

TROUBLESHOOTING GUIDELINES *continued*

may be interference in the installation environment. Proceed to the *Interference* section detailed below.

Interference

Problem: If the green "Sensitivity" LED stays lit constantly and the troubleshooting steps listed above have failed to rectify the problem, either optical or electromagnetic interference may be present in the system.

Solution: Optical interference could cause the LS-1 to operate incorrectly if the sensor receives too much direct or ambient light. Be sure to use the included blocking cover to shade the LS-1 from optical interference. In order to avoid the possibility of electromagnetic interference affecting the LS-1's operation, it is suggested that the LS-1 chassis, the sensor, and the associated wiring be kept away from television sets (especially large direct view sets), wall-mounted light dimmers, fan controls, and other motorized devices. If any of these devices are suspected of causing problems with the LS-1, try moving the sensor away from the source of the interference, or

move the source of the EMI away from the LS-1 and its wiring.

Power Supply Failure

Problem: If the red +12V "Power" LED on the LS-1 chassis does not light, the power supply may be defective or maybe the wrong voltage/current rating.

Solution: Check the label on the power supply and be sure it reads 12V DC 500mA. If there is any question as to the power supply's actual output, it can be measured with a multimeter (tip is +12V DC, shaft is ground). If no voltage is measured, replace the power supply.

Bad Connections or Wiring

Problem: If the connections or wiring are wrong, loose, shorted, or open, the system will not operate properly. Symptoms may include: "Power" LED flickers or is off, "Sensitivity" LED flickers or is not lit, intermittent or no operation.

Solution for "Power" LED malfunction: If the "Power" LED flickers or is not lit, check the power supply. The label should read +12V DC 500mA. Check the

power supply's connection. The mini-plug should be connected to the LS-1 chassis at the +12V DC "Power" connection. Plug the power supply into an unswitched wall receptacle, and the "Power" LED should light. If not, see the *Power Supply Failure* section above. If the power supply checks out okay, the LS-1 may be defective.

Solution for Sensitivity LED malfunction: If the "Sensitivity" LED flickers or is off, increase the "Sensitivity" adjustment. If the unit still does not operate consistently, the LS-1 may be defective.

Solution for Control Out malfunction: If the LS-1 appears to be operating correctly but the IntelliControl system (or any other device requiring a 12V control voltage) is not able to monitor the *On/Off* status of the source component being sensed by the LS-1, the Control Out cable may be damaged. Check the output voltage at the mini-plug (tip is positive, shaft is ground) with a multimeter for +12V DC when the green LED is lit.

SPECIFICATIONS

Compatible with all colors of LED, fluorescent or backlit LCD displays. Detects all light wavelengths ranging from 600nm (blue/green) to 1000nm (infrared). Frequency response of DC to 100Khz.

Unit Dimensions

- 2-1/2" wide x 3-1/2" long x 1-5/8" tall (including adjustment pot)

Power Requirements

- 12V DC 500mA power supply (included).
- 73.4mA current consumption, 400mA current output.



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INSTALLATION & OPERATION GUIDE

LS-1 LIGHT SENSOR

INTRODUCTION

The Niles LS-1 Light Sensor is a device used to monitor the on/off status of almost any component. It is used to provide a 12V "sync" or status feedback signal to the IntelliControl® Home Theater

Automation System; IntelliPad® Wall-Mounted Keypad; a Niles infrared repeater system, or any other device that requires a 12V DC control voltage.

When the source component is

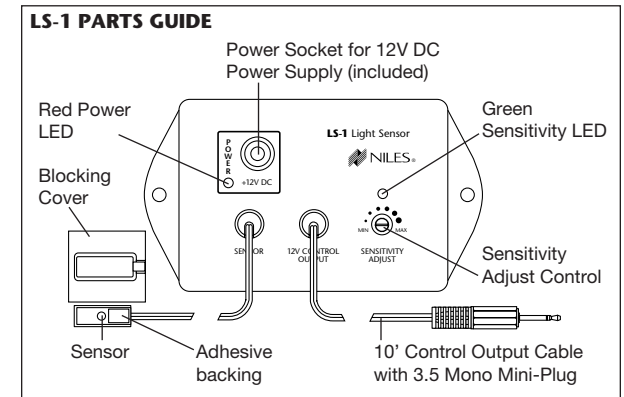
powered up, the LS-1 sensor detects the change in brightness of the component's front panel display or on/off indicator. This change in brightness triggers the LS-1 to output a 12V DC "sync" signal.

