

OPERATION

This manual contains instructions for the IRR-4S only. For specific information on the adjustment and operation of your Niles Infrared system, please refer to the instruction manual included with your Niles Main System Unit (IRP-2, IRP-6A, IRZ-6A).

Operation of the IRR-4S is simple. Aim your hand-held remote at the IRR-4S. Your IR command is instantly repeated to your A/V equipment. A green "flash-back" LED on the IRR-4S visually confirms remote control operation.

Troubleshooting

The "flash-back" LED on the front of the IRR-4S is a useful troubleshooting aid.

The LED should light only when a remote command is being received.

SPECIFICATIONS

IR System

Compatible with virtually all brands of remotes using carrier frequencies between 26 and 60 kHz

IR Receiving Range

Varies depending on remote strength; 18-30' typical

IR Receiving Angle

60° off-axis (horizontal and vertical) at 18'

If the IRR-4S does not work, and the LED does not light at all:

1. Test the remote control(s) by operating the A/V equipment directly. Replace the batteries if needed.
2. Double check the cable connections on all IRR-4S's and on the Main System Unit. Look for open, shorted or reversed wires.

If the IRR-4S does not work, and the LED remains solidly lit:

1. Double check the cable connections on all IRR-4S's and on the Main System Unit. Look for shorted or reversed wires.
2. Test for interference from the following sources:
 - Reduce the amount of sunlight in the area of the IRR-4S.
 - Turn off florescent, neon or

halogen lights in the room.

- Turn off light dimmers, beginning with those closest to the IRR-4S.

Observe the IRR-4S LED while performing all the tests. It is possible to have interference from more than one source.

There are many methods for reducing interference. Which solution is best for you depends on your situation. Contact Niles Technical Support at 1-800-289-4434 if you require further assistance.

If the LED on the IRR-4S "flickers" dimly, and the IRR-4S functions normally, there is no cause for concern.

Mounting

In-wall, fits into most 18 cubic. in. single-gang electrical boxes at least 2 3/4" deep, Standard-style wall plate

Wiring Requirements

Individual "home-runs" of 2-conductor shielded cable, West Penn D291 or equivalent

Unit Dimensions

1 5/8" wide x 2 5/8" high

Face Plate Dimensions

Standard wall plate; 2 3/4" wide x 4 1/2" high

Depth Behind Plate

2 3/4"

INSTALLATION & OPERATION GUIDE

MODEL IRR-4S WALL-MOUNT INFRARED SENSOR

INTRODUCTION

The IRR-4S is a wall-mount, infrared sensor which uses a standard-style wall plate and is designed for use with the Niles Infrared Repeating and IR Routing Systems.

Installed in a remote room location, the IRR-4S receives the IR commands transmitted from your existing hand-held remotes in that room. The commands are carried via a small 2-conductor shielded cable to your A/V

equipment in another room, and instantly "repeated".

The IRR-4S is compatible with all current Niles infrared systems. It may be used along with, or as an alternative to, the Niles IRR-4D, SCW-UIR, TIR-1, MS-1, MS-2 and CMS-3 IR sensors.

The IRR-4S is just one of the three building blocks necessary to complete a Niles IR repeating system:

• **Main System Unit**—Models IRZ-6A, IRP-6A or IRP-2.

• **IR Sensors**—Models IRR-4S, IRR-4D, SCW-UIR, TIR-1, MS-1, MS-2 and CMS-3.

• **IR Flashers**—Models IRC-1, IRC-2, IRW-1 and IRW-2.

An expansion unit, Model XRP-6A, is available for IR repeater systems used in more than six rooms.

FEATURES & BENEFITS

The IRR-4S offers a number of improvements over other in-wall IR sensors.

- Universal system—compatible with most brands of A/V equipment and remotes using carrier frequencies 26 to 60 kHz.
- Greater IR receiving range—18 to 30 feet of remote control range instead of the typical 15 to 25 (depending upon the remote control, actual range may vary).

- 100% factory tested for pickup range and angle.
- Green "flash-back" L.E.D. visually confirms remote control operation.
- Simple 3-wire hookup.
- Removable connector simplifies installation.
- Mounting depth of 2 3/4" fits into most standard 18 cubic. inch 1-gang electrical boxes.

- Printed circuit board design uses no hand wiring, assuring high reliability.
- Ideal for both home and commercial installations.
- Available colors: White, Bone, Almond, or Black.
- Two year parts and labor warranty.
- Proudly made in the USA.



