



BLENDING HIGH FIDELITY AND ARCHITECTURE®

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INSTALLATION

You may splice the MS210 cable to another cable by soldering or crimping the connections. Make sure that you maintain proper polarity and correct connections through the splice.

Connecting to the main system unit

1. Strip 1/4" of insulation from the end of each wire. Tightly twist the end of each wire until no frayed ends remain.
2. Use a small flathead screwdriver or your thumbnail to raise the locking tabs, exposing the holes on the removable connector plug of the MSU.
3. 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.
4. Double-check all connections. This manual contains instructions for the MS210 only. For specific information on the adjustment of your Niles Infrared system, please refer to the instruction manual included with your Niles IR main system unit.

OPERATION

Operation of the MS210 is straightforward. Simply aim your hand-held remote at the MS210. Your IR command is instantly repeated to your A/V equipment. A blue "flash-back" LED on the MS210 visually confirms the reception of an IR signal.

TROUBLESHOOTING

This manual contains instructions for the MS210 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 MS210 is a useful troubleshooting aid.

The blue LED should light only when a remote command is being received. If the LED on the MS210 "flickers", and the MS210 functions normally, there is no cause for concern, some stray IR signals are being received by the MS210 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 MS210'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 MS210

Observe the MS210's 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 IRB-1 "flooding flasher" with an MF1 or MF2 MicroFlasher® and covering all flashers with the supplied IR blocking covers.

Identifying the type of interference:

The blue "flash-back" LED on the front of the MS210 is a useful trouble-shooting aid.

If the MS210 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 MS210's main system unit and on the IR main

system unit. Consult your IR main system unit's manual for more detail.

If the MS210 does not work, and the LED "flickers" blue 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.

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. 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

Surface-mount. Self-adhesive mounting strip included

Unit Dimensions

Overall Unit: 2" Wide x 11/16" High x 1/2" Deep

LIMITED WARRANTY

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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. _____



INSTALLATION & OPERATION GUIDE



SURFACE-MOUNT IR MICROSENSOR®

MS210

INTRODUCTION

The MS210 IR Microsensor® is designed for use with the Niles infrared extender systems.

Installed in a remote room location, the MS210 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 AV equipment in another room, and instantly “repeated”.

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

The MS210 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, MF1VF, MF2, MF2VF and the IRB1

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

In a typical system (Figure 1) the MS210 remote room sensors are placed in convenient locations and are connected to a main system unit.

The main system unit is connected to power via its 12VDC power supply. In this example, the MSU250 main system unit powers 2 MF2 MicroFlashers® which are attached to the front panel sensor windows of four AV components.

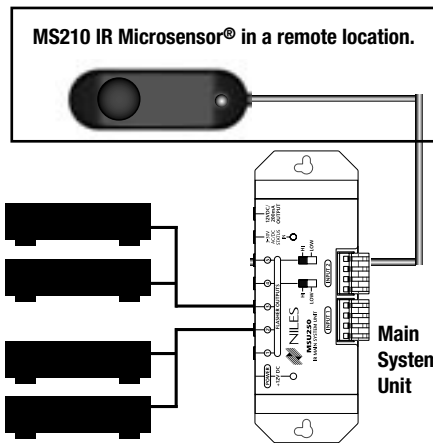


Figure 1

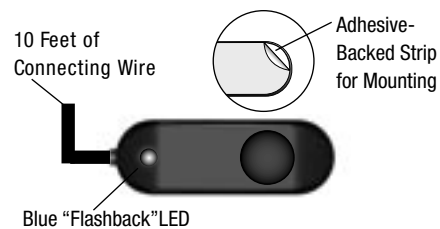
FEATURES & BENEFITS

The MS210 offers a number of improvements over other miniature IR sensors

- **Plasma and LCD-proof performance**— allows placement of the MS210 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 AV 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” wide x 11/16 high x 1/2” deep**— fits almost anywhere
- **10’ connecting cable included**
- **Available in black, white or silver**
- **Printed circuit board design uses surface mount technology (SMT)**, assuring high reliability
- **Two year parts and labor warranty.**

MS210 PARTS GUIDE



INSTALLATION CONSIDERATIONS

Wiring MS210 Microsensors®

From every IR Sensor location, you must “home-run” a cable back to the main system unit. “Home-run” means an individual cable is connected between each IR Sensor and the main system unit. You should never daisy-chain (connect in parallel) two or more IR Sensors to a single input. (Figure 2).