FEATURES & BENEFITS

The Niles LS-1 is designed to provide reliable on/off status feedback when audio/video, voltage, or current sensing is not possible. The LS-1 can be adjusted to detect a change in the component's front panel display. The display can be virtually any color from an LED, fluorescent or backlit LCD design.

Key features include:

- Universal System — works with virtually any electronic A/V component.
- Small size of only 3-1/2" x 2-1/2" x 1-5/8", fits almost anywhere.
- Compatible with almost any type of electronic device that has a visual indication of its on/off state.
- Adjustable "Sensitivity" feature enables precise trigger level control and optimum front panel placement of the LS-1.
- Red "Power" LED enables testing of proper power supply operation.



- Green "Sensitivity" LED detects interference and enables testing for proper operation while monitoring the on/off status of the component being sensed.
- 10 foot Control Output cable provides fast and convenient "sync" connection to the IntelliControl MSU, or any other device requiring a 12V DC control voltage.
- Two year parts and labor warranty.

- Proudly made in the USA.

Note: The LS-1 may be unable to monitor certain components if there is only a very minimal change in the illuminated characters of a backlit display, or if the front panel display changes colors without changing brightness.



BLENDING TECHNOLOGY AND ARCHITECTURE®

INSTALLATION CONSIDERATIONS

Placement of the LS-1 Chassis

Place the LS-1 chassis conveniently close to the component it will be sensing. Generally, the unit is placed in a concealed location because its controls and indicators are only used during installation. If necessary, the power supply cable and/or the control output cable can be extended up to 100 feet with two-conductor cable. **DO NOT EXTEND THE SENSOR CABLE.**

Figure 1

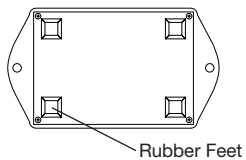
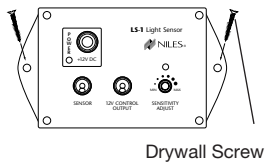


Figure 2



Placement possibilities include:
1) Tabletop (on the floor or shelf behind the equipment).

2) Wall-mount (affixed to the back of the equipment cabinet or a nearby wall).

IMPORTANT: Do not place the LS-1 on top of, or directly behind, a television set. Some televisions produce intense electromagnetic interference which may disrupt your LS-1's operation.

TABLETOP PLACEMENT (Figure 1)

- 1) Make sure the bottom of the LS-1 chassis is clean and dry.
- 2) Affix the enclosed self-adhesive rubber feet to the bottom of the LS-1.

WALL-MOUNT PLACEMENT (Figure 2)

- 1) Make sure that the Sensor cable, 12V DC Control Output cable, and the 12V DC Power Supply cable will all reach the proposed installation location.

2) Mount the LS-1 chassis to the wall with drywall screws inserted through the holes in the LS-1's mounting wings.

Placement of the LS-1 Sensor

The LS-1 Sensor is best placed on the component's front panel, in an area that will not impede operation. This mounting area must receive more light when the component is on and less when it is off. Use the plastic IR blocking cover to shade the sensor and its immediate surroundings. Use electrical tape to temporarily affix the sensor and its blocking cover to the component's front panel until thorough testing has resulted in an ideal mounting location. The plastic blocking cover may be cut to size if necessary (**USE CAUTION: cutting the blocking cover too small may render it useless**). When consistent operation is achieved, remove the backing paper from both the plastic blocking cover and the sensor, and mount the LS-1 Sensor to the component.

INSTALLATION

For proper installation (**Figure 3**), follow the steps outlined below in the correct order. If you discover a fault during the course of the installation, go on to the *Troubleshooting Guidelines* section of this manual before continuing with the next installation step.

1) Make sure that the Sensor cable, 12V DC Control Output cable, and the 12V DC Power Supply cable will all reach the proposed installation location.

2) Connect and test the power supply. If it tests okay (indicated by the red "Power" LED on the LS-1 chassis), disconnect the mini-plug connector from the LS-1's +12V DC "Power" input and proceed. (All power supplies are 100% tested to

ensure reliability, but it is a good practice to always double check.)

3) Use the ten foot mini-plug cable (attached) to connect the 12V Control Output cable to the IntelliControl Main System Unit (or any other device that requires a 12V trigger). The Control Output cable can be extended with two-conductor wire to the desired length if it is too short.