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INSTALLATION CONSIDERATIONS

The IRR-4S is a standard-style wall plate module and is designed to use standard-style cover plates (included) and mounting hardware (included).

P-Rings and Electrical Boxes

The mounting depth of the IRR-4S is 2 3/4". When installed, the unit extends 2 1/4" behind the drywall (assuming 1/2" drywall). For installation, you must choose between a standard light switch plaster ring (p-ring) or a standard 18 cubic inch (or larger) electrical box. Suitable p-rings and electrical boxes are available from your Niles dealer or local electrical supply company. Using the p-ring is best because it gives you unobstructed access to the full depth of the wall. In some instances, the use of a p-ring may be inappropriate, such as in a retro-fit (existing) installation, or when building codes require that wall devices be enclosed in electrical boxes. Contact your local building code and inspection department if unsure.

Type of Cable

The IRR-4S connects to the Niles Infrared Systems with an individual "home run" (wired directly) of 2-conductor shielded cable. Recommended cables are West Penn D291, Belden 8761, Carol C2516 or equivalent, made of two 22 gauge (or larger) conductors surrounded by a foil shield and a bare drain (ground) wire.

DO NOT USE UNSHIELDED CABLE WITH THE IRR-4S.

When running wires inside walls, most states and municipalities in the U.S. specify that you must use a special type of wire. Usually, the requirement is that the wire has a specific "CL" fire rating, such as "CL-2" or "CL-3". Consult your Niles dealer, building contractor, or local building and inspection department if unsure about which type of wire is best for your application.

IRR-4S Mounting Location

Locating the IRR-4S in the center of a room usually results in the most even IR receiving coverage, especially if the room is square shaped. Rooms that are L-shaped or long and narrow require more careful consideration. With these types of rooms, installing the IRR-4S closest to the primary location of the user will ensure the best performance.

Receiving Range & Pickup Angle

The receiving range of the IRR-4S will vary according to the IR output strength of the remote control being used. Remote strength varies among brands depending on the number and size of batteries used, and how many IR emitters the remote has. For example, remotes that operate on two small AAA batteries and have only one IR emitter are generally not as strong as remotes that use the larger AA size batteries and have two emitters. Tests with various manufacturers' remote controls have shown that the operating range can vary from a minimum of 18 ft. to a maximum of about 30 ft.

Infrared signals travel essentially line-of-sight. They will not pass through or around solid objects. Do not rely on an IR signal being able to "bounce" off a wall or object to the IRR-4S.

The IR pickup angle of the IRR-4S is 60° off-axis (horizontal and vertical) at 18 feet.

Avoiding Interference

As with any type of IR sensor, avoid locating the IRR-4S where it will be exposed to direct sunlight. The sun emits an enormous amount of IR energy, many times stronger than that of a hand-held remote. Although the AGC circuitry in the IRR-4S automatically compensates for ambient sunlight, keep in mind that the less sunlight the IRR-4S receives, the better the range of the remotes.

Installing the IRR-4S outdoors is not recommended. During daylight hours, you will experience poor range and/or interference.

Avoid locating the IRR-4S near potential sources of electrical or optical noise, such as light dimmers, florescent lighting fixtures, low-voltage lights, and TV's (both tube-type and projection-type).

DO NOT INSTALL THE IRR-4S INTO ELECTRICAL BOXES WITH 110 VOLT DEVICES.

