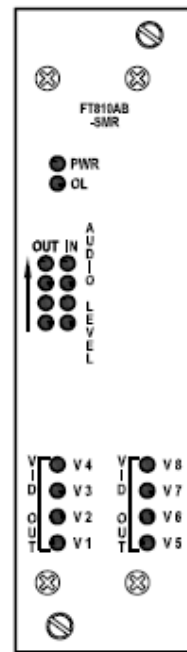
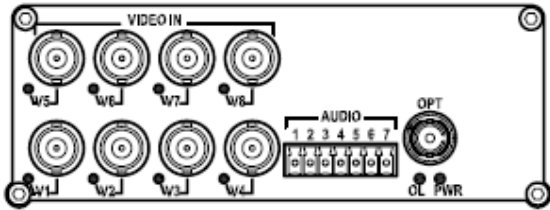




All Digital Fiber Optic Manufacturing Specialists

Installation and Operation Manual

FT810AB Series



10-bit Digital Series

8-ch Video with 1 Bi-directional Data
Fiber Optic Converter

Models covered in this manual

Standalone Units

Single-Mode Transmitters

FT810AB-SSTSA

FT810AB-SSTLSA

Single-Mode Receivers

FT810AB-SSRSA

FT810AB-SSRLSA

Multi-Mode Transmitter

FT810AB-SMTSA

Multi-Mode Receiver

FT810AB-SMRSA

Card Modules

Single-Mode Transmitters

FT810AB-SST

FT810AB-SSTL

Single-Mode Receivers

FT810AB-SSR

FT810AB-SSRL

Multi-Mode Transmitter

FT810AB-SMT

Multi-Mode Receiver

FT810AB-SMR

Remark:

If the optical connector is FC type, the suffix in the model number will be “-**FXX**”. Eg.

FT810AB-**FST**

Table of Contents

(1)	SAFETY INSTRUCTIONS.....	3
(2)	PRODUCT OVERVIEW.....	4
	2.1 Introduction.....	4
	2.2 Models selection table.....	5
(3)	INSTALLATION	6
	3.1 General	6
	3.2 Standalone unit installation.....	6
	3.3 Card module installation.....	7
(4)	CABLE CONNECTIONS & SETUP PROCEDURES.....	7
	4.1 System cable connections.....	7
	4.3 Ground connection.....	10
(5)	OPERATIONAL GUIDES.....	10
	5.1 FT810AB Series Transmitter.....	10
	5.2 FT810AB Series Receiver.....	11
(6)	SPECIFICATIONS.....	12
(7)	DRAWINGS.....	13
(8)	WARRANTY INFORMATION	13
(9)	CONTACT INFORMATION.....	13

(1) Safety Instructions

Please be familiar with all information in this manual prior to installation and operation.

Note 1: The products described contain a Class 1 laser or LED fiber optic emitter. The following safety precautions apply.

Warning: Do not disconnect the fiber optic connector while the unit is powered up. Exposure to Class I invisible optical radiation is possible when the internal fiber optic connector is disconnected while the unit is powered up.

Caution: Any access to the controls, adjustments, or performing operations, which are other than those specified may result in hazardous radiation exposure. Permanent eye damage or other bodily injuries may be resulted from such exposure even for only seconds.

Note 2: This assembly contains parts sensitive to damage by electrostatic discharge (ESD). ESD precautionary procedures should be applied in the course of touching, removing or inserting parts or assemblies.

(2) Product Overview

2.1 Introduction

The FT810AB Series products comprise of either single-mode or multi-mode fiber optic transmitters and receivers for the optical transmission of EIGHT forward (Tx → Rx) video and ONE bi-directional (Tx ↔ Rx) audio signal on one fiber. The products work at wavelengths of 1310nm and 1550nm with either a 9/125um or 62.5/125um fiber for single-mode or multi-mode transmission respectively.

A non-compressed 10-bit digital video transmission scheme is implemented which supports video in NTSC, PAL and SECAM formats.

A 24-bit digital PCM transmission scheme is employed for analogue audio transmission. Both balanced and unbalanced audio inputs and outputs are supported. Optical Wavelength Division Multiplex (WDM) technique is also employed for simultaneous reverse audio signal transmission.

For single-mode transmission, we also offer specifically designed products for long-haul transmissions up to 60km. These models include the letter “L” in the suffix, e.g. FT810AB-SSTL for Tx, FT810AB-SSRL for Rx, etc.

