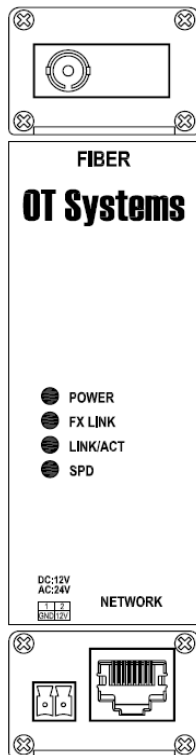




All Digital Fiber Optic Manufacturing Specialists

Installation and Operation Manual

ET1111 Series



Media Converter Series

Industrial 10/100BASE-TX to 100BASE-FX Ethernet Media Converter

OT Systems Ltd., 2011
Rev 1.0

Models covered in this manual

Micro Type Wall-Mount Fiber connector in SC

Multi-Mode (2-Fiber)

ET1111-A-MT

Single-Mode (2-Fiber)

ET1111-B-MT

Multi-Mode (1-Fiber)

ET1111-C-MT

ET1111-D-MT

Single-Mode (1-Fiber)

ET1111-E-MT

ET1111-F-MT

Fiber connector in ST

Multi-Mode (2-Fiber)

ET1111-G-MT

Single-Mode (2-Fiber)

ET1111-H-MT

Multi-Mode (1-Fiber)

ET1111-I-MT

ET1111-J-MT

Single-Mode (1-Fiber)

ET1111-K-MT

ET1111-L-MT

Table of Contents

TABLE OF CONTENTS	1
(1) SAFETY INSTRUCTIONS.....	2
(2) PRODUCT OVERVIEW	3
2.1 Introduction.....	3
2.2 Products Highlights	3
2.3 Models selection table	4
(3) INSTALLATION	5
3.1 General.....	5
3.2 Package Contents	5
3.3 Selecting a site for the Media Converter	6
3.4 Installation.....	6
3.5 Installation- Wall Mount.....	7
3.6 Connecting to Power	7
(4) CABLE CONNECTIONS & SETUP PROCEDURES.....	8
4.1 System cable connections	8
4.2 Connecting to Your Network	9
(5) OPERATIONAL GUIDES	11
5.1 LEDs Status.....	11
5.2 Signal and Power Ports	11
(6) SPECIFICATIONS.....	12
(7) DRAWINGS.....	14
(8) WARRANTY INFORMATION	14
(9) CONTACT INFORMATION	15
APPENDIX A.....	I

(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

OT Systems' ET1111 media converter offers an easy and affordable solution for network managers to connect 10/100 Fast Ethernet from UTP to fiber optic cabling. The media converter series uses a high performance auto-sensing exchange chip for full functionality of transfer and exchange, guaranteeing the safety and stability of data transfer. The media converter is available in both single-mode and multi-mode fiber.

This Sleek Microtype design media converter occupies limited space and it's ideal solution for easy installation within most camera housings.

2.2 Products Highlights

Basic Features

- Microtype design - fits within most camera housings
- Converts 10/100Base-TX to 100Base-FX
- Full/Half duplex, Auto-Negotiation
- Singlemode or Multimode fiber operation
- Single or Dual-core fiber with SC or ST connectors
- Store and forward switching mechanism
- MDI/MDI-X Auto-Crossover supported
- Plug-and-Play
- 12VDC or 24VAC Terminal Block Power inputs
- -10 °C to 60 °C (14 °F to 140 °F) operating temperature
- Supports Wall Mounting installation.

2.3 Models selection table

Models	Descriptions				
	Fiber Options	Wavelengths	Links Budget	Max. Distance	Mounting
ET1111-A-MT	Multimode/2-fiber/SC	1310nm	14dB	2Km	Micro Type Wall-mount
ET1111-B-MT	Singlemode/2-fiber/SC	1310nm	21dB	20Km	
ET1111-C-MT	Multimode/WDM 1-fiber/SC	TX:1310nm/RX1550nm	21dB	2Km	
ET1111-D-MT	Multimode/WDM 1-fiber/SC	TX:1550nm/RX1310nm	21dB	2Km	
ET1111-E-MT	Singlemode/WDM 1-fiber/SC	TX:1310nm/RX1550nm	19dB	20Km	
ET1111-F-MT	Singlemode/WDM 1-fiber/SC	TX:1550nm/RX1310nm	19dB	20Km	
ET1111-G-MT	Multimode/2-fiber/ST	1310nm	14dB	2Km	
ET1111-H-MT	Singlemode/2-fiber/ST	1310nm	21dB	20Km	
ET1111-I-MT	Multimode/WDM 1-fiber/ST	TX:1310nm/RX1550nm	21dB	2Km	
ET1111-J-MT	Multimode/WDM 1-fiber/ST	TX:1550nm/RX1310nm	21dB	2Km	
ET1111-K-MT	Singlemode/WDM 1-fiber/ST	TX:1310nm/RX1550nm	19dB	20Km	
ET1111-L-MT	Singlemode/WDM 1-fiber/ST	TX:1550nm/RX1310nm	19dB	20Km	

(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.

