NILES®

INSTALLATION GUIDE

WALL-MOUNT IR SENSOR

WS110R

CONGRATULATIONS!

Thank you for choosing the **WS110R Wall-Mount Infrared Remote Sensor** from Niles. With proper installation and operation, you should enjoy years of trouble-free use.

Niles manufactures the industry's most complete line of custom installation components and accessories for audio/video systems. To see the complete Niles product assortment, visit us on the internet at: www.nilesaudio.com.

TABLE OF CONTENTS

Introduction	1
Contents	1
Features and Benefits	2
Installation Considerations	3
Installation	10
Operation	11
Troubleshooting	12
Specifications	15
Limited Warranty	16

INTRODUCTION

The Niles WS110R is a wall-mount, Decora® style IR sensor designed for use with the Niles infrared extender systems.

Installed in a remote room location, the WS110R receives the IR commands transmitted from your existing hand-held remotes in that room. The commands are carried via a CAT 5 cable to your A/V equipment in another room, and instantly "repeated".

The WS110R is compatible with all current Niles infrared systems. It may be used along with, or as an alternative to, the Niles TS110, MS110, MS210, and CS110 sensors or the IntelliPad®.

The WS110R is just one part of the three building blocks necessary to complete a Niles IR repeating system:

- ***IR Main System Unit****—Models MSU140, MSU250, MSU480 and MSU440Z.*
- ***IR Sensors/Keypads****—Models WS110R, TS110, MS110, MS210, CS110, and the IntelliPad®.*
- ***IR Flashers****—Models MF1, MF2, MF1VF, MF2VF and the IRB1.*

An IR sensor expansion hub, Model IRH610, is available to provide additional sensor inputs to your system.

CONTENTS

- WS110R Sensor
- Decora Insert
- Decora faceplate
- Removable Connector
- Device Mounting Screws (2)
- Faceplate Spaces (2)

FEATURES AND BENEFITS

The WS110R offers a number of improvements over other wall-mount IR sensors.

- *Plasma and LCD-proof performance— allows placement of the WS110R near plasma and LCD displays*
- *CFL interference resistant— expands installation flexibility to areas with fluorescent lighting*
- *Works under most lighting conditions, including indirect sunlight— eliminates environmental restrictions*
- *Universal system— compatible with virtually all brands of A/V equipment and remote controls*
- *Excellent IR receiving range— you get 20' to 35' of remote control range (depending upon the strength of your handheld remote)*
- *100% factory tested for pickup range and angle*
- *Small size of only 2-3/4" wide by 4-1/2" high by 1-1/4" deep — fits in a one-gang box*
- *Printed circuit board design uses surface mount technology (SMT), assuring high reliability*
- *Ideal for both home and commercial installations*
- *Removable Decora-style snap-in color insert (Available in four colors)*
- *Two year parts and labor warranty*

INSTALLATION CONSIDERATIONS

The WS110R is a Decora-style module and is designed to use standard Decora-style cover plates and mounting hardware. Decora cover plates (up to 6-gang) with color-matched plate screws are available from your Niles dealer.

TOOLS REQUIRED

- *1/8" Standard Slotted Screwdriver*
- *1/4" Standard Slotted Screwdriver*
- *Wire Stripper*

TYPE OF CABLE

The WS110R connects to the Niles infrared main systems unit or IRH610 sensor expansion hub with an individual home run of CAT 5 cable. 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.

WS110R MOUNTING LOCATION

Locating the WS110R 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 WS110R closest to the primary location of the user will ensure the best performance.

INSTALLATION CONSIDERATIONS *(CONTINUED)*

RECEIVING RANGE AND PICKUP ANGLE

The receiving range of the WS110R 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 20' to a maximum of about 35'.

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 WS110R. The IR pickup angle of the WS110R is 60° off-axis (horizontal and vertical) at 20'.

JUNCTION BOXES

The mounting depth of the WS110R is 1-1/4". When installed, the unit extends 3/4" behind the sheetrock wall (assuming 1/2" sheetrock). Suitable electrical boxes are available from your Niles dealer or local electrical supply company.

DO NOT INSTALL THE WS110R INTO ELECTRICAL BOXES WITH 110 VOLT DEVICES.

Some states or municipalities allow devices such as the WS110R 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 WS110R can act as an "antenna" for electrical noise. Locating the WS110R cable too close to a light dimmer or switch may interfere with

INSTALLATION CONSIDERATIONS *(CONTINUED)*

the WS110R. If you must locate the WS110R near electrical devices, install it in a separate metal electrical box, ground the box to the electrical system ground, and route the WS110R cable several feet away from all electrical wiring.