The FT810AB Series units are available as standalone units, which can be mounted horizontally or vertically wall-mounted on any fixture. The standalone unit comes with an external power supply FT-PA/12V, which can be powered by local 110/220V power.

The FT810AB Series units are also available as plug-in card modules installed in a 19” rack-mount chassis. Each plug-in card occupies two slots in the rack-mount chassis. The rack mount chassis has to be ordered separately, and comes with its own power supply for powering the installed card modules.

2.2 Models selection table

Type	Mode	Models ¹	Descriptions	Installation requirements	Remarks
Standalone Units	Single-Mode	FT810AB-SSTSA	Single-mode 8-Ch. Video Transmitter & 1 Audio Transceiver Standalone Unit	Horizontally or vertically wall-mounted Standalone unit	FT-PA/12V external power supply is included for the Standalone unit ²
		FT810AB-SSTLSA	Single-mode Long-haul 8-Ch. Video Transmitter & 1 Audio Transceiver Standalone Unit		
		FT810AB-SSRSA	Single-mode 8-Ch. Video Receiver & 1 Audio Transceiver Standalone Unit		
		FT810AB-SSRLSA	Single-mode Long-haul 8-Ch. Video Receiver & 1 Audio Transceiver Standalone Unit		
	Multi-Mode	FT810AB-SMTSA	Multi-mode 8-Ch. Video Transmitter & 1 Audio Transceiver Standalone Unit		
		FT810AB-SMRSA	Multi-mode 8-Ch. Video Receiver & 1 Audio Transceiver Standalone Unit		
Card Modules	Single-Mode	FT810AB-SST	Single-mode 8-Ch. Video Transmitter & 1 Audio Transceiver Card Module	Housed in FT-C18 chassis ³	FT-C18 chassis has to be ordered separately
		FT810AB-SSTL	Single-mode Long-haul 8-Ch. Video Transmitter & 1 Audio Transceiver Card Module		
		FT810AB-SSR	Single-mode 8-Ch. Video Receiver & 1 Audio Transceiver Card Module		
		FT810AB-SSRL	Single-mode Long-haul 8-Ch. Video Receiver & 1 Audio Transceiver Card Module		
	Multi-Mode	FT810AB-SMT	Multi-mode 8-Ch. Video Transmitter & 1 Audio Transceiver Card Module		
		FT810AB-SMR	Multi-mode 8-Ch. Video Receiver & 1 Aduio Transceiver Card Module		

¹ If the optical connector is FC type, the suffix in the model number will be "-FXX". Eg. FT810AB-FST

² FT-PA/12V works under 100 -240VAC, 50/60Hz power supply

³ Refer to FT-C18 product manual for specifications

(3) Installation

3.1 General

All OT Systems products are thoroughly inspected, tested and securely packaged before delivery to ensure a stable, intact and trouble-free service. Please check the equipment upon receipt for any visible damage which may have been caused during shipping.

The FT810AB Series standalone units (Fig. 3.1) can be either horizontally or vertically wall-mounted, or mounted on any fixture. The Standalone unit works with an external power supply FT-PA/12V powered by local 110/220V power.

The FT810AB Series card modules are housed inside the FT-C18 rack-mount chassis (Fig. 3.2) with an included power supply unit. The whole chassis is powered by local 110/220V power. FT-C18 is a standard 19" (483mm) rack-mount chassis which occupies 4 rack units (177.8mm) in height. Each FT810AB card module occupies two slots and a total of 9 cards can be housed inside the chassis.



Fig. 3.1 Standalone unit



Fig. 3.2 FT-C18 chassis

3.2 Standalone unit installation

- a) Mount the standalone unit onto a fixture, (either on the wall or on a flat surface) with four screws through the holes on the mounting frame to secure it in position.
- b) The provided power supply should also be mounted on the same fixture or in the proximity for connection of the supply cables to the unit, provided that an AC power supply socket is nearby for powering the adaptor.
- c) Connect all the signal inputs and outputs at the back of the unit with appropriate cables: fiber optic cable for optical link, BNC cables for video inputs/outputs (Tx/Rx), and UTP cable for audio input/output (Tx/Rx).
- d) Once the unit is powered up, check that the red POWER LED on the unit is lit. If not, check the power supply cable connections between the unit and the power supply socket.
- e) With all the signals available at the input and output ports, check the status of LEDs located on the unit. With correct status of each LED, installation is now completed [for LEDs status, see **Operational Guides** on this manual's section (5)].

