INSTRUCTION MANUAL
4 Port Wireless Receiver Model WIAR2
Wireless Water Intrusion Sensor Model WIAS2 / Wireless Freezing Pipe Sensor Model WIAS3

Contents of package:

- (1) 4 Port Wireless Receiver
- (3) 1" #6 Phillips head screws
- (3) Plastic anchor inserts
- (3) Molly bolts

Tools you will need:

- Phillips head screwdriver for #6 size screws
- Small awl
- Small hammer
- Magic marker

Other tools you may need:

- Drill w/ 3/16" masonry bit or 3/32" wood bit for pilot holes when installing a 4 Port Receiver on masonry or wood.

Product overview/Features:

- The model WIAR2 is a 4 Port Wireless Receiver that reacts to coded information received from wireless water intrusion and/or freezing pipe sensors. For example, wireless sensors can be placed in various locations, constantly checking for water intrusion or variations in temperature. The 4 Port Receiver can be placed in another location nearby and linked to a security system where alarm information is passed on to a centralized alarm center. The 4 Port Receiver can also be configured to take action on its own, shutting off water or vent pipes in the event of a water intrusion or temperature-related problem.

- The 4 Port Wireless Receiver receives status information from each sensor every 24 hours, indicating the ability of the sensor to operate properly and provide warning, alarm and/or electrical closures to other systems when there is a water intrusion or temperature related problem. The 4 Port Wireless Receiver also has the ability to make dynamic tests of the standby battery to make sure there is sufficient battery life when commercial power fails. The LED's on the 4 Port Wireless Receiver will light when there is a problem, such as the failure of a sensor to perform a daily check-in or the presence of a *warning* or *alarm* condition.

- Whenever there is a problem, such as the failure of a sensor to check-in or the presence of an Alarm condition, the 4 Port Wireless Receiver displays the number of the sensor reporting a problem. If one sensor is reporting an alarm and another has failed to check-in, the 4 Port Wireless Receiver's display will scroll through both numbers and the corresponding red LED will light.

Getting Started:

- Before you mount any sensors, **choose a location for the 4 Port Wireless Receiver**. Consider the space between the 4 Port Receiver and where you plan to mount the wireless sensors, are there steel cabinets, machinery, etc., near the antenna, at either end, that might interfere with the transmission of signals? Sensors can typically communicate with a 4 Port Receiver up to 350 feet away, a more than adequate range for most installations.

- An ideal place for the 4 Port Wireless Receiver is on a wall about 5 feet off the floor, away from steel cabinets, machinery, etc. A **mounting height** of 5 feet is good for reading the receiver's display.

Mounting the 4 Port Wireless Receiver:

- Once you have found a suitable location away from steel cabinets, machinery, etc., you can mount the 4 Port Wireless Receiver. Use one of the screws provided to hang the 4 Port Receiver from the plastic molding on the back of the unit. Now, using the 2 mounting holes on the bottom of the receiver you can proceed to secure the unit to the wall with the provided screws. For installations on a wooden wall, using a 3/32" drill bit, drill pilot holes in the marked spots and attach the sensor to the wall with the #6 screws provided. For sheet-rock or other hollow walls, use the 3 Molly bolts provided. For concrete walls, drill pilot holes with a 3/16" masonry drill bit, insert

the 3 plastic anchors provided and secure the sensor to the wall using the #6 screws provided.

I. Using the 4 Port Wireless Receiver with wireless sensors:

1. Sensor Basics

- The model WIAS2 Wireless Water Intrusion Sensor is a wireless sensor designed for early detection of water. This is particularly useful where water can cause damage to valuable assets; such as in rooms that house computers that house computers and telecommunications equipment, power distribution vaults and record keeping areas.