AVOIDING INTERFERENCE

The WS110R is designed to work in most applications including plasma and LCD displays and in areas where CFL lighting and indirect sunlight are present. You should avoid locating the WS110R near potential sources of electrical or optical noise, such as light dimmers or low-voltage lights. Avoid locating the WS110R near any potential sources of electrical or optical noise, such as light dimmers, low-voltage lights, and neon lights.

AVOIDING OPTICAL FEEDBACK

If installing the WS110R in the same room as an IR flasher, it is possible for the flasher's IR output to be picked-up by the WS110R. This effect, known as an optical feedback loop, can cause erratic operation. Optical feedback is similar to acoustical feedback: the howling or whistling sound heard in a P.A. system when the microphone is too close to the speaker. To avoid optical feedback:

1. Re-position the flasher(s) and/or the sensor.

2. Use Niles MF1 or MF2 flashers and cover them with the supplied IR blockers.

INSTALLATION CONSIDERATIONS *(CONTINUED)*

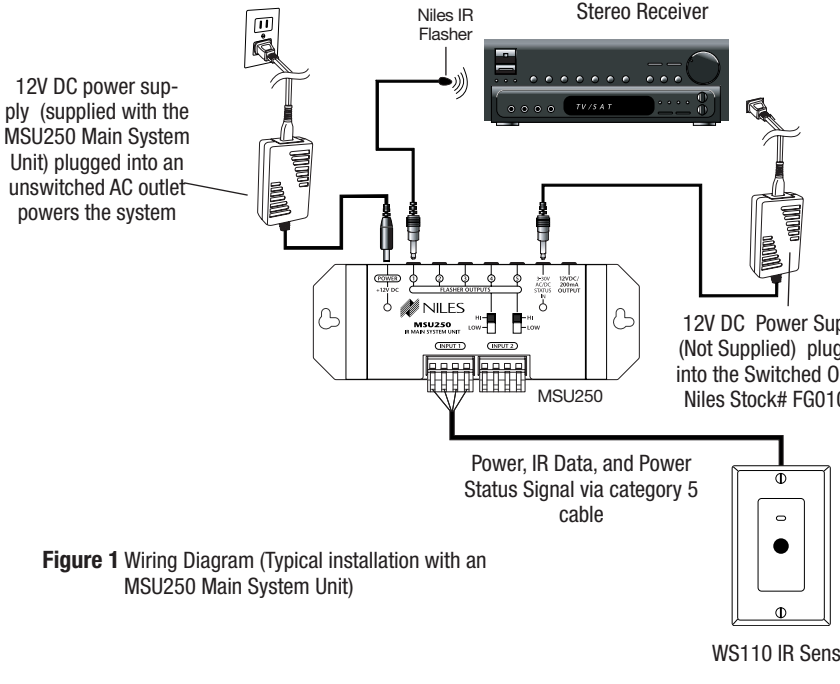

Figure 1 Wiring Diagram (Typical installation with an MSU250 Main System Unit)