3.2 Package Contents

When you unpack the product package, you shall find the items listed below. Please inspect the contents, and report any apparent damage or missing items immediately to your authorized reseller.

- ✓ Media Converter
- ✓ Quick Installation Guide
- ✓ External 12VDC power adapter & Power Cord

The ET1111 Series (Fig. 3.1) can be either horizontally or vertically wall-mounted, or fits within the most camera housings, etc. It works with an external 12VDC or 24VAC power supply.



Fig. 3.1 *ET1111*

3.3 Selecting a site for the Media Converter

As with any electric device, you should place the Media Converter where it will not be subjected to extreme temperatures, humidity, or electromagnetic interference. Specifically, the site you select should meet the following requirements:

- The ambient temperature should be between -10 to +60 degrees Celsius.
- The relative humidity should be less than 95 percent, non-condensing.
- Surrounding electrical devices should not exceed the electromagnetic field (RFC) standards.
- Make sure that the Media Converter receives adequate ventilation.
- The power outlet should be within 1.8 meters of the Media Converter.

3.4 Installation

This chapter gives step-by-step instructions about how to install the Media Converter:

- a) Mount the ET1111 onto a fixture or camera housings, e.g. a plank, (either on the wall or on a flat surface) with two screws through the holes on the mounting frame to secure it in position.
- b) The 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 unit with appropriate cables: fiber optic cable for optical link and UTP/STP Cat 5 cable for Ethernet. Please refer to Section 4.1 for the details.
- d) Once the unit is powered up, check that the 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 physical 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)].

3.5 Installation- Wall Mount

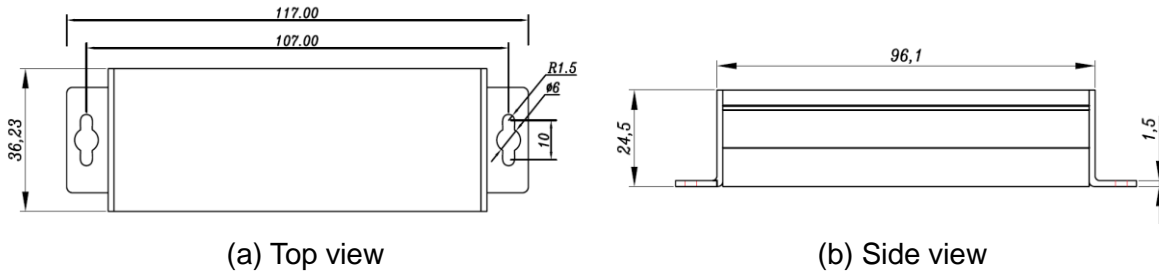
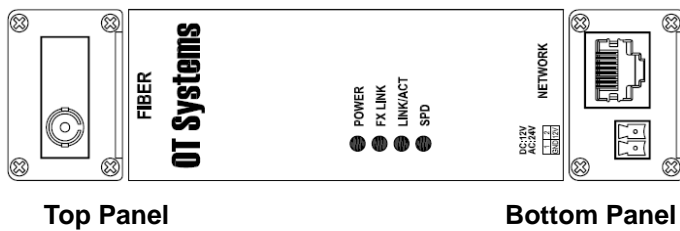


Fig. 3.2 Dimension of Micro type units

- **Installation:** Mount the Micro type unit onto a fixture, or camera housings, e.g. a plank, (either on the wall or on a flat surface) with at least 2 screws piercing through the holes on the mounting frame to secure it in position.
- **Startup:** Connect the supply voltage to start up the Media Converter via the terminal block.
- **Removal:** Locate and remove the securing screws. Usually, but not limited to, at least 2 screws.

3.6 Connecting to Power



Bottom panel – Ethernet Port and Power Input

Ethernet Port

NETWORK -	RJ45 connector
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Power Input Assignment

12VDC	1	GND	Terminal Block
	2	12V	

DC Terminal Block Power Input

Step 1: Connect the DC power cord to the pluggable terminal block on the bottom of Media Converter and then plug it into a standard DC outlet.

