

Figure 3 Parts guide

- (a) Mounting surface
- (b) IR Cable (10 feet supplied)
- (c) CS110 Miniature IR Sensor (supplied)
- (d) Installation screws (supplied)
- (e) CS110 lens bezel (supplied)

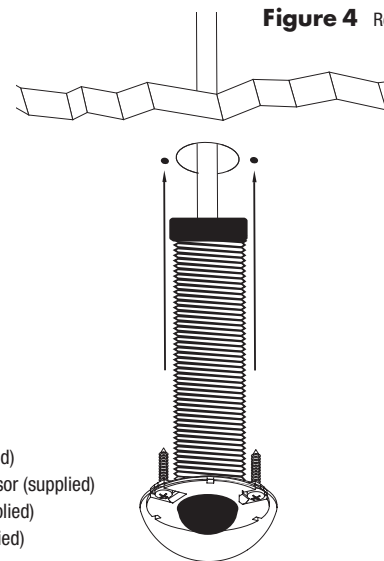


Figure 4 Removing the bezel

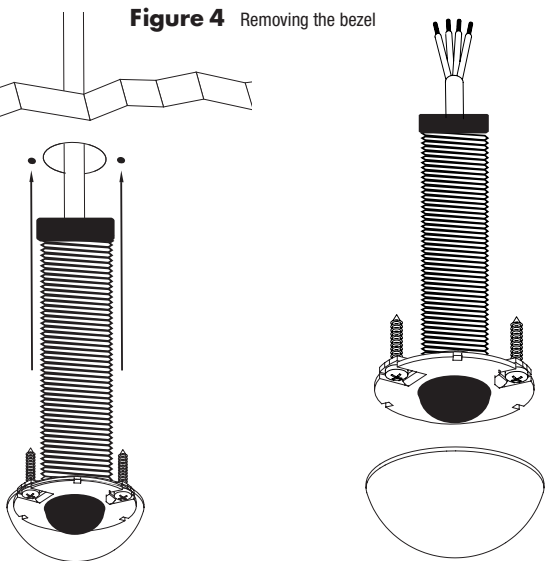
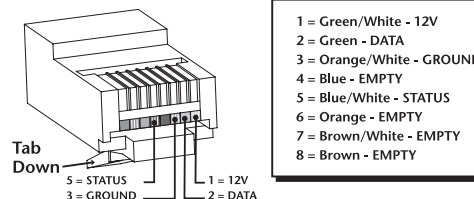


Figure 5 Suggested wiring of CS110 to Niles IntelliPad Ci keypad via an RJ45 jack



## OPERATION

Operation of the CS110 is straightforward. Simply aim your hand-held remote at the CS110. Your IR command is instantly repeated to your AV equipment.

## TROUBLESHOOTING

This manual contains instructions for the CS110 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).

1. Test the remote control(s) by operating the AV equipment directly. Replace the batteries if needed
2. Double check the cable connections on the CS110 and on the main system unit. Look for open, shorted or reversed wires (Figure 2)
3. Test for interference from the following sources:
  - Neon or halogen lights in the room
  - Light dimmers, beginning with those closest to the CS110

Observe the main system unit IR confirmation LED while performing all the tests. It is possible to have interference from more than one source.

### 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.

### EMI (Electromagnetic Interference)

Identify the source of the interference. The most common sources of electromagnetic interference are listed in the Installation Considerations section. 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 38kHz, 40kHz and 56kHz

### IR Receiving Range

Varies depending on remote strength; Typically 20 to 35'

### IR Receiving Angle

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

### Mounting

Thru-hole, fits into a 1/2" diameter hole; requires a minimum of 2-5/8" mounting depth

### Wiring Requirements

Individual home-runs of CAT-5 cable

### Unit Dimensions

Front Bezel: 3/4" Diameter x 1/4" high

Lens Bezel: 1-1/2" Diameter x 41/64 high

Unit With Dome: 1/2" Diameter x 3" Long

Unit Without Dome: 1/2" Diameter x 2-7/8" Long

### Contents

- CS110 Miniature IR Sensor
- Installation Screws (3)
- CS110 Lens Bezel
- Mounting Bracket

## LIMITED WARRANTY

NILES AUDIO CORPORATION ("NILES") WARRANTS ITS PASSIVE PRODUCTS (THOSE NOT 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 33116-0818.

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

Model \_\_\_\_\_ Purchase Date \_\_\_\_\_  
Serial No. \_\_\_\_\_



CEILING-MOUNT IR MICROSENSOR®

# CS110



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, Microsensor and Blending High Fidelity and Architecture are registered trademarks of Niles Audio Corporation. All other trademarks are the property of their respective owners. DS00564A

## INTRODUCTION

The CS110 is a ceiling mounted IR sensor designed for use with the Niles infrared extender systems. Installed in a remote room location, the CS110 receives the IR commands transmitted from your existing hand-held remotes in that room. The commands are carried via a category 5 cable to your A/V equipment in another room, and instantly “repeated”.

The CS110 is compatible with all current Niles infrared systems. It may be used along with, or as an alternative to, the Niles TS110, MS110, MS210, WS110R and MVC100IR sensors or the IntelliPad®.