3.3 Card module installation

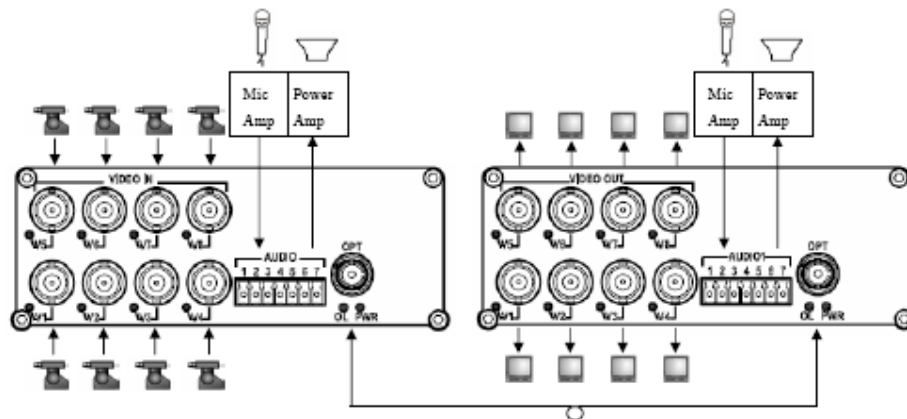
- a) Insert the card module into the FT-C18 chassis along the top and bottom card guides of an empty slot and push the card into the multi-pin socket at the rear firmly. Secure with the provided thumb screws.
- b) Repeat the above procedure for all the rest card modules. Unused slots must be covered with blank panels provided.
- c) Connect all the signal inputs and outputs at the back of the unit with appropriate cables: fiber optic cable for optical link, BNC cables for video inputs/outputs (Tx/Rx), and UTP cable for audio input/output (Tx/Rx).
- d) Once the chassis is powered up, check that the red POWER LED on the front and back panels of the card modules are lit. If not, check the power supply cable connections between the chassis and the power supply socket. For failures of individual card's POWER LEDs, check the corresponding card modules, whether they have been inserted properly.
- e) With all the signals available at the input and output ports, check the status of LEDs located on the unit. With correct status of each LED, installation is now completed [for LEDs status, see **Operational Guides** on this manual's section (5)].

(4) Cable Connections & Setup Procedures

4.1 System cable connections

Signal Type	Cable Type	Connector
Optical	Single-mode or Multi-mode fiber	ST (or FC) Connector
Video	Coaxial Video Cable	BNC Connector
audio	Twisted-pair Cable	Screw Terminal Block

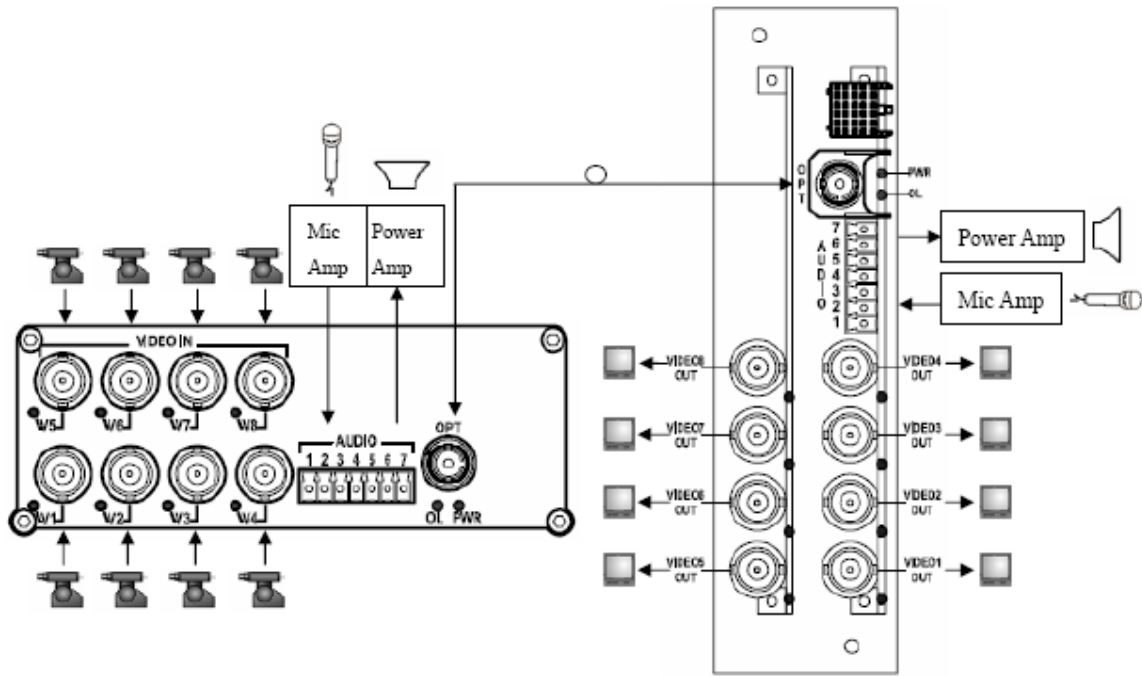
Typical System Cable Connections Diagrams:



