NILES®

TABLETOP IR SENSOR

TS120

CONGRATULATIONS!

Thank you for choosing the **TS120 Tabletop 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.

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INTRODUCTION

The Niles TS120 is a tabletop infrared sensor designed for use with the Niles infrared extender systems.

Installed in a remote room location, the TS120 receives the IR commands transmitted from your hand-held remote(s). The IR commands are carried via a CAT-5 cable to your A/V equipment in another room, and instantly "repeated".

The TS120 represents one of the 3 building blocks necessary to complete a Niles IR repeating system:

• *IR Main System Unit*—Models MSU140, MSU250, MSU480 and MSU440Z.

• *IR Sensors/Keypads*—Models WS120, TS120, MS120, MS220, CS120 and the IntelliPad®.

• *IR Flashers*—Models MF1, MF1VF, MF2, MF2VF and the IRB1.

An IR sensor expansion unit, Model IRH610, is available for IR repeater systems used in more than six rooms.

CONTENTS

Check that your TS120 Tabletop Infrared Sensor contains the following:

• TS120

• Removable Connector

FEATURES AND BENEFITS

The TS120 offers a number of improvements over other tabletop IR sensors.

• *Wideband High-Fidelity Design enables operation with virtually any brand of equipment*

• *Patent Pending Universal Noise Suppression Design enables operation in virtually any environment: near plasma and LCD displays, compact fluorescent lights, and indirect sunlight*

• *Excellent IR receiving range—you get 20' to 35' of remote control range (depending upon the strength of your handheld remote)*

• *Small size of only 2-7/8" wide x 1-1/16" high x 3-1/8 deep— fits almost anywhere.*

• *Printed circuit board design uses surface mount technology, assuring high reliability*

• *Ideal for both home and commercial installations*

• *Non-skid, non-scratch feet*

• *Two year parts and labor limited warranty*

INSTALLATION CONSIDERATIONS

TYPE OF CABLE

The TS120 connects to the Niles infrared main system 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.

TECH TIP: Wire size is expressed by it's AWG (American Wire Gauge) number. The lower the AWG number, the larger the wire, i.e., 20 AWG wire is physically larger than 22 AWG.

TS120 MOUNTING LOCATION

The TS120 is ideal for use in applications when ceiling or wall-mounting is undesirable. Its small size and unobtrusive appearance makes it ideal for installation in existing homes or cabinets with great ease and minimal custom work. Installing the TS120 close to the primary location of the user will ensure best performance.

The TS120 is designed to mount over or under almost any flat horizontal surface. Convenient mounting locations for the TS120 are:

• *On top of a television set*

• *On a shelf in an entertainment center*

• *Under a shelf in an entertainment center*

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INSTALLATION CONSIDERATIONS (*CONTINUED)*

RECEIVING RANGE AND PICKUP ANGLE

The receiving range of the TS120 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 TS120. The IR pickup angle of the TS120 is 30° off-axis (horizontal and vertical) at 25'.

AVOIDING ELECTRICAL INTERFERENCE

Avoid locating the TS120 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 TS120 in the same room as an IR flasher, it is possible for the flasher's IR output to be picked-up by the TS120. 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 MF series flashers and cover them with the supplied IR blockers.

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INSTALLATION CONSIDERATIONS (*CONTINUED*)

AVOIDING INTERFERENCE

TS120 is designed to work in most applications including with plasma and LCD TV's and in areas where CFL lighting and indirect sunlight are present. You should avoid locating the TS120 near potential sources of electrical or optical noise, such as light dimmers or low-voltage lights.

USING THE POWER STATUS DISPLAY

The Green power status LED can only be activated by a "power status" broadcast from a Niles IR main system unit (MSU140, MSU250, MSU480, MSU440Z). The IR main system unit will broadcast the power status signal if the preamp/ receiver is on and a 12V DC adapter is plugged into the preamp/receiver's switched AC outlet and the 3.5mm plug is connected to the IR main system unit's Status input jack (**Figure 2**).
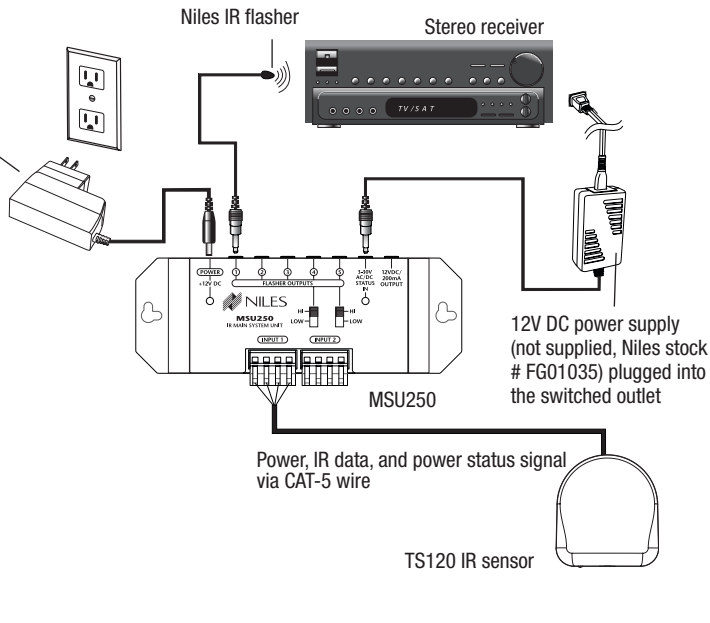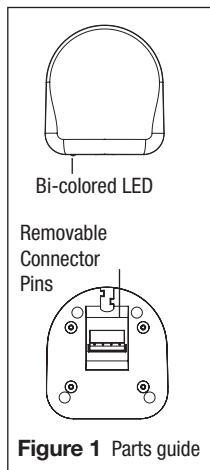
NOTE: THE 12V DC ADAPTER PLUGGED INTO THE SWITCHED OUTLET OF THE STEREO RECEIVER IS NOT INCLUDED WITH THE IR MAIN SYSTEM UNIT. IT SHOULD BE 12V DC WITH A MINIMUM OF 100MA OF OUTPUT. IT CAN BE ORDERED FROM YOUR NILES DEALER (FG01035 POWER ADAPTER).