Wireless Water Intrusion Sensor Model WIAS2

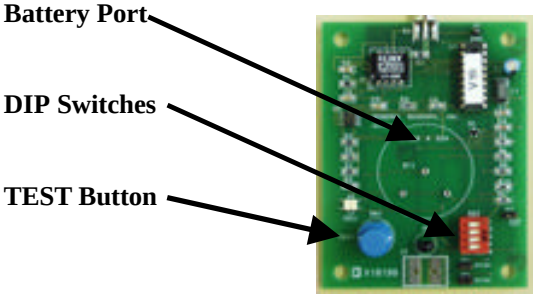

figure 1

- The WIAS3 Wireless Freezing Pipe Sensor is a wireless sensor designed to sense air and pipe temperature. The unit delivers a warning when air temperature drops below 39°F and an alarm when the pipe temperature dips below 34°F. This is useful in unheated areas during the colder months when pipes are in danger of freezing.

Wireless Freezing Pipe Sensor Model WIAS3

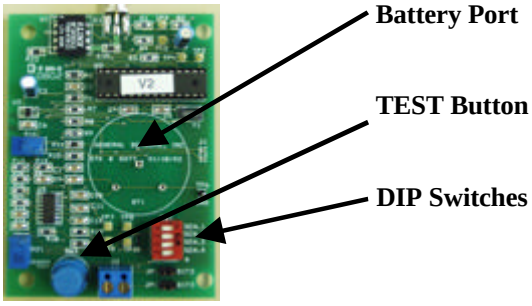

figure 2

- Each sensor linked to the 4 Port Receiver has a different sensor number so that the receiver can identify which sensor is sending data. If there is a water intrusion or temperature-related problem it is crucial to know which sensor is reporting a problem.

4 Port WirelessReceiver Model WIAR2

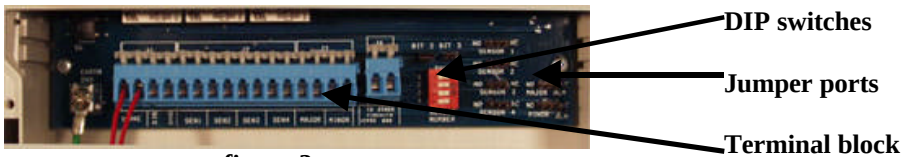

figure 3

2. Installing wireless sensors with the 4 Port Wireless Receiver

- To install multiple wireless sensors you will have to set the DIP switch on the 4 Port Receiver so that it knows how many sensors it should monitor and can identify each one individually. The 4 Port Receiver has a DIP switch located in the bottom right corner of the circuit board labeled SW1 that indicates which sensors are active. When a sensor is active the corresponding switch must be in the *On* position. For example, if you are using 4 wireless sensors you want to make sure that all 4 of the DIP switches on the 4 Port Receiver are in the On position.

- The 4 Port Receiver can have up to 4 sensors on its system. To communicate individually with the 4 Port Receiver **the DIP switches on each wireless sensor must**

be configured as shown in the table below. If the sensor's DIP switches are not set as shown below the 4 Port Receiver will not get a valid message.

Sensor#	DIP switch Pos. 4	DIP switch Pos. 3	DIP switch Pos. 2	DIP switch Pos. 1
1	On	On	On	On
2	On	On	On	**Off**
3	On	On	**Off**	On
4	On	On	**Off**	**Off**

3. Installing the batteries and testing the sensor codes:

- The **DIP switches must be set** before you install the sensor batteries.
- Unwrap the protective plastic from each battery. Note that the battery pins are off center, meaning that there is only one way to **insert the battery** in the center of each sensor's printed circuit board.(**see fig.1&2**). There is a small arrow on one side of the battery indicating the top position of the battery as it fits in the pin sockets. Make sure the pins are straight and push the battery into the pin sockets.
- Now you can **test the sensor** to make sure the sensors can communicate with the 4 Port Receiver. Before mounting the sensor in its final location, bring it up close to the 4 Port Wireless Receiver and press the *Test* button on the sensor's printed circuit board. (Note: you must mount the Single Port Receiver and connect it to a 16VAC power source before testing.) If the code matches, the receiver's display will indicate which sensor you are testing and scroll through its LED's. If the test is successful you can proceed to section 4 and install the sensor.
- If the receiver does NOT scroll through its display it means the system is not communicating properly. Check the DIP switch settings on both the sensor and the receiver. Refer again to the table in section 2 and change the settings accordingly**. Before you change the DIP switch settings you must remove the battery in the sensor and then reinstall it or the microcomputer in the units will not recognize the change**. Once you change the setting, push the red *Reset* button on the front of the receiver. Now test the sensor again by pressing the *Test* button. If the sensor number comes up and the receiver scrolls through its LED display you can move ahead to the instructions on how to install the sensor.

