



**EL2321
Managed 10/100/1000BASE-TX to
100/1000BASE-FX Dual Rate
Media Converter**

User's Guide

FCC Statement

The FCC (Federal Communications Commission) restricts the amount of radio frequency emission and radiation coming from computer equipment.

The equipment introduced in this manual 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 is required to correct the interference at his/her own expense.

Any changes or modifications not expressly approved by the manufacture would void the user's authority to operate the equipment.

Trademarks

Product names mentioned in this manual may be trademarks or registered trademarks of those products.

All trademarks or brand names mentioned are properties of their respective owners.

Preface

This OAM Managed 10/100/1000BASE-TX to 1000BASE-FX or 100/1000BASE SFP Dual Rate Media Converter can be monitored and configured through management via SNMP or browser interface. This manual describes how to install and use the Media Converter. The Media Converter introduced here provides one channel media conversion solution:

10/100/1000Base-TX to 1000Base-FX or 100/1000Base SFP interface

This Media Converter fully complies with IEEE802.3 10BASE-T, 802.3u 100BASE-TX, 802.3ab 1000BASE-T, 802.3z 1000BASE-X Ethernet standards.

In this manual, you will find:

- Product overview
- Features on the media converter
- Illustrative LED functions
- Installation instructions
- System configuration
- Specifications

Table of Contents

FCC Statement	1
Trademarks	1
Preface	1
Table of Contents	2
Introduction	3
Product Overview	3
Product Features	4
Packing List	4
Physical Ports	5
Port Status LEDs	5
Installation	6
Selecting a Site for the Equipment	6
Connecting to Power	6
Installing in a Chassis	6
System Configuration	7
Logging on to the Media Converter	7
Main Menu / Local Device Information	8
Local Setting	9
Remote Setting	19
Logout	27
Reset Button	28
Specifications	28

Introduction

The EL2321 Media Converter provides one channel for media conversion between 10/100/1000Base-TX to 1000Base-FX fixed fiber or 100/1000Base SFP interface with link-fault-pass-through function. It is 802.3ah OAM compliant, and can be used as a stand-alone device or with an EtherWAN chassis as shown below.

Product Overview

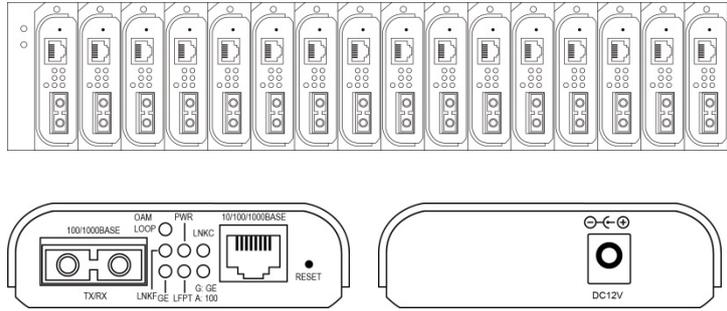


Figure 1:

EL-2321 Media Converter with link-fault-pass-through function

NOTE: Chassis is ordered separately.

Product Features

- Complies with IEEE802.3 10BASE-T, 802.3u 100BASE-TX, 802.3ab 1000BASE-T, 802.3z 1000BASE-X
- Complies with IEEE 802.3ah OAM standard
- Supports SNMP V1, V2 Management
- Supports IN-BAND Loop Back and Diagnostic
- Gigabit transmission supports 9K bytes jumbo frame
- One fiber interface supports dual rate 100BASE-FX and 1000BASE-SX/LX fiber transmission
- Supports IEEE802.3x Flow controls: Flow control for full duplex and Back pressure for half duplex
- Auto-Negotiation, Auto-MDI/MDIX
- Full wire-speed forwarding rate
- Supports Wall Mounting installation or use with EMC1600 media converter chassis system.

Packing List

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

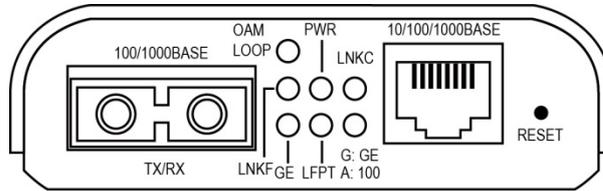
- The Media Converter
- User's Manual
- AC to DC Power Adaptor

Physical Ports

This converter provides one 10/100/1000Base-TX RJ45 port and one 1000Base-FX fixed fiber port or a 100/1000 Dual Rate SFP socket. For the 100Base and 1000Base dual rate SFP socket, it provides options of multi-mode/single-mode or WDM multi-mode/single-mode fiber. For the RJ45 TX port supports auto negotiation and auto MDIX.