USING THE TS120 WITH NILES MULTIZONE KEYPADS WITH AN IR CONNECTION

The TS120 is fully compatible with any Niles MultiZone Keypad with an IR connection, follow the wiring instructions in **Figure 4**. For specific information see your Niles MultiZone Keypad manual.

INSTALLATION CONSIDERATIONS (*CONTINUED*)

12V DC power supply (supplied with the MSU250 IR main system unit) plugged into an unswitched AC outlet powers the system

Niles IR flasher

Stereo receiver

Bi-colored LED

Removable Connector Pins

Figure 1 Parts guide

12V DC power supply (not supplied, Niles stock # FG01035) plugged into the switched outlet

MSU250

Power, IR data, and power status signal via CAT-5 wire

TS120 IR sensor

Figure 2 Connecting the TS120 to a Niles MSU250 IR main system unit broadcasting a status feedback signal.

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INSTALLATION

STEP BY STEP

1. The TS120 is a small free-standing box designed to sit on a shelf or other convenient surface. The unit can be mounted under a shelf using double-sided tape or Velcro® (not supplied).

2. Run the cable to the TS120. Label the cable for future reference.

3. Locate the connector on the TS120 and remove it.

4. 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.

5. Use a small flathead screwdriver or your thumbnail to raise the locking tabs, exposing the holes on the removable connectors.

Tab Down

5 = STATUS
3 = GROUND
1 = 12V
2 = DATA

1 = Green/White - 12V
2 = Green - DATA
3 = Orange/White - GROUND
4 = Blue - EMPTY
5 = Blue/White - STATUS
6 = Orange - EMPTY
7 = Brown/White - EMPTY
8 = Brown - EMPTY

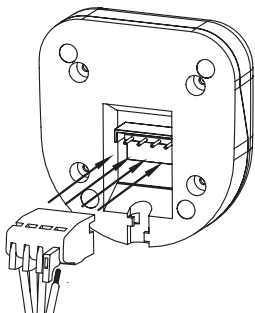1 = STATUS   2 = DATA   3 = GROUND   4 = 12V DC

ST   IR   G   V+

Figure 4 This color code is based on the industry standard T568A coding for the RJ45 connector. When connecting the TS120 to Niles MultiZone Keypads with an IR connection observe this pin configuration
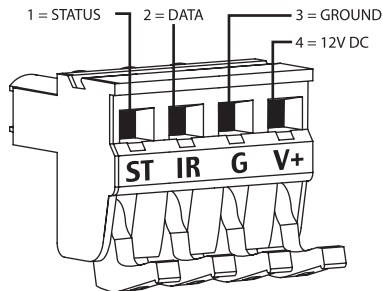
*6. Insert each wire into the appropriate hole on the removable connector plug (**Figure 6***), and snap the locking tab down. To help you, the connector plug is keyed. Insert the smooth side of the connector plug into the smooth side of the socket. Don't force the scalloped side of the connector plug into the smooth side of the socket (**Figure 5***).*

7. Double-check all connections. Plug the connector back into its socket on the TS120.

Figure 5 Installing the removable connector

1 = STATUS   2 = DATA   3 = GROUND   4 = 12V DC

ST IR G V+

Figure 6 Removable Connector Plug

OPERATION

Operation of the TS120 is simple. Stand within the operational range of your TS120, aim your hand-held remote at the TS120 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 TS120 is correctly connected (**Figure 2**), the Green LED will stay lit as long as the pre-amp/receiver is on. When your preamp/receiver is off, the LED will stay off.

BLUE "FEEDBACK" LED

The blue "feedback" LED on the TS120 visually confirms the reception of an IR command.

TROUBLESHOOTING

This manual contains instructions for the TS120 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 TS120 is a useful troubleshooting aid.

The blue LED should light only when a remote command is being received. If the LED on the TS120 "flickers", and the TS120 functions normally, there is no cause for concern, some stray IR signal are being received by the TS120 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 TS120's and on the main system unit. Look for open, shorted or reversed wires.

   3. Test for interference from the following sources:

   • **Neon, Compact Florecent Lighting (CFL), or halogen lights in the room**

   • **Light dimmers, beginning with those closest to the TS120**

Observe the TS120'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 an MF1 or MF2 MicroFlasher® and covering all flashers with the supplied IR blocking covers.

IDENTIFYING THE TYPE OF INTERFERENCE

The blue "feedback" LED on the front of the TS120 is a useful troubleshooting aid.

The LED should light blue only when a remote command is being received. However, if the LED on the TS120 "flickers", and the TS120 functions normally, there is no cause for concern.

If the TS120 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 the TS120's and on the IR main system unit. Consult your IR main system unit's manual for more detail.

If the TS120 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 and/or Optical 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
between 25kHz and 90kHz

IR Receiving Range
20' to 35' depending upon the strength of the remote control

IR Receiving Angle
30° off-axis (horizontal and vertical) at 25'

Mounting
Tabletop

Wiring Requirements
Individual "home-runs" of CAT-5 cable

Unit Dimensions
2-7/8" wide x 1-1/16" high x 3-1/8" deep

NOTES

NOTES

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 _____TS120_____ Serial No. _____ Purchase Date _____

WARRANTY REGISTRATION CARD

Model Purchased ___TS120___   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?

_____

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