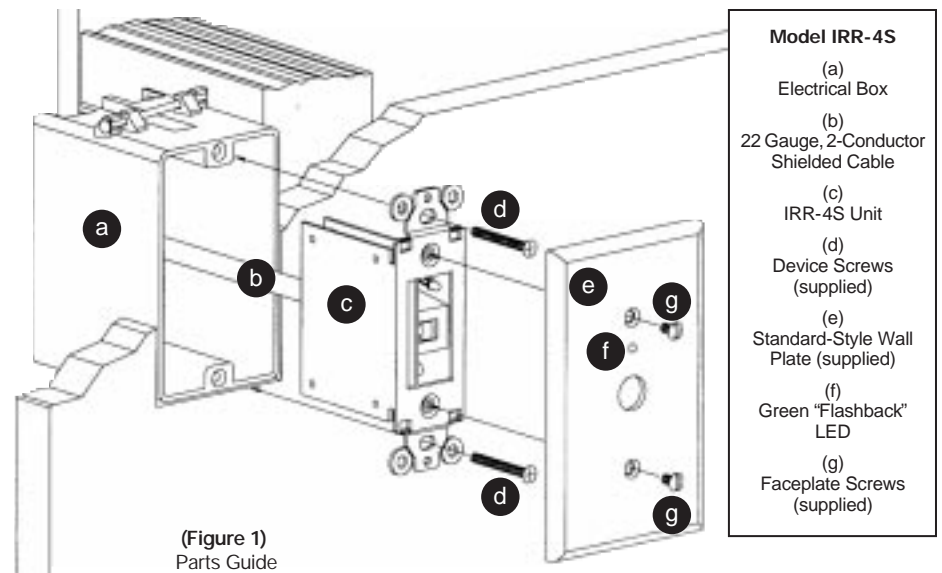
Some states or municipalities allow devices such as the IRR-4S to be installed into the same electrical box as 110 volt devices, provided a "low-voltage partition" is used between the devices. We do not recommend this. The cable connected to the IRR-4S can act as an "antenna" for electrical noise. Locating the IRR-4S cable close to a light dimmer or switch may interfere with the IRR-4S. If you must locate the unit near electrical devices, install it in a separate metal electrical box, ground the box to the electrical system ground, and route the IRR-4S cable several feet away from all electrical wiring.

Avoiding Optical Feedback

If installing the IRR-4S in the same room as an IR flasher, it is possible for the flasher's IR output to be picked-up by the IRR-4S. This effect, known as an optical feedback loop, can cause erratic operation.

To avoid optical feedback:

1. Lower the output power of the flasher(s) using the variable flasher level control(s) on the Niles Main System Units (IRP/IRZ units).
2. Re-position the flasher(s) and/or the sensor.
3. Use Niles IRC-2 flashers and cover them with the IR blockers (supplied with the IRC-2).



(Figure 1)
Parts Guide

INSTALLATION

If you are installing the IRR-4S into an existing wall, take time to consider any possible obstructions which may be hidden inside the wall, such as wood and metal studs; electrical, telephone or other types of wiring; plumbing; conduit; old wall safes; etc.

1. Install the electrical box or p-ring in the usual manner.
2. Run the cable to the IRR-4S. Label the cable for future reference. See (Figure 2).
3. Make the connections to the IRR-4S. Locate the connector on the IRR-4S and remove it [see

(Figure 3)]. Next, strip 1/4" of insulation from the end of each wire. Tightly twist the end of each wire until there are no frayed ends. Insert each wire into the appropriate hole on the removable connector block; secure the wiring to the connector by tightening the small connector screws. Double-check all connections. Plug the connector back into its socket on the IRR-4S.

IRR-4S Wiring Configuration

PIN 1 = RED (+12V DC)

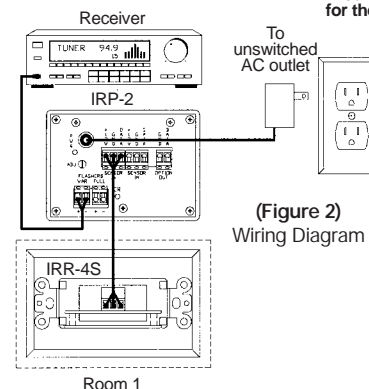
PIN 2 = BARE (GND)*

PIN 3 = BLACK (DATA)

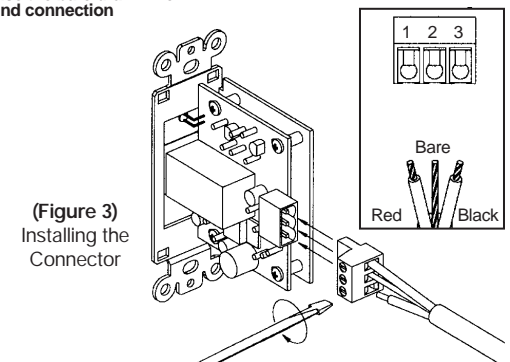
***You must use the bare drain wire for the ground connection**

NOTE: The color code shown above is for West Penn D291 IR cable. Actual color code of recommended cables may vary.

Secure the IRR-4S to the electrical box or p-ring. Insert the 1" long screws into the screw holes on the top and bottom of the IRR-4S. Position the IRR-4S so that the screws are aligned with the threaded holes in the electrical box or p-ring. Tighten the screws using a standard slotted screwdriver. DO NOT OVER-TIGHTEN. Line up all the screws in the same direction for a finished look.



(Figure 2)
Wiring Diagram



(Figure 3)
Installing the Connector