The CS110 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.

1

## FEATURES & BENEFITS

The CS110 offers a number of improvements over other miniature IR sensors.

- *Plasma and LCD-proof performance—allows placement of the CS110 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 — 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 1/2" diameter by 2-7/8" long—fits almost anywhere*
- *10' of connecting wire included*
- *Printed circuit board design uses surface mount technology, assuring high reliability*
- *Ideal for both home and commercial installations*
- *Each CS110 includes a transparent cover*
- *Two year parts and labor warranty*

2

## INSTALLATION CONSIDERATIONS

**IMPORTANT: REFER INSTALLATION TO A PROFESSIONAL CUSTOM INSTALLER IF YOU ARE UNFAMILIAR WITH ANY OF THE FOLLOWING PROCEDURES.**

### TOOLS REQUIRED

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

### Type of Cable

The CS110 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.

### CS110 Mounting Location

The CS110 is designed to be ceiling mounted in a direct line of sight location within the operating range of the remote control.

### Receiving Range and Pickup Angle

The receiving range of the CS110 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

3

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 CS110. The IR pickup angle of the CS110 is 60° off-axis (horizontal and vertical) at 20’.

### Avoiding Interference

CS110 is designed to work in most applications including LCD and plasma displays and in areas where CFL lighting and indirect sunlight are present. You should avoid locating the CS110 near potential sources of electrical or optical noise, such as light dimmers or low-voltage lights.

### Avoiding Optical Feedback

If installing the CS110 in the same room as an IR flasher, it is possible for the flasher’s IR output to be picked-up by the CS110. 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.

4

To avoid optical feedback:

1. Re-position the flasher(s) and/or the sensor
2. Use Niles MF1 or MF2 Microflashers and cover them with the supplied IR blockers

### Using the CS110 with the IntelliPad Ci system

The CS110 is fully compatible with the Niles IntelliPad Ci line, follow the wiring instructions in **Figure 5**. For specific information see your IntelliPad Ci manual.

## INSTALLATION

If you are installing the CS110 into an existing ceiling, take time to consider any possible obstructions which may be hidden, such as wood or metal studs, electrical, telephone or other types of wiring, plumbing, AC or heating conduits, etc.

1. Determine a mounting location for the CS110
2. Drill a 1/2" hole where the CS110 will be mounted
3. Run the CS110's IR cable. Label the cable for future reference (**Figure 2**). The CS110 is supplied with 10' of pre-stripped IR cable. The IR cable may be shortened or lengthened as needed. If you want to make the CS110's cable shorter, use a pair of wire cutters to cut the cable to the desired length. The IR cable may be lengthened by splicing it to a recommended IR cable (See Installation Considerations—Type of Cable). You may splice the CS110 cable to another cable by soldering or crimping the connections.

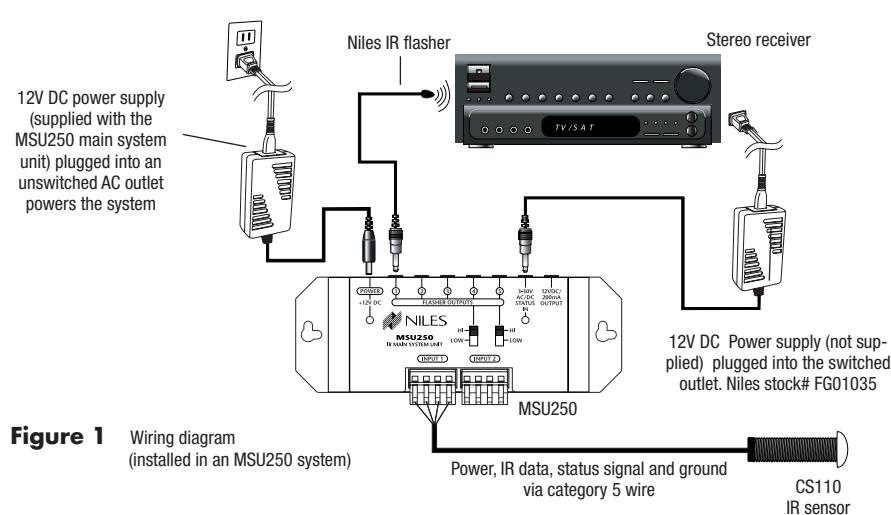
5

4. Fasten sensor to ceiling with supplied screws (**Figure 3**)

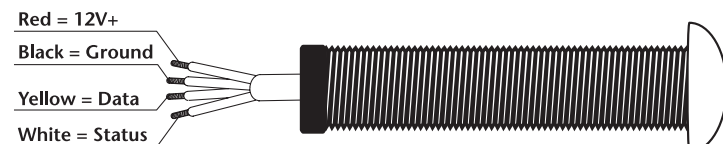
5. Connect the CS110 cable to the main system unit (**Figure 1**). Strip 1/4" of insulation from the end of each wire until there are no frayed ends. Insert each wire into the appropriate hole on the removable connector plug, and snap the locking tab down.

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. Refer to the main system main system unit manual for specific installation instructions.

6



**Figure 1** Wiring diagram (installed in an MSU250 system)



**Figure 2** Wiring legend

8