2306LR/2307LR
Miniature L-Band/Wideband Fiber Optic Receiver
User Manual

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The material contained in this manual consists of information that is the property of Evertz Microsystems and is intended solely for the use of purchasers of the 2306LR/2307LR series product. Evertz Microsystems expressly prohibits the use of this manual for any purpose other than the operation of the 2306LR/2307LR series product. Due to on going research and development, features and specifications in this manual are subject to change without notice.

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IMPORTANT SAFETY INSTRUCTIONS

⚡	The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "Dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.
❗	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (Servicing) instructions in the literature accompanying the product.

- Read these instructions
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

WARNING
TO REDUCE THE RISK OF FIRE OR ELECTRIC – SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE

WARNING
DO NOT EXPOSE THIS EQUIPMENT TO DRIPPING OR SPLASHING AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS ARE PLACED ON THE EQUIPMENT

WARNING
TO COMPLETELY DISCONNECT THIS EQUIPMENT FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE
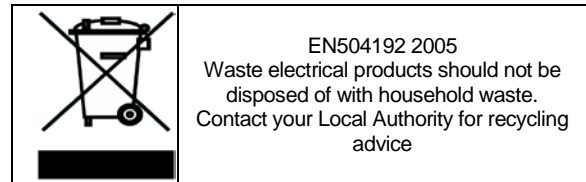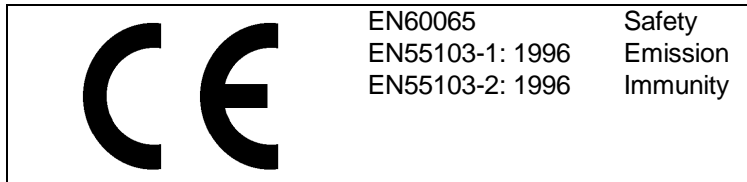
WARNING
THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE

INFORMATION TO USERS IN EUROPE

NOTE

CISPR 22 CLASS A DIGITAL DEVICE OR PERIPHERAL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the European Union EMC directive. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

| CE | EN60065
EN55103-1: 1996
EN55103-2: 1996 | Safety
Emission
Immunity | | EN504192 2005
Waste electrical products should not be disposed of with household waste.
Contact your Local Authority for recycling advice |

INFORMATION TO USERS IN THE U.S.A.

NOTE

FCC CLASS A DIGITAL DEVICE OR PERIPHERAL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING

Changes or Modifications not expressly approved by Evertz Microsystems Ltd. could void the user's authority to operate the equipment.

Use of unshielded plugs or cables may cause radiation interference. Properly shielded interface cables with the shield connected to the chassis ground of the device must be used.

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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First Release	Jan 2016

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1. OVERVIEW

The 2306LR/2307LR is a fiber optic receiver in a revolutionary from a factor. With the same diameter as a BNC connector, and overall length of 3.3" (85mm), the 2306LR/2307LR is the smallest RF optical receiver in the industry. It accepts an optical LC connector input on one end, and provides an electrical output on the other.

The 2306LR/2307LR attaches to the input of a device without any intermediate cabling required. This essentially offers direct optical input to the connected piece of equipment, without incurring the cost and rack space associated with using conventional optical receivers. The primary application is in providing direct optical inputs to XRF series routers, without requiring external fiber receiver cards.

The 2306LR/2307LR receives its power form the same connector that attaches to the input of the companion device, therefore the 2306LR/2307LR may also interfaced to any device that provides LNB voltage at its RF input connector. For example, when connected to a 7703DA16-RF-LNB, a fiber receiver with 16 electrical outputs is created. A 2306LR/2307LR connected to the input of a 7703PA-LNB results in a fiber receiver with a high-powered output and adjustable slope compensation. The 2306LR/2307LR may also be connected to the DC-biased inputs of devices such as IRD's, facilitating direct optical input via high-performance optical infrastructure.

Features and Benefits

- Compact, efficient form factor provides fiber receiver functionality in zero rack space
- Provides high-quality, direct optical input to XRF series routers and other devices with DC biased RF input ports
- Wide frequency range for L-Band, over-the-air DTV and other applications
- Tri-color LED optical input strength indicator
- Efficient design featuring high reliability and low power consumption
- Protocol independent-passes any modulation format
- Minimizes the use of coax in the infrastructure, providing the highest possible quality signals over longer distances and without high-frequency roll off
- Compatible with Evertz 2408LT, 7708LT and 7807LT-2 series fiber transmitters

