neopro INTEGRATOR

light spider™

Integrator's Guide

HD Video, Audio, RS-232, and IR
Over Single Multimode Fiber

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Introduction

The LightSpider system consists of a Transmitter module and a Receiver module, each powered by an AC to 9 Vdc power supply adapter. The Transmitter and Receiver are linked via a single Multimode fiber optic cable, with a maximum length of 1000 ft. (305m), which carries HDMI, analog audio (stereo L/R), and other control signals.

The analog audio signals are carried independently of the HDMI video/audio content. They are not "derived" from HDMI audio content. If you do not provide a L/R analog audio source at the LightSpider Transmitter, L/R audio will not be available at the LightSpider Receiver L/R output.

Additionally, the LightSpider system can be used as a "bridge" to carry RS-232 (DTE) and infrared remote signals (unmodulated) through the fiber optic link. These signals DO NOT control or affect the function of the LightSpider.

Unpacking

The basic LightSpider kit includes the following items:

1 – Transmitter module (rear panel labeled “TX”)

1 – Receiver module (rear panel labeled “RX”)

2 – AC to 9 Vdc power supply adapters

Optional Accessories also available from Neothings:

- Infrared kit: (IR sensor and IR emitter)
- RS-232 cable kit: (2 cables)
- Fiber optic cable: Multimode (MM) type, LC connectors, available in standard and custom lengths

Cables NOT INCLUDED:

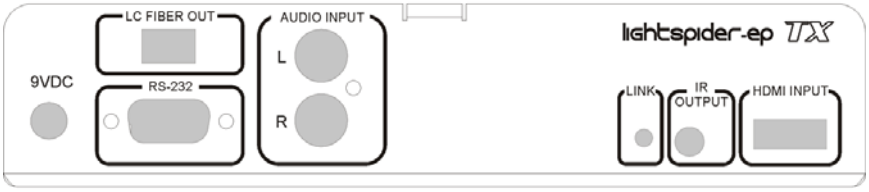
- HDMI Cables
- Audio coax cables (RCA type connectors)

Safety Precautions

The LightSpider is shipped with 2 AC to 9 Vdc power supply adapters, selected and tested by Neothings for optimum performance. *DO NOT use any supply not provided by Neothings, Inc. Using another supply may compromise safety and will void the LightSpider warranty.*

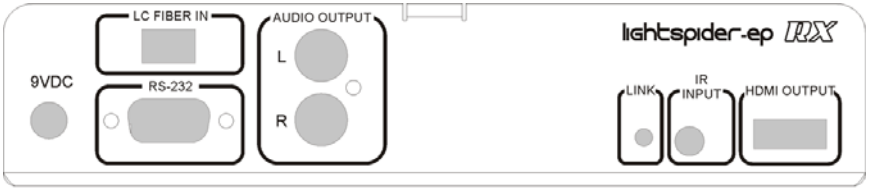
Rear Panel Details

The diagrams below have detailed information on the rear panels of the Transmitter and Receiver modules.



Transmitter Module - Rear Panel

Label	Transmitter Module functions
9VDC	9 Vdc power input from power supply adapter
LC FIBER OUT	Fiber cable output to the LightSpider Receiver
RS-232	RS-232 (DCE) signal from controller
AUDIO INPUT L R	Analog audio (left/right stereo) inputs from the audio source.
LINK	LED indicates state of fiber optic link
IR OUTPUT*	IR Emitter jack for 3.5mm “mono” type plug (2 conductor). The emitter converts the signal to IR, and is placed over the IR sensor on the device to be controlled.
HDMI INPUT	HDMI input from DVD, Blu-ray, Satellite, etc.



Receiver Module - Rear Panel

Label	Receiver Module functions
9VDC	9 Vdc power input from power supply adapter
LC FIBER IN	Fiber cable input from the LightSpider Transmitter
RS-232	RS-232 (DTE) signal to device under control
AUDIO OUTPUT L R	Analog audio (left/right stereo) outputs to the sound system.
LINK	LED indicates state of fiber optic link
IR INPUT	IR Input jack for 3.5mm “stereo” type plug (3 conductor). The sensor converts the IR signal from the remote control and sends it through the fiber cable to the Transmitter.
HDMI OUTPUT	HDMI output to projector, TV, etc.

Setup and Operation

Whenever possible, Neothings recommends setting up the LightSpider modules in a “bench test” configuration to verify all features are functioning properly before routing the fiber cable through walls, etc.