Standalone Transmitter

Standalone Receiver

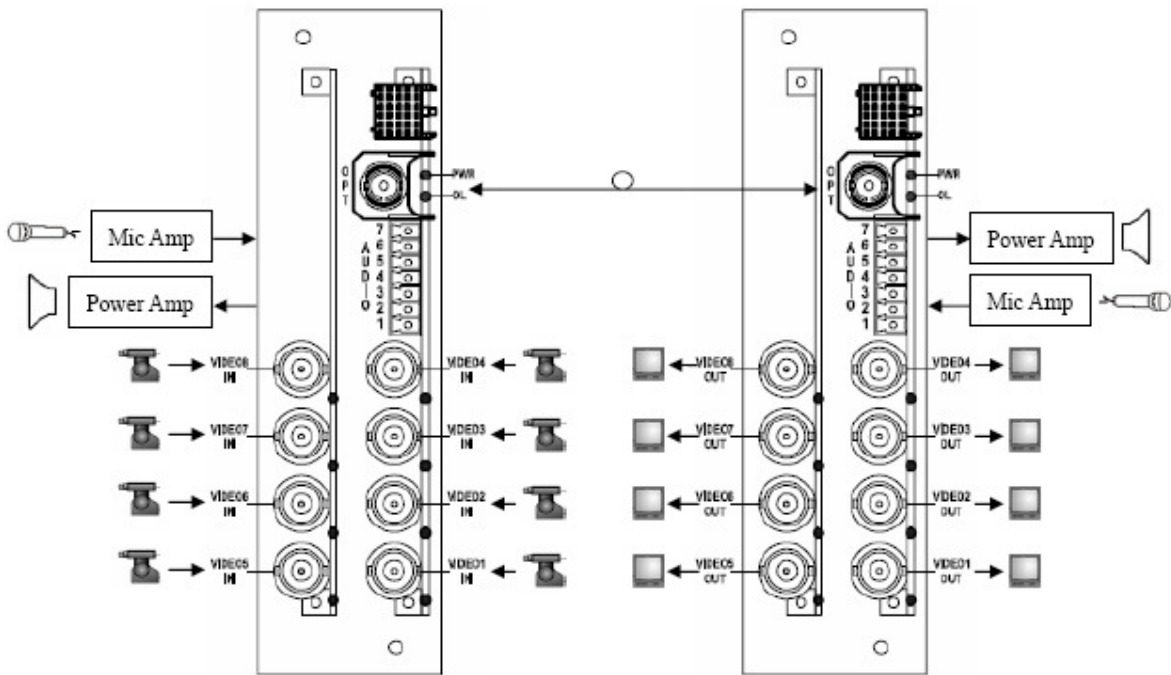
Fig 4.1 Standalone unit to Standalone unit connection diagram



Standalone Transmitter

Card Module Receiver

Fig 4.2 Standalone unit to Card Module connection diagram



Card Module Transmitter

Card Module Receiver

Fig 4.3 Card Module to Card Module connection diagram

4.2 Audio port assignment and pin connections

For audio input and output connections, please note the following pin assignment:

Pin Assignment (Screw Terminal Block)	1	2	3	4	5	6	7
Data format							
Balanced signal	N/A	N/A	IN (+)	IN(-)	OUT(+)	OUT(-)	N/A
Un-Balanced signal	N/A	N/A	IN	Sig. COM PIN2 connect to PIN5	OUT	Sig. COM PIN4 connect to PIN5	

