DiVAR
OPTICAL FIBER SOLUTIONS

LWL2CXMBAL

USER MANUAL

MIC + Line Audio over Fiber - uni-directional

Import, Manufacturing and Distribution by

vuetec.tv UG (haftungsbeschränkt)

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LWL2CXMBAL MIC + Line Audio over Fiber uni-directional

The ***DIVAR*** LWL2CXMBAL fiber extender kit sends 2-channel, uni-directional, balanced mic and line level audio over a single fiber. The transmitter port 1 accepts MIC level signals.

The system consists of a transmitter and receiver that support 16-bit digitally encoded broadcast audio for use on multimode or singlemode optical fiber. This extender transmits a broadcast quality audio signal up to 1600 feet on multimode fiber and up to 12.5 miles on singlemode fiber.

Includes

- 1 Transmitter
- 1 Receiver
- 2 Power Supplies, 5VDC/2A

Features

- 2-channel, uni-directional audio on XLR connectors
- No adjustments; pure digital processing and transmission
- Channel 1 MIC level input, amplified by 50 dB to Line level
- Channel 2 Line level, balanced audio operation
- Indicator LEDs monitor audio signals and power
- Standalone chassis with surface mounting bracket
- Multimode fiber transmission up to 1600 feet without attenuation
- Singlemode fiber transmission up to 12.5 miles without attenuation
- Complete Transmitter and Receiver System

Specifications

Optical:

Wavelength	1310 nm & 1470 nm~1610 nm
Output Power	-14~ -8 dBm / -5~0 dBm
Optic fiber	50/125u multimode, 62.5/125u multimode, 9/125u single mode
Rx sensitivity	-30 dBm
Optical connector	FC or ST or SC (optional on request)
Distance	0~2 km (MM) / 0~20 km (SM)

Balanced Audio

Number of Channels	2 Input + 2 Output
Input Connector	XLR-3F (female)
Output Connector	XLR-3M (male)
Input / Output Impedance	10 kOhm, electronically balanced
Input capacitance LINE inputs	10 pF
Max input/output voltage	Line: 3.0 Vp-p MIC: 5 mVp-p
MIC Amplification	50 dB fixed
Frequency Response	10 Hz~24 kHz @ ±3 dB
Sample Rates From	48 kHz
SNR	> 80 dB

Electrical & Mechanical

Input Power Requirements:	DC 5 V @ 2 A
Power Adapter:	AC 90 V~240 V
Power Consumption:	< 5 W
Dimensions:	168 mm × 154 mm × 45 mm
Weight:	650 g Transmitter & Receiver each

Environmental

Operating Temperature:	-20°C ~ +75°C
Storage Temperature:	-40°C ~ +85°C
Relative Humidity:	0% ~ 95% (non-condensing)
MTBF:	>100,000 hours

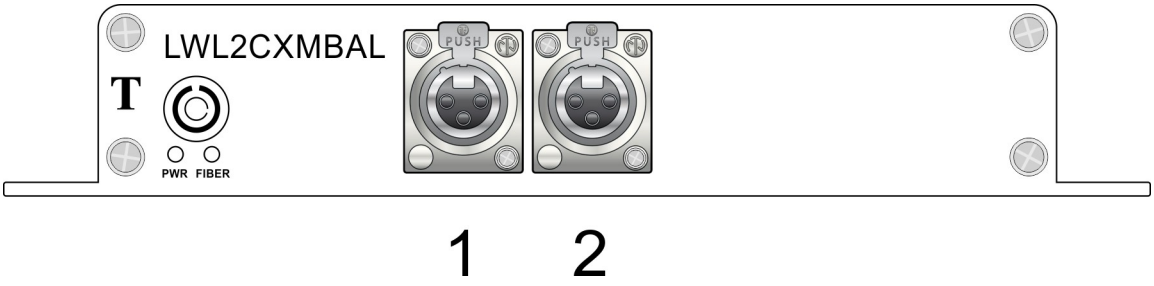
NOT FOR USE WITH IFB SYSTEMS WHERE AUDIO IS MODULATED WITH VOLTAGE

NOT FOR USE WITH PHANTOM POWERED DEVICES

Interfacing the LWL2CXMBAL

Transmitter

The transmitter unit have following I/O ports and connections:



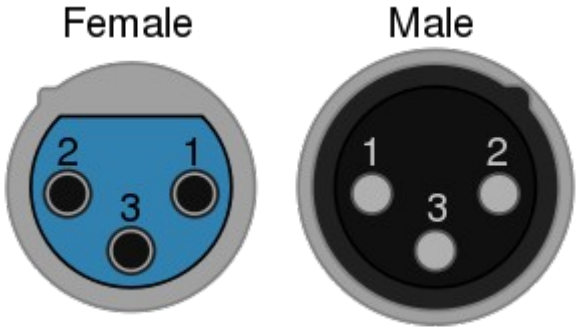
Fiber I/O

Status Indicator LEDs

1. Audio MIC Level Input to Receiver Output 1
2. Audio Line Level Input o Receiver Output 2

XLR Connector

The industry standard XLR connector is used for Audio at fiber transmission system.

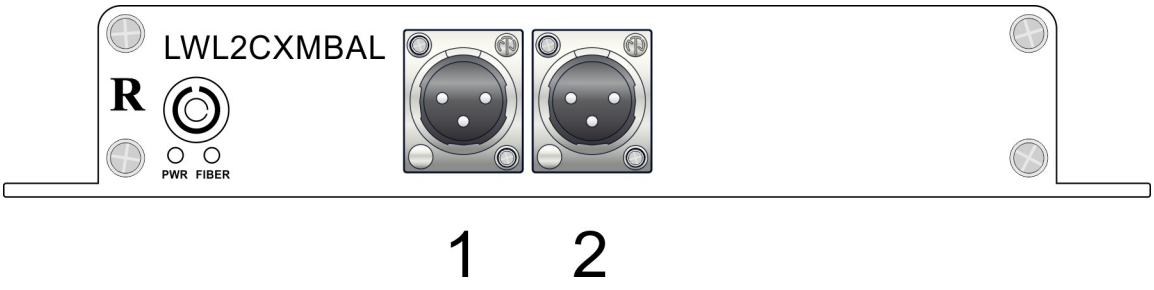


See pin-out below.

XLR Connector Pin	Female	Male
Pin 1	Audio Ground	Audio Ground
Pin 2	Balanced Audio +	Balanced Audio +
Pin 3	Balanced Audio -	Balanced Audio -

Receiver

The receiver unit have following I/O ports and connections:



Fiber I/O

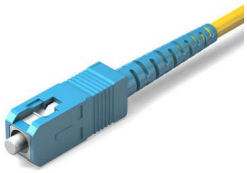
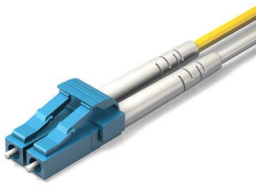
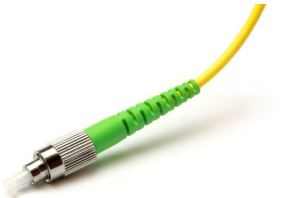
Status Indicator LEDs

1. Audio Output 1 Line Level from Transmitter MIC Level Input
2. Audio Output 2 Line Level from Transmitter Line Level Input

Fiber Connector

All ***DIVAR*** Fiber Optic devices are available with different fiber connectors.

The user can select between following connectors.