Port Status LEDs

The LED indicators give you instant feedback on status of the converter:



LED	State	Indication
PWR (Green)	Steady	Power On
	Off	Power Off
Copper Port Speed	Steady	Green: Copper Port connection at the speed of 1000Mbps Amber: Copper Port connection at the speed of 100Mbps
	Off	Copper Port connection at the speed of 10Mbps
LNKC (Green)	Steady	A valid network connection is established on TX port
	Flashing	Data transmitting
OAM LOOP (Green)	Steady	When device in OAM Active Mode
	Flashing	Blinks for 4 seconds if loopback testing pass, when device in OAM Passive Mode
GE	Steady	Fiber port connection at the speed of 1000Mbps
	Off	Fiber port connection at the speed of 100Mbps
LNKF (Green)	Steady	A valid network connection is established on TX port
	Flashing	Data transmitting
LFPT (Green)	Steady	LFPT function enabled
	Off	LFPT function disabled

Installation

This chapter gives step-by-step installation instructions for the Converter.

Selecting a Site for the Equipment

As with any electric device, you should place the equipment 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 0 to 50 degrees Celsius (32 and 122 degrees Fahrenheit).
- The relative humidity should be less than 95 percent, non-condensing.
- Surrounding electrical devices should not exceed the electromagnetic field (RF) standards for IEC 801-3, Level 2 (3V/M) field strength.
- Make sure that the equipment receives adequate ventilation. Do not block the ventilation holes of the equipment.
- The power outlet should be within 1.8 meters of the product.

Connecting to Power

This Converter is a plug-and-play device.

Connect the supplied AC to DC power adapter to the receptacle at the back of the converter.

Attach the plug into a standard AC outlet.

Installing in a Chassis

The Converter is designed to fit into any of the expansion slots on an EtherWAN rackmount chassis.

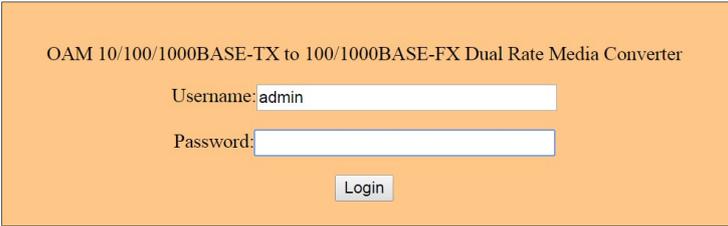
- Unscrew the carrier from the desired expansion slot on the chassis.
- Fit the converter onto the carrier.
- When the converter is completely seated onto the carrier, insert the carrier to the guide rails of the expansion slot.
- Carefully slide in the carrier until it is fully and firmly fit the chassis.
- Fasten the carrier to the chassis by the screws.

NOTE: Never insert any converter into the chassis directly without using the supplied carriers. The carriers allow secure and consistent placement of the converters into the chassis' backplane without causing any damage.

System Configuration

This chapter provides network managers and system administrators with information about how to configure the OAM Managed 10/100/1000BASE-TX to 100/1000BASE-FX Dual Rate Media Converter via the Web Browser.

Logging on to the Media Converter



OAM 10/100/1000BASE-TX to 100/1000BASE-FX Dual Rate Media Converter

Username:

Password:

The default IP Address for the media converter is 192.168.1.10. Enter the factory default Username (admin). Enter the factory default Password (no password). Then click on the "Login" button to log on.

Main Menu / Local Device Information



EtherWAN

Network Information

Local Setting

Remote Setting

Tools

[Logout](#)

Local Device Information

MAC Address	00:e0:b3:11:16:7b
Software Version	1.0.4
Firmware Date	2012/09/10
IP Address	192.168.1.11
Gateway	0.0.0.0
Subnet Mask	255.255.255.0
Description	

Local Port Status

Ports	TP	FX
Signal detect(SD)	Detected	Detected
Link status	On	On
Speed	1000M	1000M
Duplex mode	Full	Full
Flow control	Enable	Enable
Auto negotiation	Enable	Enable

The information displayed on this page gives specific device information, network information, and port status for the EL2321 and for a remote device that supports OAM.

Local Setting

IP Configuration

DHCP Client	Disable ▾
IP Address	192.168.1.11
Subnet Mask	255.255.255.0
Gateway	0.0.0.0
Description	

Apply

Warning: Description field can only be a number, in English or '*@_-'

DHCP Client: Click "DHCP Client" drop-down menu to choose "Disable" or "Enable" from the "DHCP Client" drop-down list to disable or enable DHCP Client setting for the media converter. You will need to set the IP Address, Subnet Mask, and Gateway manually if DHCP Client is disabled. The IP Address will be provided by DHCP Server if DHCP Client is enabled.