INSTALLATION CONSIDERATIONS *(CONTINUED)*

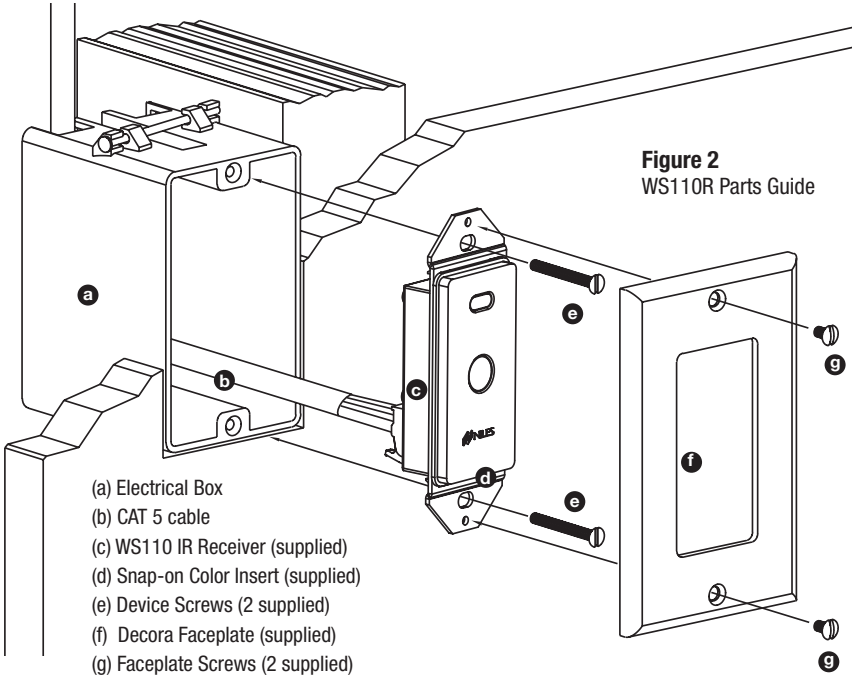

Figure 2
WS110R Parts Guide

(a) Electrical Box
(b) CAT 5 cable
(c) WS110 IR Receiver (supplied)
(d) Snap-on Color Insert (supplied)
(e) Device Screws (2 supplied)
(f) Decora Faceplate (supplied)
(g) Faceplate Screws (2 supplied)

INSTALLATION CONSIDERATIONS *(CONTINUED)*

CHANGING THE COLOR OF THE WS110R

The Decora-style insert on the WS110R is removable, allowing fast and easy color changes as needed. Inserts are available in a variety of colors.

If you need to change the color of the WS110R:

1. *Obtain the WS110R Decora-style insert in the desired color from your Niles dealer.*
2. *Hold the WS110R as shown in* **Figure 3***. Locate the two plastic mounting tabs at the top rear of the Decora-style insert. Using two fingers, simultaneously press both tabs down (towards the center of the insert) and forward (away from you) until the insert pops free from its mounting slots.*
3. *Locate the new Decora-style insert. Hold the WS110R so that it is facing you. Insert the two bottom tabs into the bottom slots first, followed by the two tabs on the top. Snap the insert into place by carefully pressing on the front of the insert.*

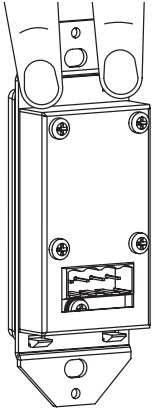

Figure 3 Removing the Decora-style Insert

TECH TIP: Do not exert excessive pressure on the plastic mounting tabs.

INSTALLATION CONSIDERATIONS *(CONTINUED)*

USING THE WS110R WITH THE INTELLIPAD CI SYSTEM.

The WS110R is fully compatible with the Niles Intellipad Ci line, follow the wiring instructions in **Figure 4**. For specific information see your Intellipad Ci manual.

Figure 4 This color code is based on the industry standard T568A coding for the RJ45 connector. When connecting the WS110R to the Niles Ci system observe this pin configuration.

INSTALLATION

If you are installing the WS110R into an existing wall, take time to consider any possible obstructions which may be hidden inside the wall, such as wood or metal studs, electrical, telephone or other types of wiring, plumbing, AC or heating conduit, etc.

1. *Locate the connector plug.*
2. *Strip 1/4" of insulation from the end of each wire.*
3. *Use a small flathead screwdriver or your thumbnail to raise the locking tabs, exposing the holes on the removable connector plug.*
4. *Insert each wire into the appropriate hole on the removable connector plug, and snap the locking tab down. To help you, the connector plug is keyed. Insert the smooth side of the connector plug into the smooth side of the socket. Don't force the scalloped side of the connector plug into the smooth side of the socket. (***Figure 5***)*
5. *Use the shorter plate screws to fasten the Decora cover plate to the WS110R. DO NOT OVER-TIGHTEN THE PLATE SCREWS OR YOU MAY DAMAGE THE COVER PLATE. Line up all the screws in the same direction for a finished look.*

NOTE: Certain "old work" or "retro-fit" boxes, such as the Carlon B225R, have a plastic "lip" which interferes with the Decora plate screws. This lip prevents you from being able to tighten these screws completely. To make the clearance necessary for these screws, you must remove the parts of the lip causing the interference. There are two ways to accomplish this:

1. *Drill through the lip of the box at the screw points.*
2. *Cut notches into the lip with a pair of diagonal cutters.*

INTELLIPAD WIRING

See your MSU manual if you are connecting the WS110R with an IntelliPad system.

OPERATION

Operation of the WS110R is simple. Stand within the operational range of your WS110R. Aim your hand-held remote at the WS110R and press the button for the desired command. Your IR command is instantly repeated to your A/V equipment.

GREEN "POWER STATUS" LED

When the WS110R is correctly connected (as shown in **Figure 1**), the Green LED will stay lit as long as the preamp/receiver is on. When your preamp/receiver is off, the LED will stay off.

BLUE "FLASH-BACK" LED

The blue "flash-back" LED on the WS110R visually confirms the reception of an IR command.