4a. Choosing a place to mount a Water Intrusion Action Sensor:

- A Wireless Water Intrusion sensor should be mounted where it cannot be tripped on, kicked or run over. **An ideal place for the sensor** is in a corner, or the lowest point in a room, as close as possible to the assets the sensor is protecting.

4b. Choosing a place to mount a Wireless Freezing Pipe Sensor:

- A Wireless Freezing Pipe sensor should be mounted as close as possible to the pipe it is going to protect. An ideal place for the sensor is on a wall directly above the pipe you want to monitor and in a visible spot so you can read the sensor's LED display.

5. Establishing a communication link between the 4 Port Receiver and wireless sensors:

- Once you have selected good locations for mounting the sensors you must **make sure the receiver can pick up the sensors' coded signals from their new locations**. Place each sensor in an upright position on the floor or near the pipe where they are going to be mounted and push the *Test* button on one of the sensors. Now walk over to the 4 Port Receiver and check to see if the sensor number is displayed and the LED's are scrolling. If they are scrolling, push the receiver's red *Reset* button. This puts the 4 Port Receiver in active mode. Repeat this test for each of the sensors connected to the 4 Port Receiver.
- If the sensor number did not come up and the receiver is NOT scrolling, it did not receive the signal from the sensor. (If you previously made sure the sensor numbers matched, that is not the problem.) **Try a different location for the sensor**, away from any machinery and/or closer to the receiver. Now push the sensor's *Test* button again from the new location and check the receiver to see if it is scrolling. If these tests fail then the installation of a Wireless Repeater, model WIAR3, will likely be necessary to boost the link needed between the sensor and the 4 Port Receiver.

6a. Mounting a Wireless Water Intrusion Sensor:

- Place each sensor against the wall where it is going to be mounted and **make sure that the end of the probe is flat on the floor**. Mark the 4 mounting holes with a small awl. For installations on a wooden wall, using a 3/32" drill bit, drill 4 pilot holes in the marked spots and attach the sensor to the wall with the 4 #6 screws provided. For sheet-rock or other hollow walls, use the 4 Molly bolts provided. For concrete walls, drill pilot holes with a 3/16" masonry drill bit, insert the 4 plastic anchors provided and secure the sensor to the wall using the #6 screws provided.

6b. Mounting a Wireless Freezing Pipe Sensor

- Place each sensor against the wall where it is going to be mounted and **make sure that the end of the temperature sensor probe reaches the pipe** you want to monitor. Mark the 4 mounting holes with a small awl. For installations on a wooden wall, using a 3/32" drill bit, drill 4 pilot holes in the marked spots and attach the sensor to the wall with the 4 #6 screws provided. For sheet-rock or other hollow walls, use the 4 Molly bolts provided. For concrete walls, drill pilot holes with a 3/16" masonry drill bit, insert the 4 plastic anchors provided and secure the sensor to the wall using the #6 screws provided. Now take the length of insulated tape provided with each Wireless Freezing Pipe sensor and secure the probe with the tape by wrapping it around the pipe.

7a. Final Test of the Wireless Water Intrusion Sensor:

- Once a Wireless Water Sensor and its matching receiver are mounted and a communication link is established you can make a **final test** of the system.

- Test the sensor by splashing water around the base, **making sure that both sides of the probe come into contact with the water**. The microcomputer in the sensor will perform a series of tests to ensure it is a true water intrusion problem, which will take about 10 seconds. At the end of that time, the sensor will transmit a coded signal to the receiver indicating a water intrusion problem. The red LED on the receiver labeled ALARM will blink and the beeper will sound. If the receiver worked as described, the system is operating properly. To clear the alarm, push the red Reset button. Another alarm will sound in 15 minutes if you don't clean up the water spill and dry the probes.