Applications

- Direct optical inputs to XRF routers
- Direct optical inputs to IRD's and other devices with LNB bias
- Distribution amplifiers with optical input
- Line amps/slope compensators with optical input
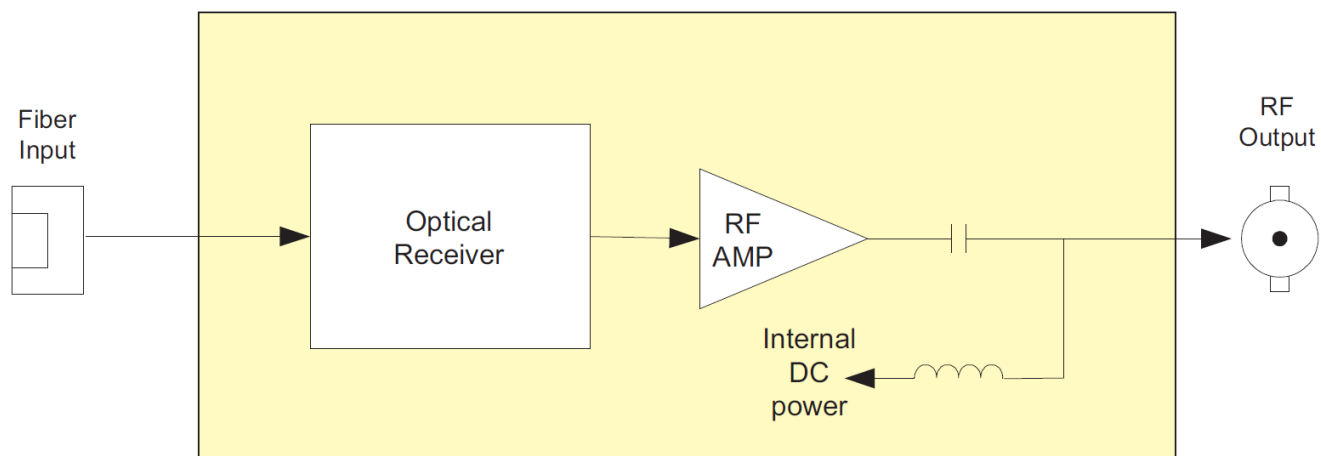
Figure 1-1 : 2306LR/2307LR Block Diagram

2.   INSTALLATION

The 2306LR and 2307LR can be connected to the input of a device directly without any intermediate cabling required.

It can be connected to each Evertz product that has LNB option.

Figure 2-1 : 2306 LR/2307 LR Module

For installing the 2306LR and 2307LR modules, it is recommended to use *Trompeter* tool. (Figure 2-2)

Warning: Using an angled BNC tool like ADC, can result in damage of the module.

Figure 2-2 : Using Trompeter for installing the 2306LR and 2307LR

Figure 2-3 : Using angled tools may cause damage in module

2.1. 2306LR/2307LR CONNECTIONS

FIBER INPUT   Input BNC connector for fiber optic signals that accepts an optical LC connector input in one end.

RF OUTPUT   One BNC connector with amplified output for signal distribution. This signal can be an analog signal with frequency from 120MHz to 3GHz, with any modulation format.

3. SPECIFICATIONS

3.1. OPTICAL INPUT

Number of Inputs:	1
Connector:	Female LC/UPC
Operating Wavelength:	1270nm-1610nm
Max Input Power:	+3dBm
Optical Sensitivity:	-14dBm@ 35dB C/N on a 36MHz carrier

3.2. RF OUTPUTs

Number of Outputs:	1
Connector:	BNC per IEC 61169-8 Annex A
I/O Impedance:	75Ω (50Ω optional)
Frequency Range:	120MHz-3GHz
Return Loss:	
120MHz to 2.3GHz:	>15 dB
2.3GHz to 3GHz:	>12 dB
Output:	IP3+40dBm
Link Gain:	-6dB at 0 dBm optical input, and 0dB gain at the fiber transmitter

3.3. DC Input

Voltage:	13V DC nominal, range 9-21V DC
Connector:	BNC per IEC 61169-8 Annex A
	(Same connector as RF output)
Power:	< 1Watt

3.4. PHYSICAL

Dimensions:	3.3" long × 0.57" dia.
	(84mm long × 15mm dia)

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4.   STATUS INDICATOR

There is one small module status LED at the end of the module that indicates the general status of module.

MODULE OK: The LED will be Orange if the module is connected and work properly.

MODULE FAULT: The LED will be OFF if the LNB is off or the module doesn't work properly.