IP Address: Click in "IP Address" text box and type a new address to change the IP Address.

Subnet Mask: Click in "Subnet Mask" text box and type a new address to change the Subnet Mask.

Gateway: Click in the "Gateway" text box and type a new address to change the Gateway.

Description: Click in the "Description" text box and type a description for the media converter. Description field can only be a number, in English, or "*@_-'".

Apply: Click "Apply" button when you have finished the IP Configuration.

Password Setting

The screenshot shows the 'Password Setting' page in the EtherWAN web interface. The left sidebar contains the following menu items: Network Information, Local Setting (IP Configuration, Password Setting, Converter Configuration, Port Configuration, MIB Counter, SNMP Configuration, SNMP Community Setting, VLAN, Q-in-Q), Remote Setting, and Tools (Logout). The main content area is titled 'Password Setting' and contains a form with the following fields:

Login Name	admin	
Old Password		
New Password	*****	
Confirm	*****	

Below the form is an 'Apply' button.

Login Name: The factory default login name "admin" can't be changed.

Old Password: Click in "Old Password" text box and type the old password. You must type the old password into this field in order to set a new password.

New Password: In the "New Password" field, enter the new password. The password must be "a"- "z", "A"- "Z", "0"- "9", and "_". The max length is 16 characters.

Confirm: Enter the new password again in this field.

Apply: Click "Apply" button when you have finished Password Setting.

Converter Configuration

Converter Configuration	
Jumbo Frame (9K)	<input checked="" type="radio"/> Disable <input checked="" type="radio"/> Enable
Link Transparent	<input checked="" type="radio"/> Disable <input checked="" type="radio"/> Enable
Link Loss Carry Forward	<input checked="" type="radio"/> Disable <input checked="" type="radio"/> Enable
Forward CRC Error Frame	<input checked="" type="radio"/> Drop <input type="radio"/> Forward
Forward Pause Frame	<input checked="" type="radio"/> Drop <input type="radio"/> Forward
Management Packet High Priority (This function need reset to take effect!)	<input checked="" type="radio"/> Disable <input checked="" type="radio"/> Enable
Broadcast Storm Filter	<input checked="" type="radio"/> Disable <input checked="" type="radio"/> Enable
Multicast Storm Filter	<input checked="" type="radio"/> Disable <input checked="" type="radio"/> Enable
Unknown DA Unicast Storm Filter	<input checked="" type="radio"/> Disable <input checked="" type="radio"/> Enable

Jumbo Frame (9K): The media converter can pass packets up to 9KB in size if this function is enabled.

Link Transparent: If the Link Transparent (Link-Fault-Pass-Through) is enabled, the Link Loss Carry Forward will be active.

Link Loss Carry Forward: If this function is enabled, when the UTP port link down, the fiber port will be forced link down. And the fiber will be resumed when UTP port link up.

Forward CRC Error Frame: The CRC error packets will be passed if this function is enabled. Otherwise the CRC error packets will be dropped.

Forward Pause Frame: The media converter will forward pause frame and regard it as a normal packet if this function is enabled.

Management Packet High Priority: Need to reset media converter then this function will take effect. All management packets will be allocated to high priority queue to guarantee bandwidth when Management Packet High Priority is enabled. Media converter will enable QoS and four queues and set queue 3 as strict priority if this function is enabled. All management packets such as 802.3ah OAM and SNMP packets will be in queue 3 to guarantee bandwidth.

Broadcast Storm Filter: If this function is enabled, when too many broadcast packets arrive in a period time, the broadcast packets will be dropped.

Multicast Storm Filter: If this function is enabled, when too many multicast packets arrive in a period time, the multicast packets will be dropped.

Unknown DA Unicast Storm Filter: If this function is enabled, when too many unknown DA unicast packets arrive in a period time, the unknown DA unicast packets will be dropped.

Apply: Click "Apply" button when you have finished Converter Configuration.

Port Configuration

Port Configuration

Port	Link	Mode	Flow Control	Ingress Rate Limit (kbps)	Egress Rate Limit (kbps)
TP	1000F	Auto Speed	Enable	Not Limit	Not Limit
FX	1000F	Auto Speed	Enable	Not Limit	Not Limit

Apply Refresh

Rate limit is 64kbps as a minimal step

Notice : When FX link to 1000Mbps, the FX mode can be set.

Mode: Click "Mode" drop-down menu to choose "Auto Speed", "1000 Full", "100 Full", "100 Half", "10 Full", "10 Half" from the "Mode" drop-down list for TP or FX port.