Step 2: Disconnect the power cord if you want to shut down the Media Converter.

(4) Cable Connections & Setup Procedures

4.1 System cable connections

Signal Type	Cable Type	Connector	For details, please refer to
Optical	Single-mode or Multi-mode fiber	SC or ST Connector	Section 4.2.2
Ethernet	Twisted-pair Cable 10BASE-T: UTP/STP Cat3, 4, 5 100BASE-TX: UTP/STP Cat 5	RJ45 Connector	Section 4.2.1
12VDC Or 24VAC	Power cord	Terminal Block	Section 3.6

Wiring Diagram

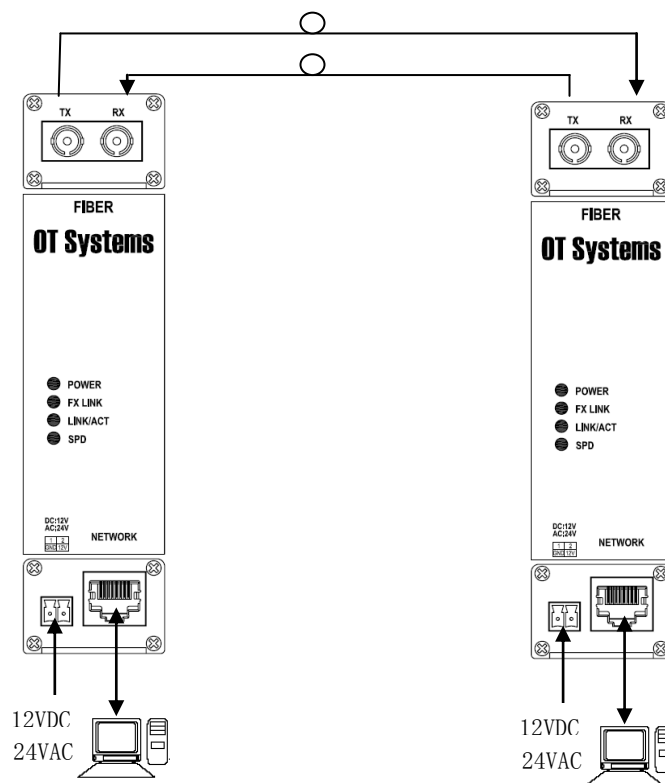


Fig 4.1 Media converter connection diagram

4.2 Connecting to Your Network

4.2.1 Cable Type & Length

It is necessary to follow the cable specifications below when connecting the Media Converter to your network. Use appropriate cables that meet your speed and cabling requirements.

Cable Specifications

Speed	Connector	Port Speed Half/Full Duplex	Cable	Max. Distance
10Base-T	RJ-45	10/20 Mbps	2-pair UTP/STP Cat. 3, 4, 5	100 m
100Base-TX	RJ-45	100/200 Mbps	2-pair UTP/STP Cat. 5	100 m
100Base-FX	SC, ST	100/200 Mbps	MMF (62.5µm)	2 km
100Base-FX	SC, ST	100/200 Mbps	SMF (9 or 10µm)	20km

4.2.2 Cabling

Step 1: First, ensure the power of the Media Converter and end devices are turned off.

<Note> Always ensure that the power is off before any installation.

Step 2: Prepare cable with corresponding connectors for each type of port in use.

Step 3: Consult the cabling requirements based on connectors and speed.

Step 4: Connect one end of the cable to the Media Converter and the other end to a desired device.

Step 5: Once the connections between two end devices are made successfully, turn on the power and the Media Converter is operational.

4.2.3 The 10/100Base-TX Connector/Cabling

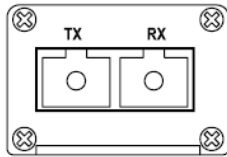
A standard straight through cable is used for the connection between the Ethernet switch and device. The products feature an auto-MDIX capability. For the details, Please see Appendix A for your reference.

4.2.4 The 100Base-FX Connectors

The 100Base-FX Connections

The fiber port pinouts

The **TX** (transmit) port of device I is connected to the **RX** (receive) port of device II, and the **RX** (receive) port of device I to the **TX** (transmit) port of device II.

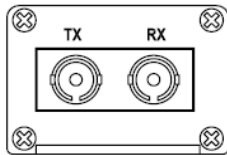


X value:

A for Multimode fiber

B for Singlemode fiber

FIBER	Connector
TX	SC Optical Connector
RX	SC Optical Connector



X value:

G for Multimode fiber

H for Singlemode fiber

FIBER	Connector
TX	ST Optical Connector
RX	ST Optical Connector

The WDM 100Base-FX Connections

The fiber port pinouts

Only **ONE** optical fiber core is required to transmit and receive data.