Balanced Audio signal connection diagram:

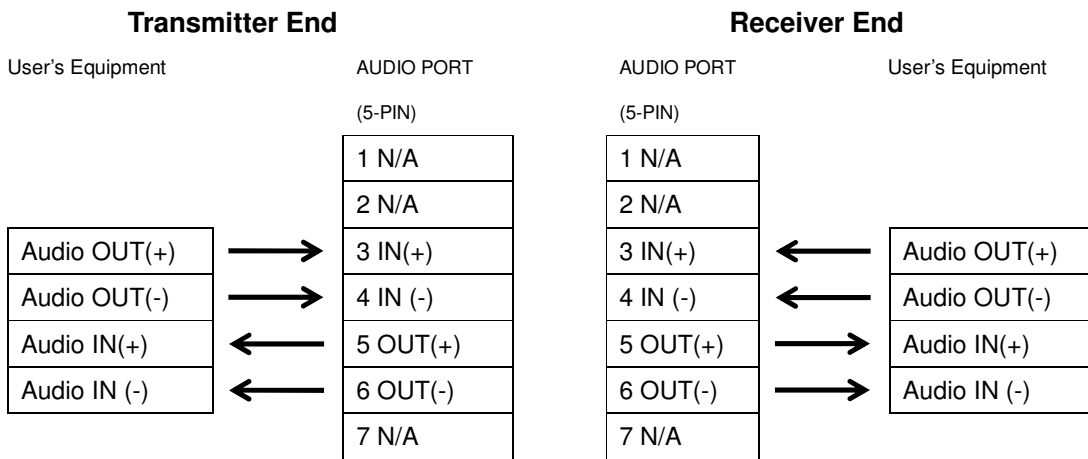


Fig. 4.4.1 Connector Pin Assignments for balanced audio signal at Audio port

Un-Balanced Audio signal connection diagram:

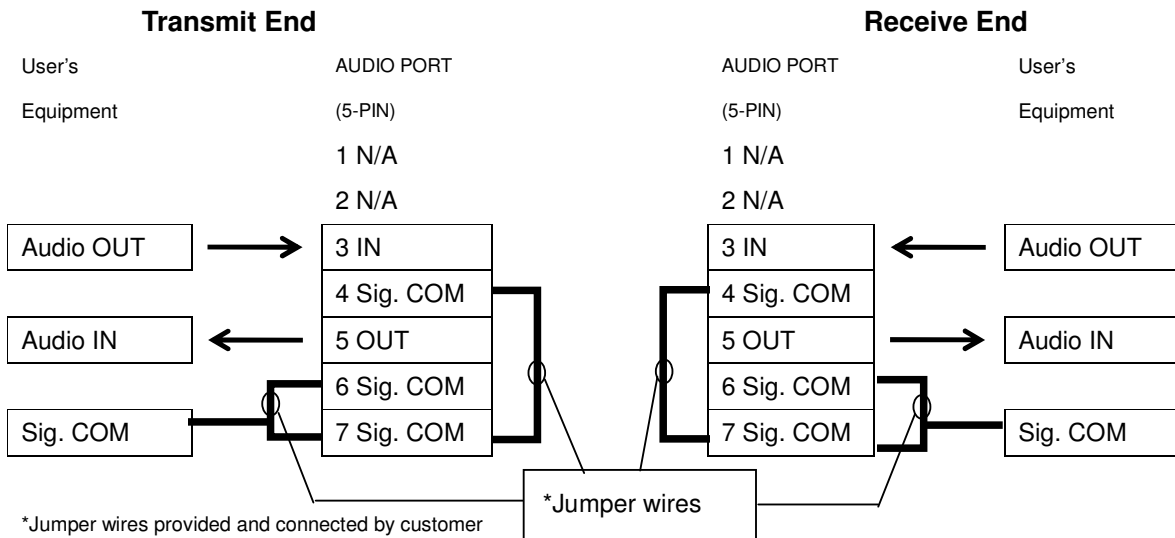


Fig. 4.4.2 Connector Pin Assignments for un-balanced audio signal at Audio port

4.3 Ground connection

For enhanced safety to reduce the risks of electrical shock and physical damage, caused by lightning and other power surges, as well as a connection to the surge suppression devices in the product, a screw terminal is provided on the Standalone cabinets (Fig. 4.5). It is highly recommended that the Standalone unit have good ground connections to the buildings ground in accordance with the local codes.

