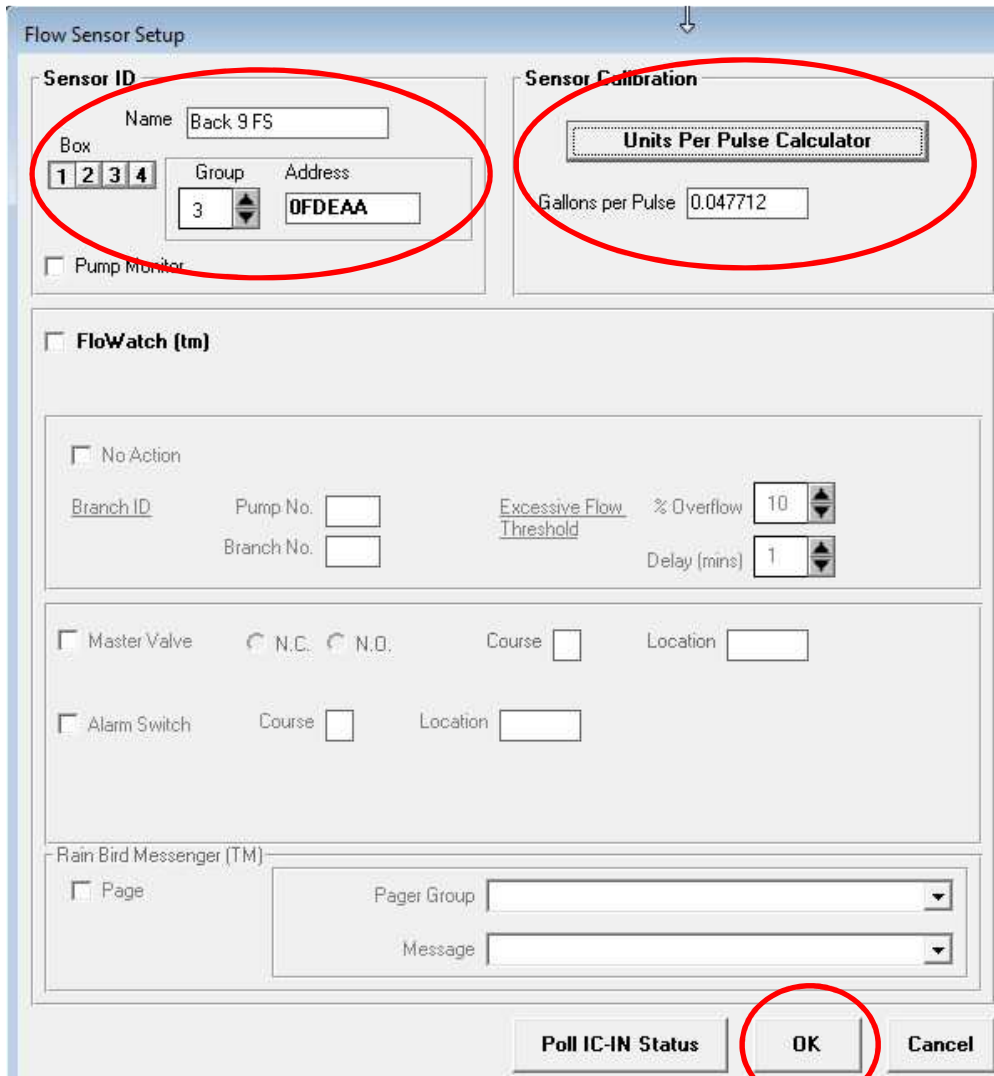
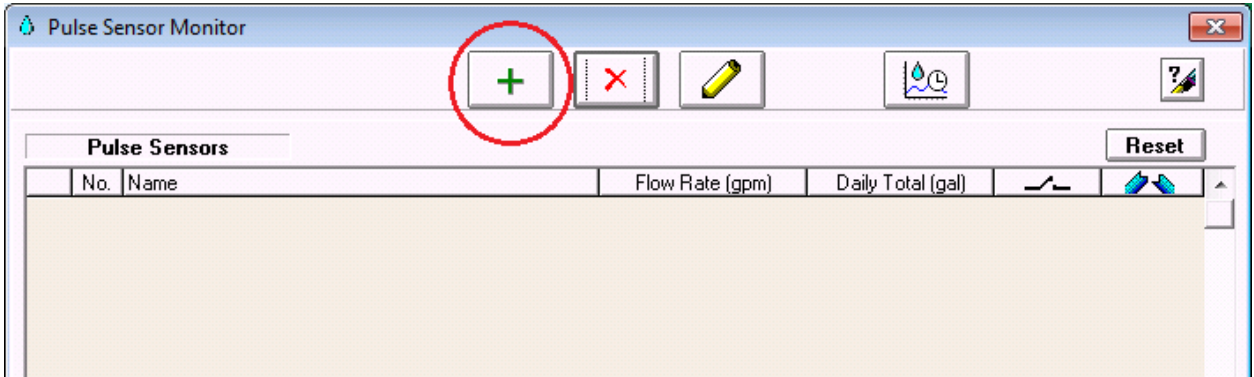
1. To add a new Flo-Watch™ sensor, select Sensors from the 2nd scroll screen in the front office of Rain Bird central control.



