# User Manual

## HD-H704K-SP

4K@60 444 HDR HDBaseT Extender Set



BASED ON V1.0.1

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**⊙HDBT™**      **HDMI®**
HIGH DEFINITION MULTIMEDIA INTERFACE

43296                                                                                  LIT1715

# Important Safety Instructions

**Contents are subject to change without notice**

**Warnings**

To reduce the risk of fire, electric shock or product damage:

**1.** Do not expose this device to rain, moisture, dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the unit.

**6.** Clean this device only with dry cloth.

**2.** Do not install or place this unit in a bookcase, built-in cabinet or in another confined space. Ensure the unit is well ventilated.

**7.** Unplug this device during lightning storms or when unused for long periods of time.

**3.** To prevent risk of electric shock or fire hazard due to overheating, do not obstruct the unit's ventilation openings with newspapers, tablecloths, curtains, and similar items.
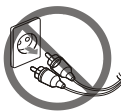
**8.** Protect cables and cords from being walked on or pinched particularly at plugs.

**4.** Do not install near any heat sources such as radiators, heat registers, stoves, or other device (including amplifiers) that produce heat.

**9.** Only use attachments/accessories specified by FSR.

**5.** Do not place sources of open flames, such as lighted candles, on the unit.

**10.** Refer all servicing to qualified service personnel.

# Table of Contents

## Overview

The HD-H704K-SP is a slim HDBT transmitter receiver set with HDCP 2.2 compatibility. It supports resolutions up to 4K@60Hz 4:4:4 8bit, transporting Ultra HD/4K video with HDR, audio, bi-directional IR and power up to 40m/130ft and 1080P signal up to 70m/230ft over a single Cat X cable.

HD-H704K-SP features bi-directional PoC, enabling only one power adapter connected to either transmitter or receiver to power both units. Bi-directional IR pass-through allows users to control the source at the display location or control the display at the source location with ease. RS232 ports support serial communication.

The HD-H704K-SP is easy to install. It is space saving and offers ideal solutions for homes, offices, digital entertainment centers, control centers, conference rooms, schools and corporate training environments, where HDMI signal extension over long distances is required.

## Features

- Supports resolutions up to 4K@60Hz 4:4:4 8bit.
- Compliant with HDCP 2.2.
- Supports HDR (High Dynamic Range), including HDR 10 and Dolby Vision*.
- Over a Cat 6a/7 cable, HDBT transmits 4K@60Hz 4:4:4 8bit up to 40m/130ft and 1080P up to 70m/230ft.
- Over a Cat 5e/6 cable, HDBT transmits 4K@60Hz 4:4:4 8bit up to 35m/115ft and 1080P up to 60m/200ft.
  - Bi-directional PoC, one power adapter at either transmitter or receiver side can power both units.

- Supports bi-directional IR/RS232 pass-through.
- Slim profile, space saving and easy-to-install

*Note: HD-H704K-SP supports Dolby Vision only if the data rate is less than or equal to 10.2Gbps

# What's in the box?:

HD-H704K-SP-Tx Transmitter
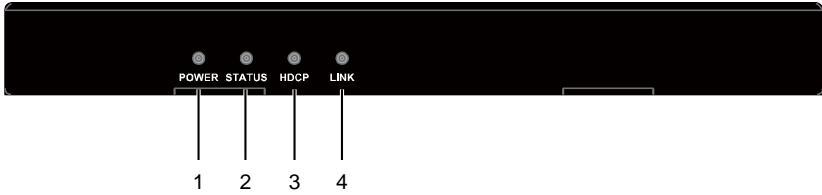HD-H704K-SP-Rx Receiver
18VDC 1A Power Supply
Under Table Mounting Brackets
1 IR Emitter Cable
1 IR Receiver Cable

# HD-H704K-SP-Tx Front Panel



| ID | Name | Description |
|----|------|-------------|
| 1 | Power LED | **On:** Unit is powered on.<br>**Off:** Unit is powered off. |
| 2 | Status LED | **Blinking:** Normal operating condition.<br>**Off:** Fault. |
| 3 | HDCP LED | **On:** HDCP video is being transmitted.<br>**Blinking:** Non- HDCP video is being transmitted.<br>**Off:** No content is being transmitted. |
| 4 | Link LED | **On:** Transmitter and receiver are linked to each other.<br>**Off/Blinking:** Fault in unit(s) or cabling |