** Special note for choosing WDM products:*

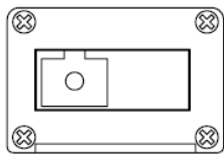
Pair of products should be used for the optical transmission by different wavelengths (1310nm, 1550nm).

i.e. ET1111-C-MT should be match with ET1111-D-MT;

ET1111-E-MT should be match with ET1111-F-MT;

ET1111-I-MT should be match with ET1111-J-MT;

ET1111-K-MT should be match with ET1111-L-MT.

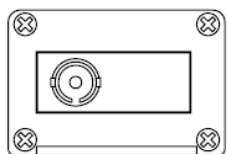


X value:

C and D for Multimode fiber

H and F for Singlemode fiber

FIBER	Connector
	SC Optical Connector



X value:

I and J for Multimode fiber

K and L for Singlemode fiber

FIBER	Connector
	ST Optical Connector

(5) Operational Guides

5.1 LEDs Status

LED	State	Indication
PWR	Green	Power on.
	Off	Power off.
FX LINK	Green	100Base-FX
SPD	Green	100Base-TX
	Off	10Base-TX
LINK/ ACT	Steady	A valid network connection established
	Flashing	Transmitting or receiving data. ACT Stands for Activity.

5.2 Signal and Power Ports

FIBER -	SC or ST Optical Connector(s) for 100BASE-FX fiber cable connection.
NETWORK -	RJ45 with Cat. 5 for 10/100BASE-TX Ethernet connection.
DC12V- AC24V -	2-pin Screw Terminal Block for 12VDC or 24VAC power connection.

(6) Specifications

Ethernet

Standards	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX/FX IEEE 802.3x
Address table size	2048MAC addresses
Processing Type	Store-and-Forward Half-duplex and IEEE802.3x Full-duplex flow control
Forward and Filter Rate	
10Base-T	10 / 20Mbps half / full-duplex
100Base-TX/FX	100 / 200Mbps half / full-duplex
Cabling	
10BASE-T	UTP/STP Cat. 3, 4, 5 or above
100BASE-TX	UTP/STP Cat. 5 or above
Maximum Distance	
Cat5 UTP	Up to 100m
Connector	
10/100BASE-TX	1X RJ45

Optical

Cabling	62.5/125 μ m (Multi-mode) 9/125 μ m (Single-mode)
Maximum Distance	
Multi-mode fiber	2Km
Single-mode fiber	20Km
Wavelength(s)	1310nm 1310/1550nm
Connector	SC or ST

Electrical and Mechanical

Input Power	12VDC or 24VAC (Terminal Block)
Power Consumption	2.4W Max.
Operating Voltage & Max. Current Consumption	0.2A @ 12VDC

LED Indicators

Power	Power Status
10/100 TX (Per Port)	Link/Activity, <i>Speed</i>
100FX (Per Port)	Link/Activity
Dimensions	36.2mm (W) × 117mm (D) × 24.5mm (H)
Net Weight	0.12Kg (0.22kg including PA)
Casing	Aluminum case
Mounting Options	Wall-Mount

Environmental

Operating Temperature	-10°C to 60°C (14°F to 140°F)
Storage Temperature	-24°C to 85°C (-13°F to 185°F)
Humidity	0% - 95% non-condensing

Regulatory Approvals

ISO9001
FCC Part 15, Class A
EN61000-3-2: 2006
EN61000-3-3: 2008
EN55024: 1998 +A1:2001+A2:2003