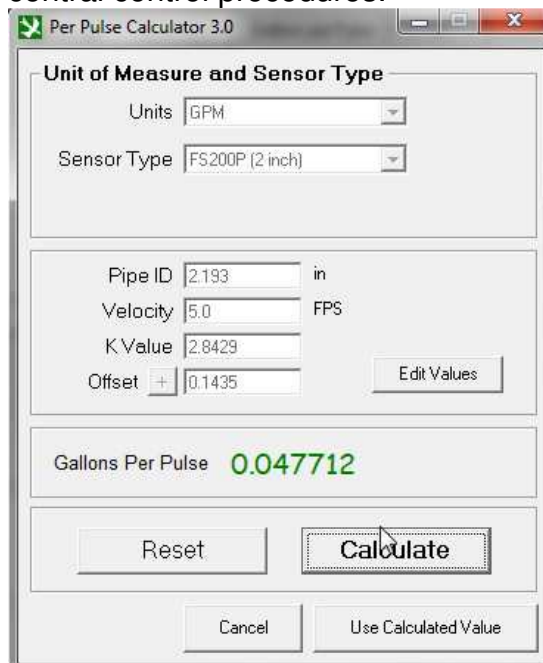
2. Select "Pulse Sensor" from the pop-up window.



- In the Pulse Sensor Monitor window, click the + icon to add a new sensor through the Flow Sensor Setup dialog:



4. Complete the “Flow Sensor Setup” details:
 - a. **Name** the entry for easy identification.
 - b. Set the **Address** to the IC-IN address from the barcode label.
 - c. Set the **Box** number to the ICI interface.
 - d. Set **Group** to the wire path to which the IC-IN is attached.
 - e. Use the **Units Per Pulse Calculator** to calculate (shown on next page) or directly enter the Gallons per Pulse value.
 - f. Configure Flo-Watch™ and Pump Monitor using normal Rain Bird central control procedures.



Per Pulse Calculator 3.0

Unit of Measure and Sensor Type

Units: GPM

Sensor Type: FS200P (2 inch)

Pipe ID: 2.193 in

Velocity: 5.0 FPS

K Value: 2.8429

Offset: + 0.1435

Edit Values

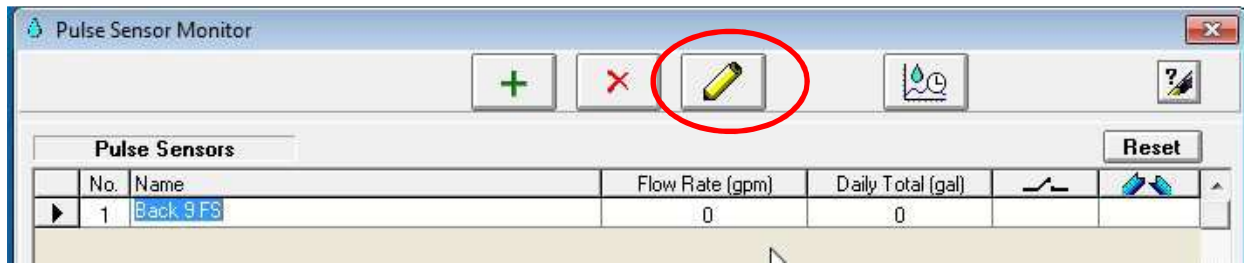
Gallons Per Pulse: 0.047712



Reset Calculate

Cancel Use Calculated Value

5. Press OK on the “Flow Sensor Setup” window to program the IC-IN module for Flo-Watch™ applications.

6. Verify IC-IN communication by selecting the Pulse Sensor name and clicking the “edit” button.



- a. In the “Flow Sensor Setup” window click on the “Poll IC-IN Status”  button to bring up the IC-IN Status window
- b. From the IC-IN status window click on “Poll IC-IN”  button to view the Sensor Status.

IC-IN Specifications

Operating Temperature:	14°F to 125°F (-10°C to 51°C)
Storage Temperature:	-40°F to 150°F (-40°C to 65.5°C)
Operating Humidity:	75% max at 40°F to 108°F (4.4°C to 42.2°C)
Storage Humidity:	75% max at 40°F to 108°F (4.4°C to 42.2°C)

Sensor Types Supported

Voltage	0-10VDC
Current	4-20mA DC
Contact Closure	
Pulse Counting	50% duty cycle 1kHz (max)
Pulses in 10 Seconds	50% duty cycle 1kHz (max)
Pulses per Second	50% duty cycle 1kHz (max)
IC System™ Field Wiring Voltage	26-28 VAC (max)



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1/2018