Type of Cable

The MS210 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.

MS210 Mounting Location

Locating the MS210 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 MS210 closest to the primary location of the user will ensure the best performance.

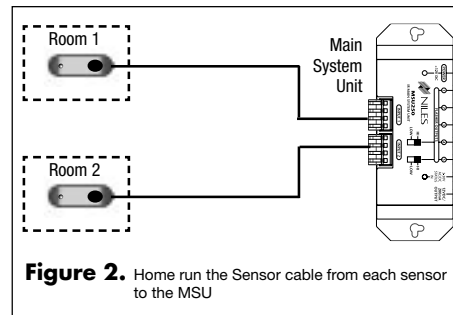


Figure 2. Home run the Sensor cable from each sensor to the MSU

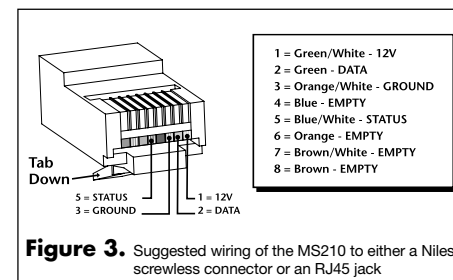


Figure 3. Suggested wiring of the MS210 to either a Niles screwless connector or an RJ45 jack

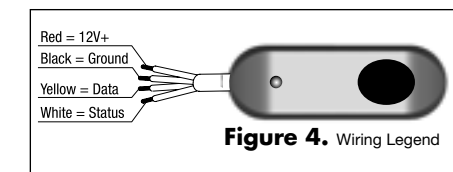


Figure 4. Wiring Legend

The MS210 is designed to surface-mount almost anywhere. Convenient mounting locations for the MS210 include:

- *On the front panel of a television set, facing the viewer*
- *On the front surface of a wall, a cabinet, an appliance, or a speaker grille*
- *Behind a speaker grille (speaker grilles typically reduce the effective range of an MS210 to 15’)*

Receiving Range and Pickup Angle

The receiving range of the MS210 will vary according to the IR output strength of the remote control being used. Remote strength varies among brands by the number and size of the 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 feet to a maximum of about 35 feet. The IR pickup angle of the MS210 is 60° off-axis (horizontal and vertical) at 20’.

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 reflective object to the MS210.

Avoiding Electrical Interference

Avoid locating the MS210 near any potential sources of Electro-Magnetic Interference (EMI). The most common sources are:

1. *Light dimmers or variable speed controls for ceiling fans. These controls emit more interference when turned down halfway. They emit little or no interference when turned up all the way (brightest or highest position).*
2. *Large appliances (air-conditioners, pumps, motors, compressors; etc.).*
3. *AC line noise (noise brought into the system via the wall outlet connected to the main system unit).*

Concealing the wire

If you are installing the wire 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, old wall safes, etc.

If the MS210 cable needs to pass through any cabinetry (or other obstruction) drill a hole where the cable will run. Make sure the hole accommodates the width of the cable.

Using the MS210 with the IntelliPad Ci system

The MS210 is fully compatible with the Niles IntelliPad Ci line, follow the wiring instructions in Figure 3. For specific information see your IntelliPad Ci manual.

INSTALLATION

Determine a mounting location for the MS210. If there is a potential source of EMI near the proposed mounting location (e.g near an electrical dimmer) you must test to find the best (interference-free) position before mounting the MS210 in place.

Clean and dry the mounting surface. Peel off the protective layer on the self-adhesive pad and firmly affix the MS210 to the mounting surface.

Testing for EMI (Electro Magnetic Interference)

1. *Turn on the device. If it is a wall mounted light dimmer turn the dimmer knob to the halfway position.*
2. *Connect the MS210 to a main system unit and plug in the 12VDC power supply.*
3. *Place the MS210 in the proposed mounting location and observe the blue “Flashback” LED.*
3. *If it flickers or lights constantly, this indicates a high level of electrical interference. Move the MS210 housing to a location where the LED does not light.*

Extending the cable

Once the cable is in place, label the cable ends for future reference. The MS210 is supplied with 10’ of pre-stripped IR cable. The IR cable may be lengthened as needed. The IR cable may be lengthened by splicing it to a recommended CAT-5 cable (See Installation Considerations—Type of Cable).