# HD-H704K-SP-Tx Rear Panel
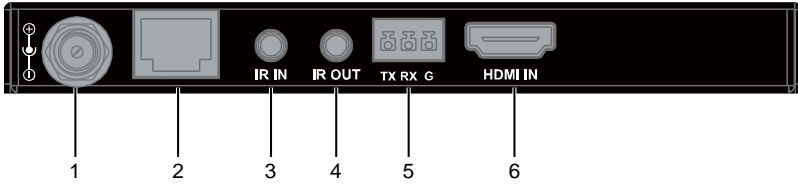


| ID | Name | Description |
|----|------|-------------|
| 1 | Power | Connect to a power supply via a power adapter to either the transmitter or receiver side 18VDC input. **Note:** It is only necessary to power one side (Tx or Rx) |
| 2 | HDBT OUT | RJ-45 connection to the receiver via a CAT5e/CAT6 CAT6A / CAT7 cable. |
| 3 | IR IN | Connect to an IR receiver cable. |
| 4 | IR OUT | Connect to an IR emitter cable. |
| 5 | RS-232 | Used to connect an RS-232 device. |
| 6 | HDMI IN | Connect to a source device via an HDMI cable. |

# HD-H704K-SP-Rx Front Panel
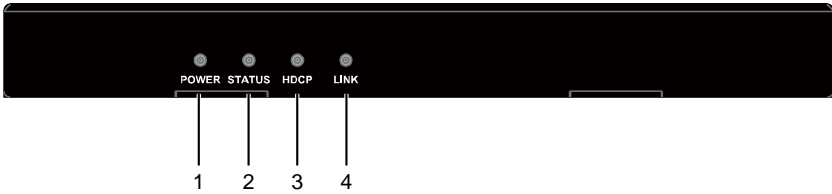


| ID | Name | Description |
|----|------|-------------|
| 1 | Power LED | **On:** Receiver is powered on.<br>**Off:** Receiver is powered off. |
| 2 | Status LED | **Blinking:** Normal operating condition<br>**Off:** Fault |
| 3 | HDCP LED | **On:** HDCP protected content is being transmitted.<br>**Blinking:** Non- HDCP protected content is being transmitted.<br>**Off:** No content is being transmitted. |
| 4 | Link LED | **On:** Receiver and Transmitter are linked to each other.<br>**Off/Blinking:** Fault in unit(s) or cabling |

# HD-H704K-SP-Rx Rear Panel
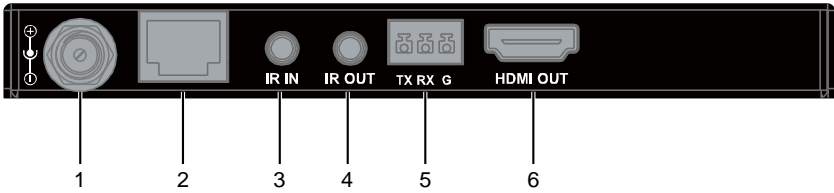


| ID | Name | Description |
|----|------|-------------|
| 1 | Power | Connect to a power supply via a power adapter to either the transmitter or receiver side 18VDC input.<br><br>**Note:** It is only necessary to power one side (Tx or Rx) |
| 2 | HDBT IN | Connect to the transmitter via a CAT5e / CAT6 / CAT6A / CAT7 cable. |
| 3 | IR IN | Connect to an IR receiver cable. |
| 4 | IR OUT | Connect to an IR emitter cable. |
| 5 | RS-232 | Used to connect an RS-232 device. |
| 6 | HDMI OUT | Connect to a Display via an HDMI cable. |

# Hardware Installation

**Warnings**

- Before the installation, disconnect the power supply from all the devices.

- Do not connect or disconnect cables from the Transmitter and Receiver when they are powered on. To connect or disconnect cables from the units, power them off first.

- For best resolution and ESD performance Shielded CAT6A in a TIA / EIA 568B wiring configuration is recommended. Please use care when installing, connecting and disconnecting cables.