- If you splashed water on the sensor probes and the *Alarm* LED does not blink and the beeper does not sound, try again, making sure both probe leads are covered by water. Wait 10 seconds check to see if the receiver's display is showing an *Alarm*. If it is not showing an *Alarm*, call General Sensors Inc., technical support at **1-800-778-0836** for assistance.

7b. Final Test of the Wireless Freezing Pipe Sensor:

- The Wireless Freezing Pipe Sensor has been rigorously tested by General Sensors Inc., to deliver a warning when the temperature reaches 39°F and an alarm when the temperature reaches 34°F. If the Wireless Freezing Pipe Sensor and its matching receiver are communicating as described in step #5, the sensor is operating properly and you have nothing left to do.

II. How to configure the 4 Port Receiver to take action:

1. Basics

- Once the 4 Port Wireless Receiver is mounted in its ultimate location and is communicating properly with its corresponding sensors, you can configure the system to work in conjunction with a Central Alarm Station (CAS) or to take local action to address a water intrusion or temperature-related problem.

- The wire terminations on the terminal block of the 4 Port Wireless Receiver are located in the middle of the receiver's printed circuit board. The function of each pair of terminal connections (Disable, Major alarm, etc.) is listed directly below the terminal block itself.(**see fig.3**).

- **Please Note: Terminal connections are always made in twos**, meaning two wires are always required to power the unit, provide closures to a CAS or a local control circuit. You should also note that when we

refer to signal closures we mean that low voltage signals, a maximum of 24VDC, are used to communicate from one system to another. Therefore, **voltages such as 120V AC are never used by the 4 Port Wireless Receiver**.

- For best results, General Sensor's recommends that you **always use 22 AWG, stranded wire when making terminal block connections**.

2. Wire Terminations and Functions:

- The table below details the function of each terminal of the 4 Port Wireless Receiver. Use the table as a guide to assist in setting up the receiver to communicate with a CAS or to take local action to address a water intrusion or temperature-related problem.

Terminal:	Function:	Connects to:	Notes:
EARTH GND	**Ground**	**Earth Ground**	**Required**. To protect the electronic circuitry. The terminal should always be connected to earth ground.
16VAC	**Power**	**16VAC**	**Required**.
DIS	**Disable Function**	Positive input from system that initiates **Disable** function.	**Optional**, but must be made if the **Disable** feature is used. Connects to another system that provides a signal closure back to the receiver. *Useful when there is a need to disable the receiver from taking any action in the event of a water intrusion or temperature related problem.*
GND	**Disable Function**	Negative(ground) input to system that completes the **Disable** circuit	**Optional**, but must be made if the **Disable** function is used.(see above).
SEN 1	**Signal closure/ Signal open**	**Local Control Circuit**	**Optional**. Provides signal closure to normally open circuit (place jumper labeled "SEN 1" in NO position) or normally closed circuit (place jumper labeled "SEN 1" in NC position). This is the connection to a **local control** circuit to shut off water, vent pipes, etc.
SEN 2	**Signal closure/ Signal open**	**Local Control Circuit**	**Optional**. Provides signal closure to normally open circuit (place jumper labeled "SEN 2" in NO position) or CAS normally closed circuit (place jumper labeled "SEN 2" in NC position). This is the connection to a **local control** circuit to shut off water, vent pipes, etc.
SEN 3	**Signal closure/ Signal open**	**Local Control Circuit**	**Optional**. Provides signal closure to normally open circuit (place jumper labeled "SEN 3" in NO position) or CAS normally closed circuit (place jumper labeled "SEN 3" in NC position). This is the connection to a **local control** circuit to shut off water, vent pipes, etc.
SEN 4	**Signal closure/ Signal open**	**Local Control Circuit**	**Optional**. Provides signal closure to normally open circuit (place jumper labeled "SEN 4" in NO position) or CAS normally closed circuit (place jumper labeled "SEN 4" in NC position). This is a connection to a **local control** circuit to shut off water, vent pipes, etc.
MAJOR	**Major Alarm**	**Central Alarm Station(CAS), Building Automation System, etc.**	**Optional**. Provides signal closure to CAS normally open circuit (place jumper labeled "MAJOR ALM" in NO position) or CAS normally closed circuit (place jumper labeled "MAJOR ALM" in NC position). This is a **Major Alarm**, indicating that some serious problem has occurred that requires immediate action.
MINOR	**Minor Alarm**	**Central Alarm Station(CAS), Building Automation System, etc.**	**Optional**. Provides signal closure to normally open circuit (place jumper labeled "MINOR ALM" in NO position) or CAS normally closed circuit (place jumper labeled "MINOR ALM" in NC position). This is a **Minor Alarm**, such as a low battery condition.
To other circuits (12VDC/ Ground)	**Power**	**Sensor that require 12VDC for operation**	**Optional**. These terminals provide 12VDC power (and stand-by battery) to another system if needed. **Please Note: The 4 Port Receiver will not operate properly if the other system drains more than 250mA. Standby battery life will be shortened when other circuits are supplied with power.**