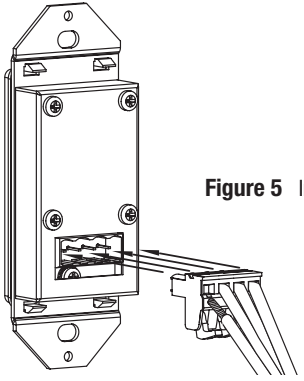

Figure 5 Installing the Connector

TROUBLESHOOTING

This manual contains instructions for the WS110R only. For specific information on the adjustment and operation of your Niles infrared extender system, please refer to the instruction manual included with your Niles IR main system unit (MSU140, MSU250, MSU480, MSU440Z).

The bi-color blue/green LED on the front of the WS110R is a useful troubleshooting aid. The led should light solid green when status is detected.

The blue LED should light only when a remote command is being received. If the LED on the WS110R "flickers", and the WS110R functions normally, there is no cause for concern, some stray IR signal are being received by the WS110R but are not being repeated.

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 WS110R's and on the main system unit. Look for open, shorted or reversed wires.*
3. *Test for interference from the following sources:*
    - *Neon or halogen lights in the room.*
    - *Light dimmers, beginning with those closest to the WS110R.*

Observe the WS110R's LED while performing all the tests. It is possible to have interference from more than one source.

TROUBLESHOOTING (*CONTINUED*)

ELIMINATING OPTICAL FEEDBACK

In some installations, two conditions combine to create an optical feedback loop. Symptoms can include: poor range, intermittent operation or no operation.

The conditions which sometimes combine to create a feedback loop are:

1. *Both a sensor and a flasher are located within the same room.*
2. *There is some low-level noise or interference on your system.*

You can eliminate optical feedback by replacing any IRB1 "flooding flasher" with MF1 or MF2 MicroFlashers® and covering all flashers with the supplied IR blocking covers.

IDENTIFYING THE TYPE OF INTERFERENCE

The "flash-back" LED on the front of the WS110R is a useful trouble-shooting aid.

The LED should light blue only when a remote command is being received. However, if the LED on the WS110R "flickers", and the WS110R functions normally, there is no cause for concern.

IF THE WS110R DOES NOT WORK, AND THE LED DOES NOT LIGHT AT ALL:
Test the remote control(s) by operating the A/V equipment directly. Replace the batteries if needed. Double check the cable connections on all WS110R's Main System Unit and on the IR main system unit. Consult your IR Main System Unit's manual for more detail.

IF THE WS110R DOES NOT WORK, AND THE LED FLICKERS OR REMAINS SOLIDLY LIT:
Cover up the Sensor with a piece of cardboard (your hand will actually create electromagnetic interference under some conditions). Observe the IR test LED.

TROUBLESHOOTING (*CONTINUED*)

IR TEST LED OFF:

Optical Interference

IR TEST LED ON OR FLICKERING:

Electromagnetic Interference

EMI (ELECTROMAGNETIC INTERFERENCE)

Identify the source of the interference. The most common sources of electromagnetic interference are listed in the Installation Considerations section on page 3. To eliminate EMI try the following methods:

1. *Move the sensor or the sensor cable away from the EMI source or move the source of the EMI away from the sensor or the cable.*
2. *Connect the Sensor's GND terminal to true earth ground (if this isn't feasible use the main system unit's GND terminal).There are many methods for reducing interference. Which solution is best for you depends on your situation. If you require further assistance call Niles Technical Support at 305-238-4373 or 1-800-289-4434 (M-F 8:00 AM - 7:00PM ET). You can also email Niles Technical Support at support@nilesaudio.com.*

SPECIFICATIONS

IR System
Compatible with virtually all brands of remotes using carrier frequencies of 38 kHz, 40 kHz and 56 kHz

IR Receiving Range
Varies depending on remote strength; Typically 20 to 35'

IR Receiving Angle

60° off-axis (horizontal and vertical) at 20'

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

Wiring Requirements
Individual home-runs of CAT 5 cable

Unit Dimensions

1-5/8" wide x 2-5/8" high x 1-1/4" deep

Face Plate Dimensions
Decora wall plate; 2-3/4" wide x 4-1/2" high

LIMITED WARRANTY

Niles Audio Corporation ("NILES") warrants its active products (those requiring AC or battery power) to the original purchaser to be free of manufacturing defects in material and workmanship for a period of two years from date of purchase.

This Warranty is subject to the following additional conditions and limitations. The Warranty is void and inapplicable if NILES deems that the product has been used or handled other than in accordance with the instructions provided by the manufacturer, including but not limited to damage caused by accident, mishandling, improper installation, abuse, negligence, or normal wear and tear, or any defect caused by repair to the product by anyone other than NILES or an authorized NILES dealer.