1. Connect the source to **HDMI IN** on the Transmitter via an HDMI cable.
2. Connect an IR emitter cable to **IR OUT** and an IR receiver cable to **IR IN** on transmitter.
3. Connect a Display to **HDMI OUT** on Receiver.
4. Connect an IR emitter cable to **IR OUT** and an IR receiver cable to **IR IN** on the Receiver.
5. Connect **HDBT OUT** on the Transmitter to **HDBT IN** on the Receiver via a shielded CAT5e / CAT6 / CAT6A / CAT7 cable.
6. Connect the power supply to either the transmitter or receiver.

TV Remote          Blu-ray Player

Broadband                    HDMI IN
IR Receiver 2

N583    HDBT OUT     IR Emitter 1

IR IN    IR OUT    TX RX G    HDMI IN

Cat X cable

N584

IR IN    IR OUT    TX RX G    HDMI OUT

HDBT IN

Broadband        IR Emitter 2    HDMI OUT
IR Receiver 1

TV

Blu-ray Player Remote
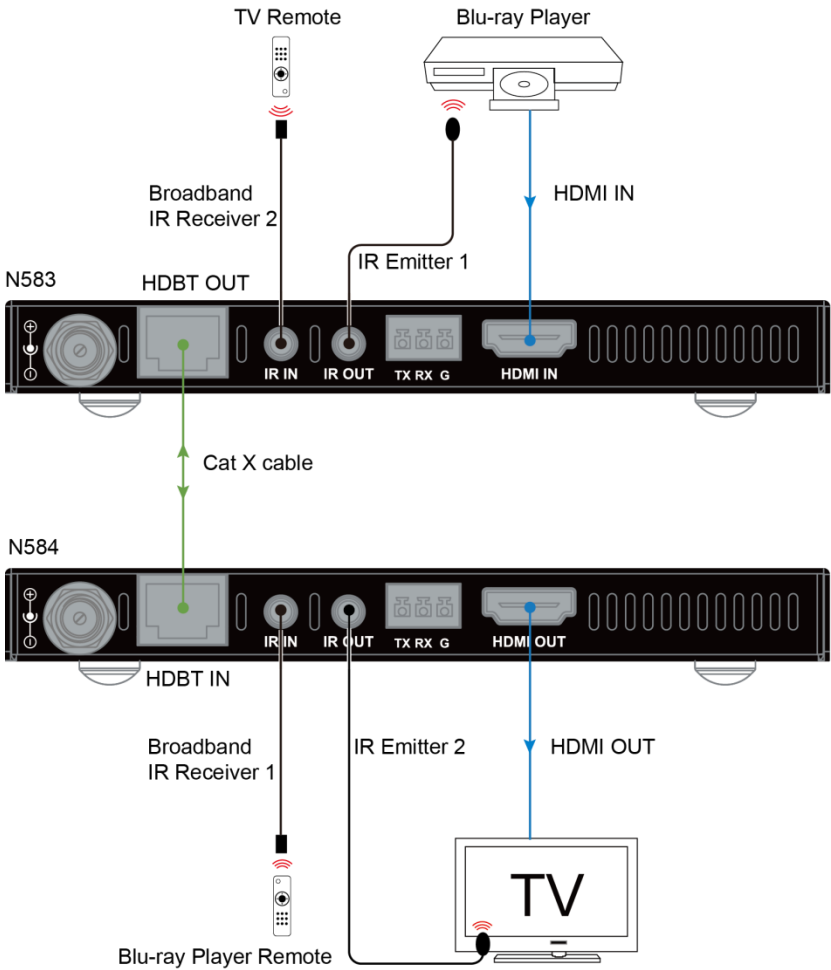
NOTE:   Only one IR pair is provided with each system. Additional
        Emitters and Receivers can be ordered from FSR.

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# IR and RS-232 Operation

## IR Control

The IR pass-through function in the Transmitter and Receiver allows you to control the source from the Display's location or control the Display from the source's location.