Type		Description	Order number
SC		SC is a snap-in connector with a 2.5 mm ferrule that is widely used for it's excellent performance. Its shell is rectangular, adopted by the pin type and the structure of the coupling sleeve size. The end face of the pin is used more PC or APC model grinding method, fastening way is to use the plug pin bolt type, do not need to rotate. SC connector latches with a simple push-pull motion. SC connectors provide for accurate alignment via their ceramic ferrules. Typical matched SC connectors are rated for 1000 mating cycles. SC connector features with low price, involve loss small ripple, high compressive strength and high density installation.	LWLxxxxx-SC
ST		ST is probably still the most popular connector for multimode networks, widely used in the optical distribution frame (ODF), like most buildings and campuses. It has a bayonet mount and a long cylindrical 2.5 mm ceramic (usually) or polymer ferrule to hold the fiber. Most ferrules are ceramic, but some are metal or plastic. ST connectors are constructed with a metal housing and are nickel-plated, can be inserted into and removed from a fiber-optic cable both quickly and easily. They have ceramic ferrules and are rated for 500 mating cycles.	LWLxxxxx-ST
LC		LC type connector is a famous BELL developed by the institute of research, using convenient operation modular jack (RJ) latch mechanism is made. The pin and the size of the sleeve is adopted by the general SC, FC, half size is 1.25 mm. It can improve the density of optical fiber connector in the optical fiber distribution frame. Otherwise, it's a standard ceramic ferrule connector, easily terminated with any adhesive. LC connector features with good performance and is highly favored for single mode.	LWLxxxxx-LC
FC		FC connector was originally developed by NTT, Japan. FC is short for FERRULE CONNECTOR. It also uses a 2.5 mm ferrule, its external strengthening way is to use metal sleeve, fastening way as the turnbuckle. FC connectors offer extremely precise positioning of the fiber-optic cable with respect to the transmitter's optical source emitter and the receiver's optical detector. FC connectors feature a position locatable notch and a threaded receptacle. FC connectors are constructed with a metal housing and are nickel-plated. They have ceramic ferrules and are rated for 500 mating cycles. This kind of connector is simple in structure, convenient operation.	LWLxxxxx-FC

Power Supply

The Tx and Rx units are powered by the 5 V DC 2 Amp universal voltage [100 V - 240 V AC 50/60 Hz input range] AC power adapters, similar to the shown above power supply below.

Note:

The LWL2CXMBAL features environmentally conscious packaging material to protect the LWL22CBAL system during transportation and can be used for temporary storage when better forms of storage are not available.

SET UP INSTRUCTIONS

1.Secure the units in a safe location, where they will not be bumped or dropped or fall and where there is room around the unit so nothing will interfere with the fiber optic cabling causing it to bend in a tight radius or bend sharply in any way as this can severely affect the signal transfer.

2.Carefully connect your source(s) to the transmitters input(s) and the receiver units output(s) to your receiving devices input(s) using the female XLR inputs on the transmitter and male XLR output connectors on the receiver unit,

3.Please note that all audio on the transmitter (Tx) and receiver (Rx) must be line level.

4.CLEAN* the ST fiber optical cable contacts that will be used for connecting the Tx and Rx units and insert the fiber into the ST connections and secure like you would secure a bayonet BNC: while pressing lightly in on the connector twist it in a clockwise direction about 1/8 to 1/4 of a turn and then release, the connector should stay inserted and have backwards spring pressure holding the bayonet in place.

5.Connect the included power supplies to the transmitter & receiver units, and plug them both into an AC power source (100v-240v AC 50/60Hz).

**ALL FIBER OPTICAL CABLE CONTACTS [THE ENDS ARE CALLED CONTACTS: THE PART THAT IS INSERTED AND MAKES CONTACT TO ENABLE THE TRANSMISSION OF THE LIGHTWAVES THROUGH THE FIBER] REQUIRE CLEANING EVERYTIME BEFORE INSERTING INTO A DEVICES OUTPUTS OR INPUTS. FAILURE TO CLEAN THE CONTACTS CAN NOT ONLY DAMAGE THE UNITS OPTICS OVER TIME BUT CAN RENDER THE CABLE AND THE DEVICE USELESS PERMANENTLY. FURTHERMORE CLEANING WITH CLEANING METHODS OTHER THAN CLEANING KITS SPECIFICALLY FOR FIBER OPTICS ARE UNACCEPTBLE AND MAY EVEN ADD CONTAMINANTS THAT CANNOT BE SEEN BY THE NAKED EYE TO THE FIBER AGAIN RENDERING THE SYSTEM USELESS, PLEASE CLEAN THE FIBER OPTICAL CONTACTS EVERYTIME PRIOR TO INSERTING THE CONNECTOR INTO THE JACK ON THE UNITS*