Technical Specifications

Weight: 4 Lbs. 3 oz.
Size:
Power Supply: 16 Volt AC input @ 20VA
Current Draw: Idle State= 0.12A @ 16VAC
Alarm Condition: 0.2A @16VAC
Standby Battery: 12V, 2.2Ah

Alarm Outputs:

Major Alarm: NO or NC (select by jumper)
Minor Alarm: NO or NC(select by jumper)
4 Individual Sensors: NO or NC (select by jumpers)

Please Note: These are low voltage signal closures, they are not for 110VAC operation. Contacts rated for a maximum of 24VDC and 300 mA.

Automatic Testing of Sensors:

-Failure of sensor to check in every 24 hours: Minor Alarm

-Temperature sensor indicates temp. below 39°: Minor Alarm

-Sensor failed self test : Minor Alarm

-Sensor has low battery : Minor Alarm

-Water Intrusion sensor shows presence of water: Major Alarm

-Temperature sensor indicates temp. below 34°F: Major Alarm

Automatic Testing of 4 Port Receiver:

-Normal Power: LED changes from GREEN when commercial or Battery Back-up power is used to RED when on standby battery.

-Battery Fully Charged: GREEN LED is lit when battery is fully charged

-Battery Life Test: Every 3 months a dynamic test is made of the battery life. If the battery fails the test a minor alarm is sent to the CAS.

FCC Statement

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.
-Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

CAUTION

For U.S. and Canada installations: The wireless radios are required to comply with FCC rules and regulations as well as Canada rules and regulations. Consequently, the radios have limited range because of their limited output power under these rules.

Changes cannot be made to these devices because such changes may void compliance with U.S. and Canadian rules and regulations.

Transmitters send a normal check-in message four times. Alarm messages are sent twelve times. However, a receiver can respond to only one message at a time, and consequently a message may be missed or blocked by radio signals that occur on or near their operating frequencies, regardless of code settings.

Distributors and dealers should have a general knowledge of wireless operations and typical problems encountered with such equipment. It is important that this be conveyed to end users.

Warranty

For a period of three (3) years from the date General Sensors Inc., order document is received upon purchase of equipment, General Sensors Inc., warrants to the original customer that the equipment is free from manufacturing defects. This warranty is void if the equipment has been subject to improper or abnormal use. If a manufacturing defect is discovered during the stated warranty period, the defective equipment must be returned to General Sensors Inc., for repair. All transportation costs for return will be borne by the customer. General Sensors Inc. will make a best effort to expedite the repair and return of repaired products.

The foregoing warranty is exclusive and in lieu of all other warranties, express or implied, whether oral or arising by usage of trade or course of dealing, including, without limitation, any warranties of fitness or merchantability. This warranty is the purchaser's sole and exclusive remedy. In no event shall General Sensors be liable for any anticipated or lost profits, incidental damages, consequential damages or other losses, whether based on breach of contract, tortious conduct or any other theory, incurred in connection with the purchase, installation, repair or operation of sensors and receivers. General Sensors Inc. does not authorize anyone to assume for it any liability or make on its behalf any additional warranties**.**