## Control the Display

In this case, IR IN on the Transmitter is connected to an IR receiver cable and IR OUT on Receiver is connected to an IR emitter cable. The TV can be controlled from the Transmitter's location with the TV remote.
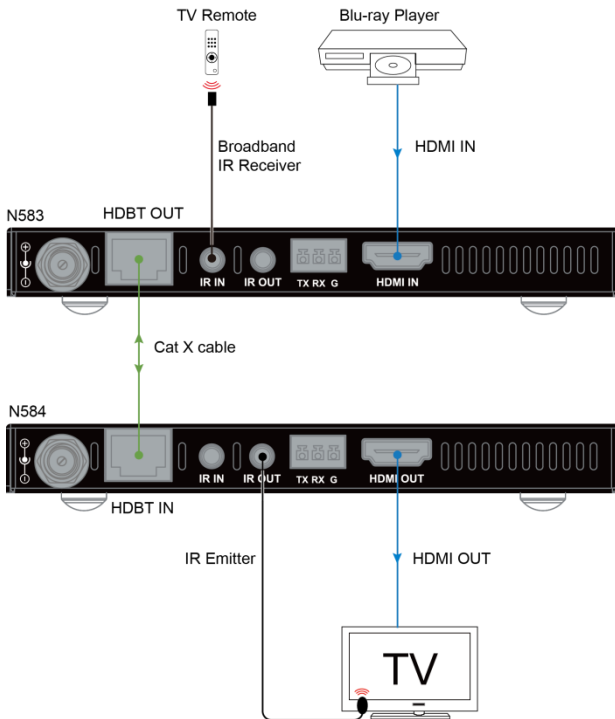
# Control the Source

In this case, IR OUT on the Transmitter is connected to an IR emitter cable and IR IN on the receiver is connected to an IR receiver cable. The DVD-player can be controlled from the Receiver's location with the DVD remote.
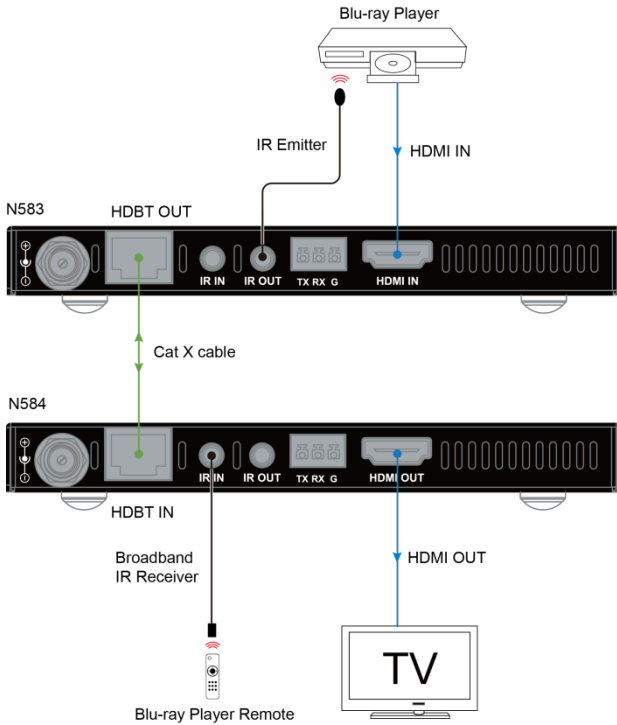
# RS-232 Control

The RS232 ports can be used for bi-directional RS232 signal pass-through between the transmitter and receiver.

Steps to set up for RS232 pass-through:

1. Connect an RS232 Master (or Slave) Device to the RS232 port of the transmitter with a RS232 cable.
2. Connect an RS232 Slave (or Master) Device to the RS232 port of the receiver with an RS232 cable.
3. Connect the HDBT OUT of the Transmitter to the HDBT IN of the receiver using a Cat 5e/6/7 cable.

When all is set, RS232 signal can be passed through bi-directionally between two RS232 devices.
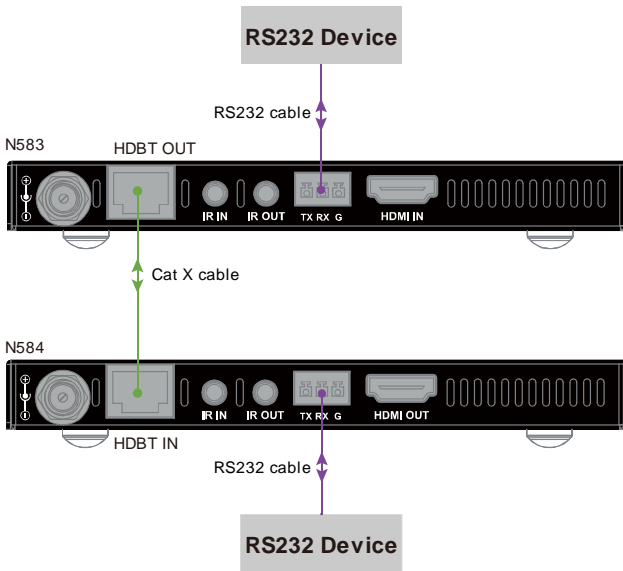


Baud rate max is 115.2 Kbps.