4) Reconnect the 12V DC power supply to the LS-1 chassis.

5) With the component's power off, temporarily mount the LS-1 sensor to an area of the component's front panel which will become illuminated

when the unit is powered on. Use the provided plastic blocking cover to help eliminate optical interference.

6) Slowly *increase* the "Sensitivity" level control from the minimum position until the point where the "Sensitivity" LED becomes constantly lit. This is the *off position threshold*.

7) Slightly *decrease* the "Sensitivity" level control only enough to *turn off* the green "Sensitivity" LED.

8) Test the LS-1 by turning the source component *on* and *off* while monitoring the output of the LS-1's green "Sensitivity" LED. The LS-1 is

INSTALLATION (continued)

working correctly if the green LED is *lit* when the power is *on*, and *unlit* when the power is *off*.

Note: It may be necessary to tweak the LS-1's "Sensitivity" adjustment with the source com-

ponent powered on and off in order to get consistent results.

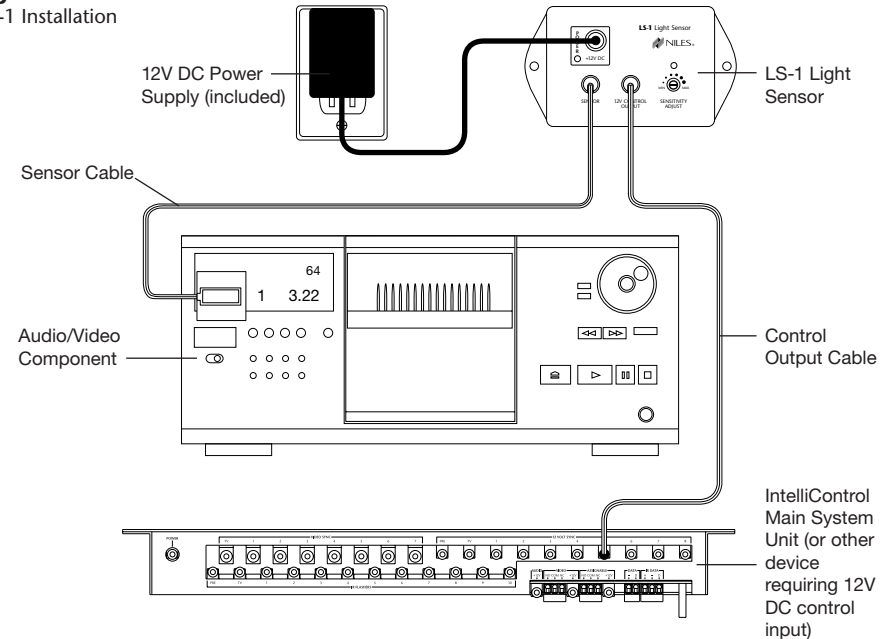
9) If the LS-1 triggers reliably, note the sensor's exact location, remove the backing paper from the plastic blocking cover, and re-

attach the sensor to the component's front panel.

10) If the LS-1 *does not* trigger reliably, proceed to the *Troubleshooting Guidelines* section below.

Figure 3

LS-1 Installation



TROUBLESHOOTING GUIDELINES

There are four basic problems which could prevent proper operation. In the order of probability they are:

Improper Sensitivity Adjustment

Problem: If the "Sensitivity" LED remains constantly lit, the LS-1's "Sensitivity" adjustment may not be set properly. If the "Sensitivity" adjustment is set *too high*, the LS-1 will detect any light output from the component's front panel and fail to recognize the difference between on and off.

Solution: With the component's power off, slowly lower the "Sensitivity" adjustment until the green LED is no longer lit. The green LED *may* stay lit even at the minimum sensitivity setting, which would indicate that even in standby, there is too much output from the front panel. If this is the case, try affixing the sensor to a different location on the front panel, and be sure to use the plastic blocking cover to shade the sensor from any ambient light in the area. Once the "Sensitivity" LED is able to stay *unlit* when the unit is

off, power on the source component. The green "Sensitivity" LED should light, indicating proper operation. If the green LED does not light, slightly increase the "Sensitivity" adjustment on the LS-1 until it does light. If you are still unable to trigger the LS-1 reliably, move the sensor to yet another alternate location on the component's front panel display and test as described in installation steps 4-7. If the "Sensitivity" LED remains lit with the adjustment set at minimum, regardless of the sensor's placement or the component's on/off state, there