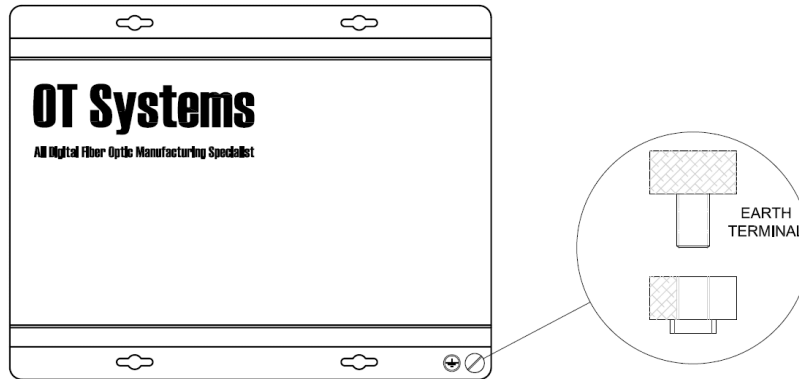


Fig. 4.5 Standalone unit earth ground terminal location

(5) Operational Guides

5.1 FT810AB Series Transmitter

LED Indicators

Indicator	Color	Description
PWR	Red	Lit when power is supplied to the Transmitter.
OL	Yellow	Lit when optical signal from receiver to transmitter is active.
VIDEO IN / VIN	V1	Green
	V2	Green
	V3	Green
	V4	Green
	V5	Green
	V6	Green
	V7	Green
	V8	Green
AUDIO	IN	Red
	OUT	Green

Lit when video signals are fed into the VIDEO IN connectors.

a) Each audio channel has a single column of Four LEDs assigned for displaying the input or output audio levels.
 b) The LEDs (Input/Output) are lit in proportion to the signal strength.
 c) An increase/decrease of signal level of about 3dB will light up/turn off an individual LED. All LEDs will go out at or less than -16dBm, and all are lit when the level attains +6dBm or over.

Signal Ports

OPT -	ST (or FC) Optical Connector for fiber cable connection.
VIDEO IN -	BNC Video Connectors for video signal inputs.
AUDIO	7-pin Screw Terminal Blocks for audio signal.

5.2 FT810AB Series Receiver

LED Indicators

Indicator	Color	Description
PWR	Red	Lit when power is supplied to the Receiver.
OL	Yellow	Lit when optical signal from transmitter to receiver is active.
VIDEO OUT / VOUT	V1	Green
	V2	Green
	V3	Green
	V4	Green
	V5	Green
	V6	Green
	V7	Green
	V8	Green
Lit when video signals are received at VIDEO OUT connectors.		
AUDIO	IN	Red
	OUT	Green
a) Each audio channel has a single column of Four LEDs assigned for displaying the input or output audio levels. b) The LEDs (Input/Output) are lit in proportion to the signal strength. c) An increase/decrease of signal level of about 3dB will light up/turn off an individual LED. All LEDs will go out at or less than -16dBm, and all are lit when the level attains +6dBm or over.		

Signal Ports

OPT -	ST (or FC) Optical Connector for fiber cable connection.
VIDEO OUT -	BNC Video Connectors for video signal outputs.
AUDIO -	7-pin Screw Terminal Blocks for audio signal.