Troubleshooting

| Why is the power LED off? |
| --- |

- Check that the power supply is powered on.
- Check that all the cables are properly connected.

| Why is the Link LED off or blinking? |
| --- |

- Check that power supplies of all the devices are powered on.
- Check that all the cables connected properly.
- Check that the length of cable is appropriate. For more information, see cable specifications in the Specifications section.

| Why does the display connected to the Receiver show no picture? |
| --- |

- Check that power supplies of all the devices are powered on.
- Check that all the cables are connected properly.
- Check that the display works properly, and that source device has a normal signal output.
- Check that your Display is switched to the correct source input mode, such as switching to HDMI 1, HDMI 2, etc.
- Check that no compatibility issues exist between Receiver and Display. If so, replace the Display with another model.

| Why does the Display connected to the Receiver display snow or mosaic? |
|---|

- Check that all the cables are qualified and connected properly.

- Check that HDBaseT cables are CAT5e/CAT6 or better cables.

- Check that the input sources have no problems, such as snow, mosaic or a damaged disc. If so, replace them with the normal input sources.

- Check that there are no compatibility issues between the Receiver and Display. If so, replace the Display with another model.

## Glossary

| | |
|---|---|
| ESD | Electro-static Discharge |
| HDBT | HDBaseT |
| HDCP | High-bandwidth Digital Content Protection |
| HDMI | High Definition Multimedia Interface |
| IR | Infra-red |
| LCD | Liquid Crystal Display |
| LED | Light Emitting Diode |
| PoC | Power over CATx |

# Specifications

# Transmitter

| Technical | |
|---|---|
| Input | 1 x HDMI IN |
| Input Signal Type | HDMI with 4K@60Hz 4:4:4, HDCP 2.2 |
| Input/Output Resolution Supported | SMPTE:<br>1280x720P[1,2,3,4,5,6,7,8], 1920x1080I[6,8], 1920x1080P[1,2,3,4,5,6,7,8], 3840x2160[2,3,5,6,8], 4096x2160[2,3,5,6,8]<br><br>VESA:<br>800x600[8], 1024x768[8], 1280x768[8], 1280x800[8], 1280x960[8], 1280x1024[8], 1360x768[8], 1366x768[8], 1400x1050[8], 1440x900[8], 1600x900[8], 1600x1200[8], 1680x1050[8], 1920x1200[8]<br><br>1 = at 23.98 Hz, 2 = at 24 Hz, 3 = at 25 Hz, 4 = at 29.97 Hz, 5 = at 30 Hz, 6 = at 50 Hz, 7 = at 59.94 Hz, 8 = at 60 Hz |
| Maximum Data Rate | 18 Gbps |
| Input Video Level | 0.5-1.0 V p-p |
| Maximum Pixel Clock | 600MHz |
| Output | 1 x HDBT |
| Output Signal Type | HDBT |
| Video Impedance | 100ohms |
| General | |
| Operating Temperature | 0°C to 45°C (32°F to 113°F), |
| Storage Temperature | -20°C to 70°C (-4°F to 158°F) |

| | |
|---|---|
| Operating Humidity | 10% to 90% RH, non-condensing |
| Storage Humidity | 10% to 90% RH, non-condensing |
| Power Supply | DC 18V 1A |
| Power Consumption (Max) | 13W (When connect the power adapter to transmitter to power both units.) |
| Device Dimension (W x H x D) | 136.8 mm ×15.4 mm × 74.5 mm/ 5.39'' x 0.61'' x 2.93'' |
| Product Weight | 0.24kg/0.53lb |
| Certification | CE, FCC |