To obtain warranty service, take the unit to the nearest authorized NILES dealer, who will test the product and if necessary, forward it to NILES for service. If there are no authorized NILES dealers in your area, you must write to NILES and include your name, model and serial number of your unit, along with a brief description of the problem. A factory Return Authorization Number will be sent to you. DO NOT RETURN ANY UNIT WITHOUT FIRST RECEIVING WRITTEN AUTHORIZATION AND SHIPPING INSTRUCTIONS FROM NILES.

If the above conditions are met, the purchaser's sole remedy shall be to return the product to NILES, in which case NILES will repair or replace, at its sole option, the defective product without charge for parts or labor. NILES will return a unit repaired or replaced under warranty by shipping same by its usual shipping method from the factory (only) at its expense within the United States of America. THERE ARE NO OTHER WARRANTIES, INCLUDING WITHOUT LIMITATION, EITHER EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE PRODUCT.

REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE CONSUMER/PURCHASER. NILES SHALL NOT BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES EXCEPT TO THE EXTENT PROVIDED (OR PROHIBITED) BY APPLICABLE LAW.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

For the name of your nearest authorized NILES dealer, contact:
NILES AUDIO CORPORATION, P.O. BOX 160818, Miami, Florida 33116.

Please fill in your product information and retain for your records.

Model _____ Serial No. _____ Purchase Date _____

WARRANTY REGISTRATION CARD

Model Purchased _____ Serial Number _____

Date Purchased (month/day/year) _____ Dealer Name and Location _____

❍ Dr. ❍ Miss ❍ Mr. ❍ Mrs. ❍ Ms.

Name _____ Address _____

City _____ State _____ Zip _____ Tel ( ) _____

Age:
❍ *Under 25*
❍ *25-34*
❍ *35-44*
❍ *45-54*
❍ *55 & over*

Income:
❍ *Under $24,999*
❍ *$25,000-$44,999*
❍ *$45,000-$74,999*
❍ *$75,000-$99,999*
❍ *$100,000-$129,999*
❍ *Over $130,000*

Occupation:
❍ *Arts/Entertainment*
❍ *Business Owner*
❍ *Engineer*
❍ *Finance/Accounting*
❍ *General Office*
❍ *Management*
❍ *Professional*
❍ *Sales/Marketing*
❍ *Student*
❍ *Tradesperson*

Musical tastes: (Please check all that apply)
❍ *Alternative* ❍ *Classical*
❍ *Country* ❍ *Jazz*
❍ *New Age* ❍ *Popular*
❍ *R&B* ❍ *Rock*
❍ *Other* _____

How did you hear about Niles?
❍ *Architect/Developer*
❍ *Custom Installer*
❍ *Direct Mail*
❍ *Friend/Family*
❍ *In-Store Display*
❍ *Interior Designer*
❍ *Magazine Ad*
❍ *Mail-Order Catalog*
❍ *Newspaper Ad*
❍ *Product Brochure*
❍ *Product Review*
❍ *Retail Salesperson*
❍ *E-Tailer*

What magazines do you read?

1. _____

2. _____

3. _____

Who will install the product?
❍ *Custom Installer*
❍ *Electrician*
❍ *Friend*
❍ *Myself*

Which factor(s) influenced the purchase of your Niles product? (Please check all that apply)
❍ *Ease of Use*
❍ *Price/Value*
❍ *Product Features*
❍ *Quality/Durability*
❍ *Reputation*
❍ *Style/Appearance*
❍ *Warranty*

Do you . . . ?
❍ *Own a House. If yes, how many square feet?*

_____

❍ *Own a Town House/ Condominium/Co-op*
❍ *Rent an Apartment*
❍ *Rent a House*

Are you interested in receiving literature on other Niles products?
❍ *Yes* ❍ *No*

Are there products/capabilities that you would like to see introduced?

_____

_____

_____

_____

Detach here and return to: Niles Audio Corporation Warranty Registration Dept. P.O. Box 160818 Miami, Florida 33116-0818

BLENDING HIGH FIDELITY AND ARCHITECTURE®

Niles Audio Corporation
12331 S.W. 130 Street Miami, Florida 33186

305-238-4373 • 1-800-BUY-HIFI www.nilesaudio.com

©2007 Niles Audio Corporation. All rights reserved. Niles, the Niles logos, Intellipad, Microflashers and Blending High Fidelity and Architecture are registered trademarks of Niles Audio Corporation. All other trademarks are the property of their respective owners. 05/07 DS00563A