(6) Specifications

PARAMETERS	MODELS*	FT810AB-SST(R)SA	FT810AB-SST(R)LSA	FT810AB-SMT(R)SA
	FT810AB-SST(R) (Single-Mode)	FT810AB-SST(R)L (Single-Mode)	FT810AB-SMT(R) (Multi-Mode)	
OPTICAL				
No. of Fiber / Connector	1 / ST (or FC)	1 / ST (or FC)	1 / ST (or FC)	1 / ST (or FC)
Wavelength	1310/1550 nm	1550/1310 nm	1310/1550 nm	
Optical Power Budget	17 dB	24 dB	23 dB	
Max Distance	40 km	60 km	2 km	
ELECTRICAL VIDEO				
Channel / Connector	8 / BNC			
System	PAL, NTSC, SECAM			
Bandwidth	≥ 6.0 MHz			
Input/Output Impedance	75 Ohm			
Input/Output Level	1.0 Vp-p typical			
Differential Gain	< 1% typical			
Differential Phase	< 1° typical			
SNR	>65dB			
AUDIO				
Channel / Connector	1 / 7-pin Screw Terminal			
Direction	Bi-directional (Duplex)			
Input Level / Impedance	0dBm(normal), 10K ohms, Balanced or Unbalanced			
Audio bandwidth	20Hz~20KHz			
Output Level	4dBm@1KHz			
SNR	>70dB			
POWER				
Power consumption	12VDC @ 6.6W			
Power Supply	Standalone Unit: FT/PA12V DC Adaptor Card module: Powered by FT-C18 chassis			
Connector (Standalone unit)	2-pin Screw Terminal			
PHYSICAL				
Weight	Standalone unit: 0.82 kg Card module: 0.35 kg			
Dimensions (W x H x D)	Standalone unit: 156 x 50.5 x 223 (MAX) Card module: 148 x 41 x 213 (MAX)			
ENVIRONMENTAL				
Operating Temperature	-40°C ~ +75°C			
Storage Temperature	-40°C ~ +85°C			
Relative Humidity	0 ~ 95% non-condensing			

MTBF	>100'000 Hours
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*If the optical connector is FC type, the suffix in the model number will be "-FCX". Eg. FT810AB-FST

(7) Drawings

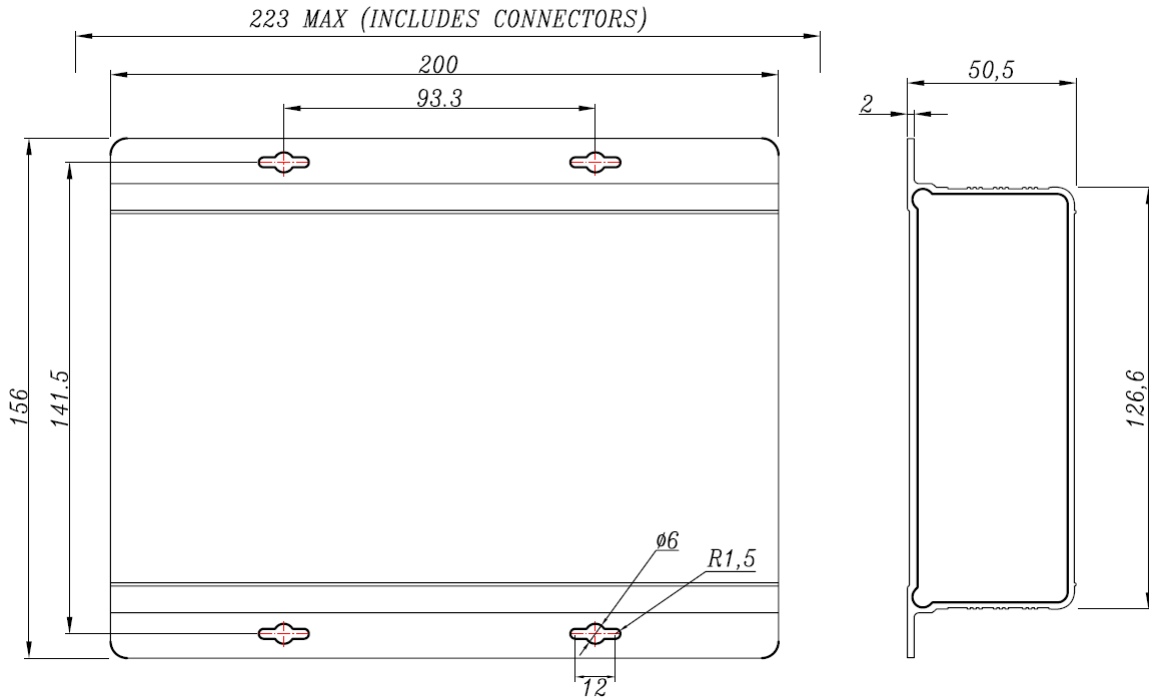


Fig. 7.1 Dimensional drawings of Standalone unit (mm)

(8) Warranty Information

All OT Systems products are subject to a limited life-time warranty offered by the company in normal circumstances. Please refer to the OT Systems Products Warranty Statement for details. Access to the statement is available in our company website at www.ot-systems.com.

(9) Contact Information

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