(7) Drawings

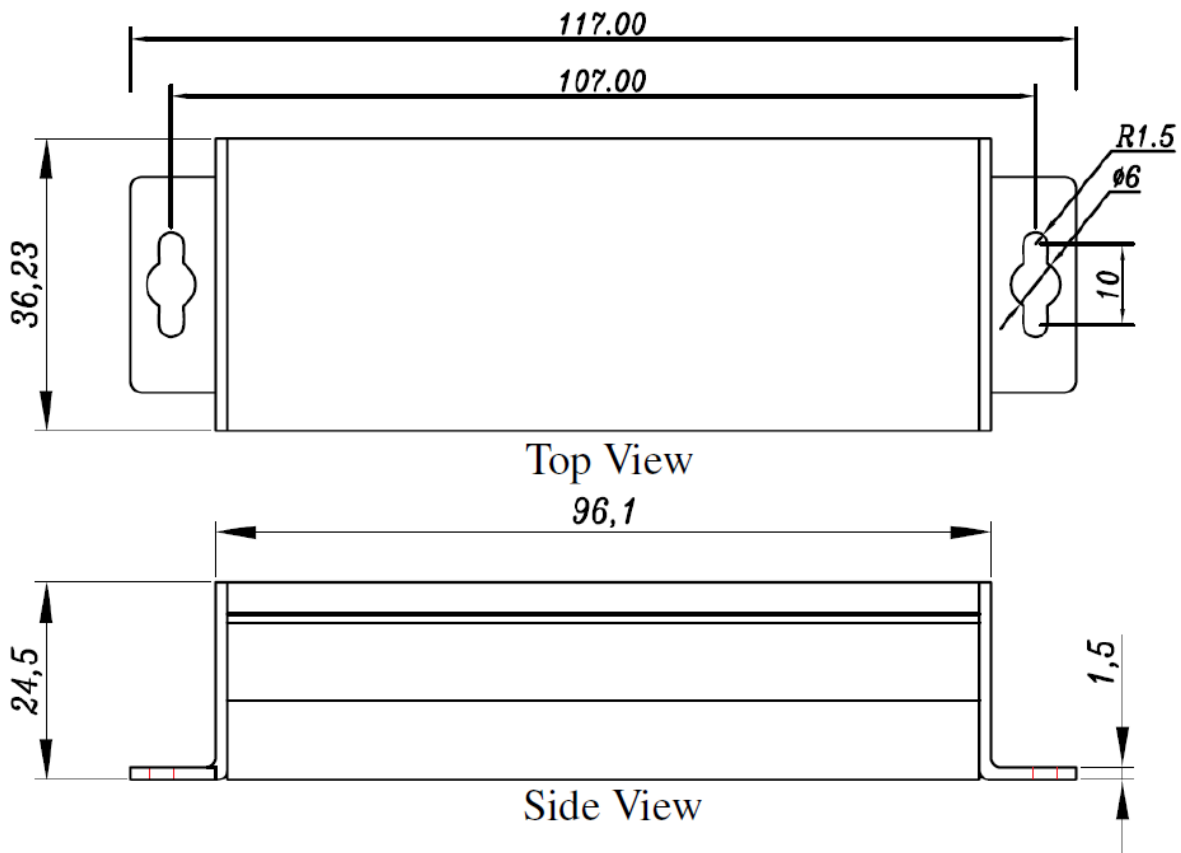


Fig. 7.1 Dimensional drawings of ET1111 (mm)

(8) Warranty Information

All ET-Series products are subject to a three-year 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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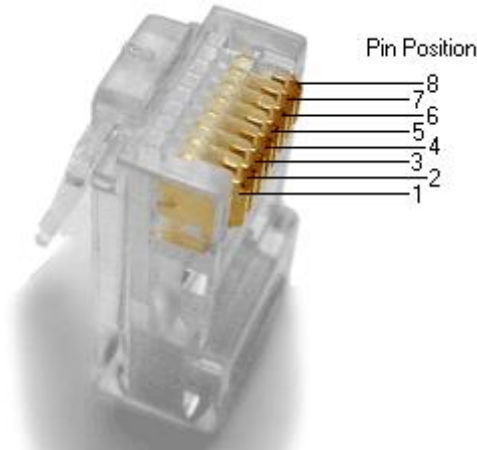
sales.usa@ot-systems.com

Technical Support

techsupport.usa@ot-systems.com

Appendix A

1. Connector Pinouts



RJ45 Connector (Male)

2. TIA/EIA-568 Cabling

RJ45 Pin #	T568A			T568B		
	Wire Diagram	Wire Color	10Base-T Signal 100Base-TX Signal	Wire Diagram	Wire Color	10Base-T Signal 100Base-TX Signal
1		White/Green	Transmit+		White/Orange	Transmit+
2		Green	Transmit-		Orange	Transmit-
3		White/Orange	Receive+		White/Green	Receive+
4		Blue	Unused		Blue	Unused
5		White/Blue	Unused		White/Blue	Unused
6		Orange	Receive-		Green	Receive-
7		White/Brown	Unused		White/Brown	Unused
8		Brown	Unused		Brown	Unused

3. Standard, Straight-Through Wiring Diagram(both ends are the same):

The Straight-Through wiring (or called “*regular*” Ethernet cable), both ends should be use the same pin out on of RJ45 port.