!!! FIBER OPTIC CLEANING KITS ARE AVAILABLE FROM YOUR DEALER/SUPPLIER !!!

SAFETY PRECAUTIONS

- To prevent fire or shock hazard, do not expose this equipment to an environment of high humidity and/or dust. Do not use in an unprotected outdoor installation or any area classified as overly damp or wet.
- The temperature for installation should be kept between 0°C - 60°C. Avoid direct sunlight exposure or extreme changes of temperature over a short period of time.
- Do not disassemble the unit or put it on an unstable base.
- Do not drop it and avoid heavy impact.
- Ventilation: Any openings in the enclosure are provided for ventilation and to ensure reliable operation of the unit and to protect it from overheating. These openings, if any, must not be blocked or covered. This unit should not be placed in a built-in installation unless proper ventilation is provided.
- Cleaning: Unplug the unit from the mains outlet before cleaning. Do not use liquid cleaners or aerosol cleaners, only use a damp cloth.
- **Do not overload outlets and extension cords as this may result in a risk of fire or electric shock.**
- Enclosure Entry of any kind is dangerous. Never push objects of any kind, including liquids, into this unit through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock.
- Service: Do not attempt to open or service this unit yourself as opening or removing covers may expose you to dangerous voltage of other hazards.
- There are no user-serviceable parts inside the unit. If the unit requires service please contact your authorized dealer, or an authorized repair service company.

Conformity Declaration

to EMV guideline (89/336/EC) and to low-voltage guideline (73/23/EC chapter 10)

The importer/manufacturer:

vuetec.tv UG, Hasselbusch 124a, 24558 Henstedt-Ulzburg

declares hereby, that the product:

Product name: Audio Over Fiber Extender

Model number: LWL2CXBAL | LWL2CBAL | LWL2CXMBAL

Year of construction: 2016

corresponds to the regulations of the guidelines described above:

The following harmonized norms were used:

- **EN 55011** ISM Equipment, Group 1, Class A
- **EN 55022** Conducted Emissions, Class B
- **EN 50081-2** Generic standard interference transmission, industry area
- **EN 50082-2** Generic standard interference immunity, industry area
- **prEN55103-1** EMV product family norm for Audio-, Video and audio-visual facilities as well as for studio light control facilities for the professional usage, -Part 1: Limiting values and measurement procedure for disturbing emissions
- **prEN55103-2** EMV product family norm for Audio-, Video and audio-visual facilities as well as for studio light control facilities for the professional usage, -Part 2: Requirements on the interference immunity
- **EN 61000-3-2** Power Factor Harmonic Correction
- **EN 61000-3-3** Flicker & Voltage Fluctuation Limits
- **EN 61000-4-2** Electrostatic Discharge Immunity
- **EN 61000-4-3** Radiated Electromagnetic Fields
- **EN 61000-4-4** Fast Transients-Burst Immunity
- **EN 61000-4-5** Input Surge Immunity
- **EM 61000-4-6** Conducted RFI
- **EN 61000-4-11** Voltage Dips

The following national or international norms (or parts/clauses from this) and specifications were used:

- **DIN EN 6099** Verbindungsmaterial für Niederspannungsstromkreise für Haushalt und ähnliche Zwecke; Teil 1: Allgemeine Anforderungen
- **IEC 127-6** Geräteschutzsicherungen

Henstedt-Ulzburg, 29.06.2016

Dipl. Ing. Erwin W. Lissy

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