First, connect the cables to the modules:

LightSpider Transmitter connections		
From	**To**	**Notes**
HDMI source (Blu-ray, satellite, etc.)	HDMI INPUT	
Analog audio source L/R	AUDIO INPUT L R	
IR OUTPUT	IR Emitter	Optional feature
RS-232	Control signal source	DCE
Power supply adapter	9VDC	
Power supply adapter	AC outlet (100-240 Vac)	Blue LED (front panel) indicates power is on.
LC FIBER OUT	Fiber cable	

LightSpider Receiver connections		
From	**To**	**Notes**
HDMI OUTPUT	HDMI display (TV, projector, etc.)	
AUDIO OUTPUT L R	Audio equipment inputs L/R	Requires L/R signal at Transmitter input
IR INPUT	IR Sensor	Optional feature
RS-232	Control signal source	DTE
Power supply adapter	9VDC	
Power supply adapter	AC outlet (100-240 Vac)	Blue LED (front panel) indicates power is on.
Fiber cable from the Transmitter	LC FIBER IN	

Next, verify the basic system operations:

- Turn on power to the video and audio source devices.
- Turn on power for the video display and audio system.
- Verify that the audio and video signals are being transferred through the LightSpider system.

Finally, verify the optional features are functioning:

- Remote Control: Point the remote control at the IR Sensor (attached to Receiver module). Test the various functions. Note: *Position the device to be controlled so that it is not receiving a signal directly from the remote.*
- RS-232 Control: Issue RS-232 commands from the controlling device and verify the correct results occur.

After verifying the system operates correctly, power down all system components and do the final mounting of modules, routing of cable, etc. If any functions fail to operate, refer to the Troubleshooting section for possible solutions.

Troubleshooting

If any feature fails to operate properly, use the table below to isolate the cause of the problem.

Symptom	**Troubleshooting steps**
Module will not power up	• Check power supply connections to module • Swap power supplies between modules to see if problem follows the supply (which indicates the module is not defective).
No HDMI at display	• Verify fiber cable LC connectors are fully seated at both ends. • Substitute known good fiber cable. • Fiber cable is not Multimode type (see Specifications for full details). • Fiber cable length exceeds 1000 ft. (305 m.).
No analog audio	• Verify an analog audio source is connected to the Transmitter module. The LightSpider does not "derive" L/R audio from the HDMI audio. • Verify all audio cables are fully seated in connectors.. • Substitute known good audio cables.
Infrared remote does not function	• Verify IR emitter is attached to the LightSpider Transmitter module and the IR sensor is plugged into the LightSpider Receiver. • Verify remote control batteries are fresh.

Symptom	Troubleshooting steps
RS-232 does not function	• Verify all RS-232 cable connectors are fully seated at both ends. • Check RS-232 connector to ensure there are no bent or broken pins. • Substitute known good RS-232 cables. • Using a known good cable, bypass the LightSpider to verify problem is not with the controller or device under control.

Tech Support

For further technical assistance, contact Neothings Tech support:

Phone support: Call 619 258-2000

E-mail: support@neothings.com

Specifications

Physical

Dimensions: Width, including mounting flanges 8.6" (21.8 cm), height 1.6" (4.1 cm), depth 4.9" (12.4 cm)
Weight: 0.9 lbs. (0.41 kg)

Power Requirements

Input: 100-240 Vac, 50/60 Hz, 10W (typical, per module)
Output: 9 Vdc

Video Performance

HDMI Formats: Up to 1080p, 60Hz digital video
PC/DVI Video: 1920 x 1200, 60 Hz
HDCP (High-bandwidth Digital Content Protection): fully supported
EDID (Extended Display Identification Data): fully supported

Digital Audio (via HDMI)

Dolby Digital 5.1
DTS (Digital Theatre System)
LPCM (Linear Pulse Code Modulation): up to 7.1

Analog Audio

Stereo L/R: Line level input (6.5 Vp-p max.)
Frequency response: 20 Hz – 20 KHz (+/- 0.5dB)
Sample rate: 96 KHz, 24 bits/sample

Control Signal Pass-through

RS-232:
Bi-directional pass-through, transmit & receive pins active
DTE (Data Terminal Equipment)
Baud rate: 300 – 115.2K
(2 cable kit is available from Neothings, Inc.)

Control Signal Pass-through, (con't)

Infrared Remotes:
Pass-through of unmodulated IR signals (38-40 KHz)
(Requires optional IR Emitter and IR Receiver kit)

Fiber Optic Cable

Type: Multimode (MM) "simplex"
For installations up to 500 ft. (152 m.): 62.5/125 µm
For installations up to 1000 ft. (305 m.): 50/125 µm
(Fixed and custom lengths of fiber cable are available from Neothings)

2 Year Warranty

Neothings, Inc. ("Neothings") warrants this product against defects in material and workmanship for a period of 2 years. This warranty applies to the original end-user purchaser and installation service provider. Neothings will, solely at its option, repair or replace this product with a functionally equivalent new or factory-reconditioned product during the warranty period. The consumer should contact the installation service provider that resold the product who will in turn deliver the product to Neothings. All transportation risks and costs in connection with this warranty service are the responsibility of the consumer.

In order to keep this warranty in effect, the product must have been handled and used as prescribed in the instructions accompanying this warranty. This warranty does not cover any damage due to accident, misuse, abuse, or negligence. Repair or replacement, as provided under this warranty, is your exclusive remedy. Neothings shall not be liable for any incidental or consequential damages. Implied warranties of merchantability and fitness for a particular purpose on this product are limited to the duration of this warranty.

Some states/countries do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. Some states/countries do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state and country to country.

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