Different LED colors indicate the fiber input thresholds as well as LNB indications. (Table 4-1 and Table 4-2)

Input	Indication (LED Color)	Function
Optical Input	**Orange**	The LED is **Orange** when there is an input which is **less** than lower threshold. (<-15)
	Blue	The LED is **Blue** when there is an input signal which is within the lower and upper thresholds. (-15 to 0)
	Red	The LED is **Red** when there is an input signal which is more than upper threshold. (>0)

Table 4-1: Optical input thresholds

Input	Indication (LED Color)	Function
LNB	**Orange**	LNB voltage is present.
	OFF	LNB OFF. (There is no LNB voltage)

Table 4-2: LNB status

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5. SMARTMON™ (2307LR ONLY)

The 2307LR sends SmartMON™ monitoring and configuration status information down the fiber for viewing locally at an Evertz SmartMON™–capable fiber optic receiver and remotely via SNMP/VistaLINK.

RF input signal, configuration status and other operating parameters are relayed over fiber for monitoring by an Evertz SmartMON™–capable fiber optic receiver. With such a receiver, this information can be monitored locally at the receiver card-edge, or remotely through SNMP and VistaLINK.

> **SmartMON works with XRF router by using XRF-IP16LB input card with +SM option activated.**

There is no need to separate data connections and it uses the same fiber that carries RF signals.

On VLPro, on Input settings, under control tab, on LNB mode 1, the user should turn on LNB by choosing 18V (Figure 5-1).

After setting the LNB to 18V, the 2307LR Tone 1 will be changed to present and the 2307LR LED will turn on.
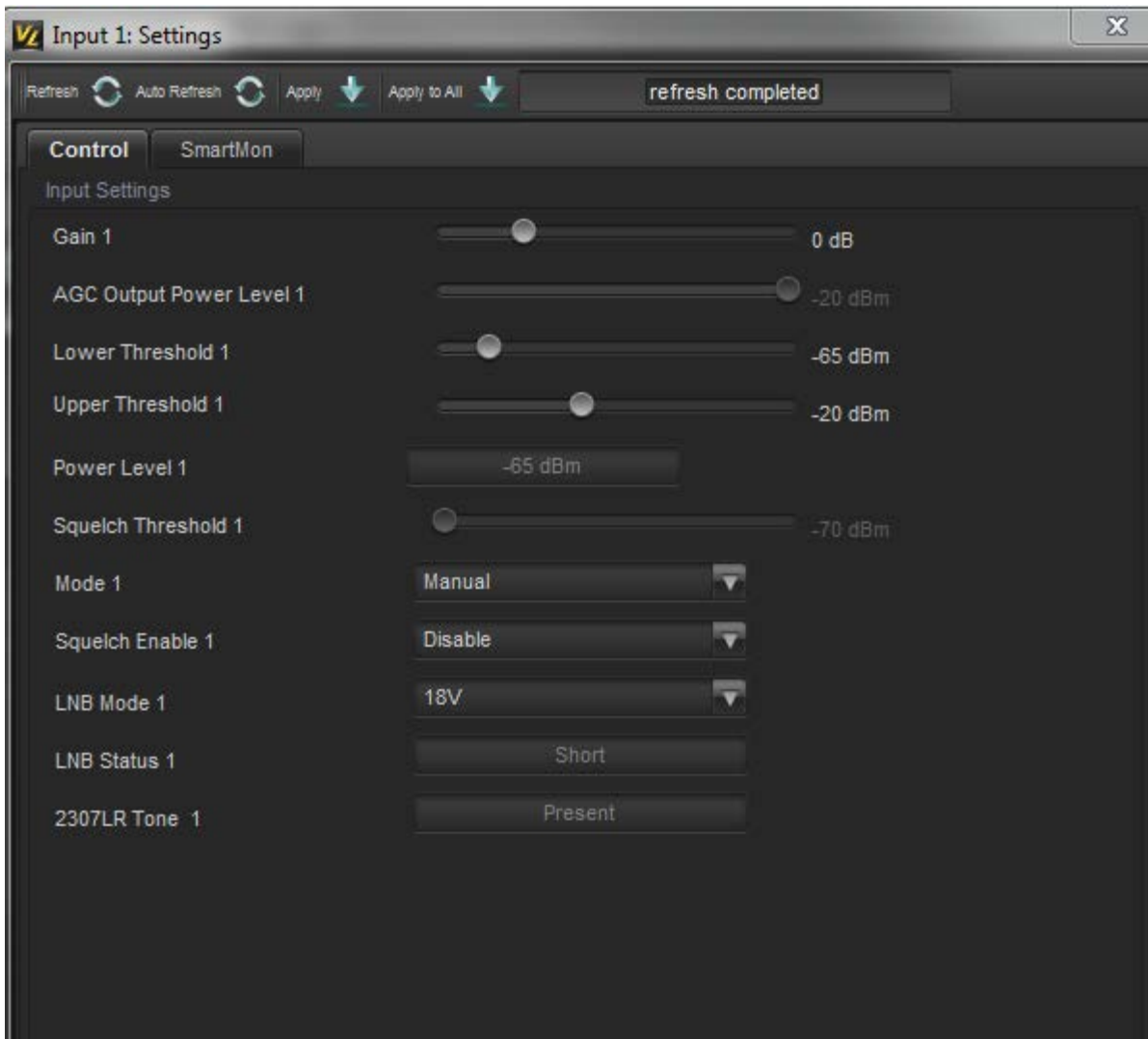
Figure 5-1: Setting LNB to 18V

On SmartMON™ tab on VLPro (Figure 5-2), the user can read a lot of information such as:
RF input power, DC input level, Gain/LNB settings, Laser status, LNB current, internal temperature.