# Receiver

| Technical | |
|---|---|
| Input | 1 x HDBT |
| Input Signal Type | HDBT |
| Input/Output Resolution Supported | SMPTE: 1280x720P[1,2,3,4,5,6,7,8], 1920x1080I[6,8], 1920x1080P[1,2,3,4,5,6,7,8], 3840x2160[2,3,5,6,8], 4096x2160[2,3,5,6,8] <br><br> VESA: 800x600[8], 1024x768[8], 1280x768[8], 1280x800[8], 1280x960[8], 1280x1024[8], 1360x768[8], 1366x768[8], 1400x1050[8], 1440x900[8], 1600x900[8], 1600x1200[8], 1680x1050[8], 1920x1200[8] <br><br> 1 = at 23.98 Hz, 2 = at 24 Hz, 3 = at 25 Hz, 4 = at 29.97 Hz, 5 = at 30 Hz, 6 = at 50 Hz, 7 = at 59.94 Hz, 8 = at 60 Hz |
| Maximum Data Rate | 18 Gbps |
| Input Video Level | 0.5-1.0 V p-p |

| | |
|---|---|
| Maximum Pixel Clock | 600MHz |
| Output | 1 x HDMI |
| Output Signal Type | HDMI with 4K@60Hz 4:4:4, HDCP 2.2 |
| Video Impedance | 100ohms |
| **General** | |
| Operating Temperature | 0°C to 45°C (32°F to 113°F) |
| Storage Temperature | -20°C to 70°C (-4°F to 158°F) |
| Operating Humidity | 10% to 90% RH, non-condensing |
| Storage Humidity | 10% to 90% RH, non-condensing |
| Power Supply | DC 18V 1A |
| Power Consumption (Max) | 12W (When connect the power adapter to receiver to power both units.) |
| Device Dimension (W x H x D) | 136.8 mm ×15.4 mm × 74.5 mm/ 5.39'' x 0.61'' x 2.93'' |
| Product Weight | 0.24kg/0.53lb |
| Certification | CE, FCC |

**Transmission Distance**

**Note:** T568B straight-through Category cable is recommended.

| Cable Type | Range | Supported Video |
|---|---|---|
| HDMI | Input/Output: 15m/50ft | 1080P@60Hz |
| | Input/Output:10 m/33ft | 4K@30Hz |
| | Input/Output: 5m/16ft | 4K@60Hz |
| Cat 5e/6 | 60m/200ft | 1080P@60Hz 36bpp |
| | 35m/115ft | 1080P@60Hz 48 bpp |

|  |  | 1080P@60Hz 3D |
|  |  | 4K@60 Hz |
| Cat 6a/7 | 70m/230ft | 1080P@60Hz 36bpp |
|  | 40m/130ft | 1080P@60Hz 48 bpp |
|  |  | 1080P@60Hz 3D |
|  |  | 4K@60 Hz |

# Limited Warranty

The HD-H704K-SP HDBaseT HDMI EXTENDER SET is warranted against failures due to defective parts or faulty workmanship for a period of three years after delivery to the original owner. During this period, FSR will make any necessary repairs or replace the unit without charge for parts or labor. Shipping charges to the factory or repair station must be prepaid by the owner, return-shipping charges (via UPS Ground) will be paid by FSR.

This warranty applies only to the original owner and is not transferable. In addition, it does not apply to repairs done by other than the FSR factory or Authorized Repair Stations.

This warranty shall be cancelable by FSR at its sole discretion if the unit has been subjected to physical abuse or has been modified in any way without written authorization from FSR. FSR's liability under this warranty is limited to repair or replacement of the defective unit.

FSR will not be responsible for incidental or consequential damages resulting from the use or misuse of its products. Some states do not allow the exclusion of incidental or consequential damages, so the above limitations 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.

Warranty claims should be accompanied by a copy of the original purchase invoice showing the purchase date (if a Warranty Registration Card was mailed in at the time of purchase, this is not necessary). Before returning any equipment for repair, please read the important information on service below.

**SERVICE**

Before returning any equipment for repair, please be sure that it is adequately packed and cushioned against damage in shipment, and that it is insured. We suggest that you save the original packaging and use it to ship the product for servicing. Also, please enclose a note giving your name, address, phone number and a description of the problem.

NOTE: all equipment being returned for repair must have a Return authorization (RMA) Number. To get a RMA Number, please call the FSR Service Department (1-800-332-FSR1). **Please display your RMA Number prominently on the front of all packages.**

CONTACT INFORMATION:

FSR INC.

244 Bergen Blvd.

Woodland Park, NJ 07424

Phone:   (973) 785-4347

Order Desk Fax: (973) 785-4207

**Web Site:***http://www.fsrinc.co*

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