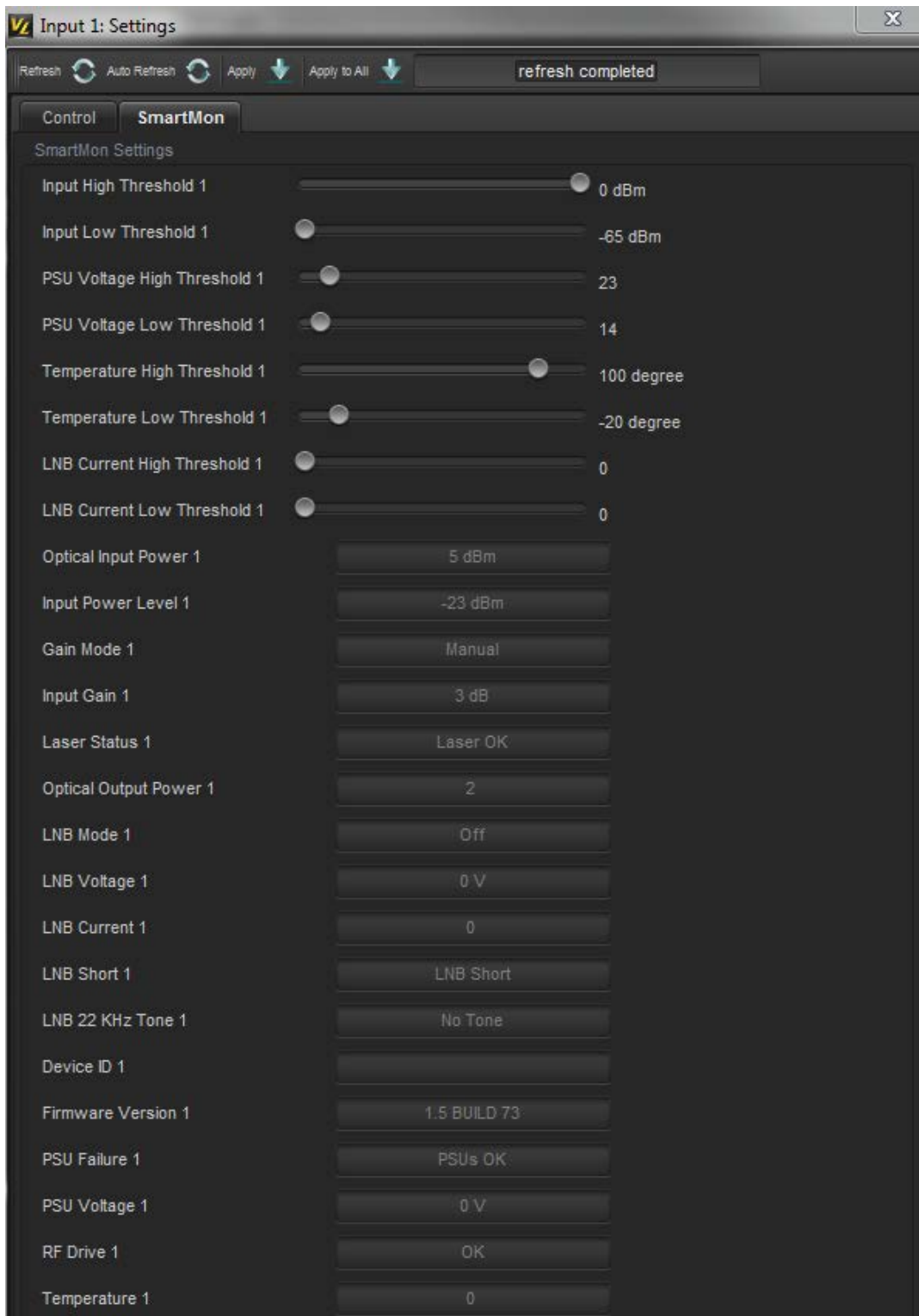It also alarms thresholds for LNB current, RF input power and temperature.

Figure 5-2 : SmartMON^{TM} tab

Note: The SmartMON^{TM} will be hidden and not available unless an appropriate SmartMON^{TM} equipped transmitter that sends monitoring data down the fiber is connected.

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