Flow Control: Click "Flow Control" drop-down menu to choose "Disable" or "Enable" from the "Flow Control" drop-down list to disable or enable Flow Control for TP or FX port.

Ingress Rate Limit (kbps): Click "Ingress Rate Limit" drop-down menu to choose the ingress rate limit from the "Ingress Rate Limit" drop-down list for TP or FX port. Or click "Ingress Rate Limit" drop-down menu to choose the "User Setting" from the "Ingress Rate Limit" drop-down list for TP or FX port. Then click in "Ingress Rate Limit" text box and type an ingress rate limit for TP or FX port. The ingress rate limit should be divided exactly by 64 because 64kbps is as a minimal step for ingress rate limit. The program will change the ingress rate limit to 64 automatically if the ingress rate limit is not divided by 64, for example 65.

Egress Rate Limit (kbps): Click "Egress Rate Limit" drop-down menu to choose the egress rate limit from the "Egress Rate Limit" drop-down list for TP or FX port. Or click "Egress Rate Limit" drop-down menu to choose the "User Setting" from the "Egress Rate Limit" drop-down list for TP or FX port. Then click in "Egress Rate Limit" text box and type an egress rate limit for TP or FX port. The egress rate limit should be divided exactly by 64 because 64kbps is as a minimal step for egress rate limit. The program will change the egress rate limit to 64 automatically if the egress rate limit is not divided by 64, for example 65.

Apply: Click "Apply" button when you have finished Port Configuration.

Refresh: Click "Refresh" button to show updated Port Configuration information.

MIB Counter

MIB Counters
(The following counter means the port received number)

Port	TP	FX	CPU
Total Bytes	234377	12914	92371
Total Pkts	2576	22	144
Total Error Pkts	0	0	0
Unicast Pkts	248	22	144
Multicast Pkts	535	0	0
Broadcast Pkts	1793	0	0
64	1837	11	75
65-127	427	0	0
128-255	268	2	3
256-511	25	0	1
512-1023	19	2	9
1024-1538	0	7	56
Undersize Pkts	0	0	0
Oversize Pkts	0	0	0
Fragments	0	0	0
CRC Errors	0	0	0
Jabbers	0	0	0
Drop Events	0	0	0
Pause Frames	0	0	0

This page shows local device's MIB (management information base) counters.

Clear: Click the "Clear" button to reset all MIB counters to zero.

Refresh: Click the "Refresh" button to refresh the MIB counter information.

SNMP Configuration

The screenshot shows the SNMP Configuration page. On the left sidebar, there is a navigation menu with the following items: Network Information, Local Setting (IP Configuration, Password Setting, Converter Configuration, Port Configuration, MIB Counter, SNMP Configuration, SNMP Community Setting, VLAN, Q-in-Q), Remote Setting, and Tools (Logout). The main content area is titled 'SNMP Configuration' and contains the following configuration fields:

SNMP Ability	Disable ▼
Trap mode	Disable ▼
SNMP Trap IP Address	0.0.0.0

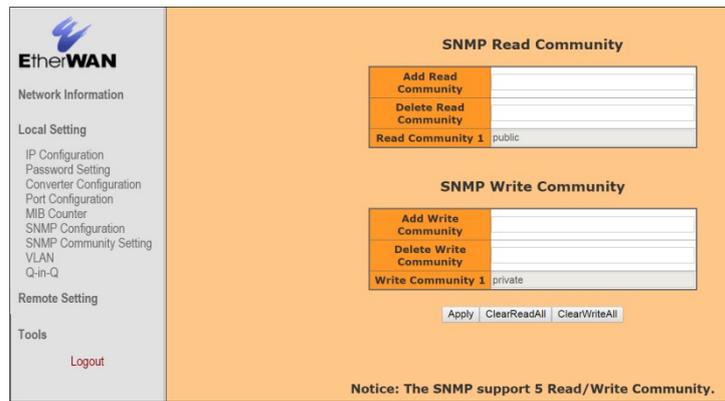
Below the fields is an 'Apply' button.

SNMP Ability: Click “SNMP Ability” drop-down menu to choose “Disable” or “Enable” from the “SNMP Ability” drop-down list to disable or enable SNMP functions.

Trap Mode: Click “Trap Mode” drop-down menu to choose “Disable” or “Enable” from the “Trap Mode” drop-down list to disable or enable to send trap event to SNMP server.

SNMP Trap IP Address: Click in “SNMP Trap IP Address” text box and type SNMP server’s IP address used for trap destination IP.

Apply: Click “Apply” button when you have finished SNMP Configuration.

SNMP Community Setting


SNMP Read Community

Add Read Community	
Delete Read Community	
Read Community 1	public

SNMP Write Community

Add Write Community	
Delete Write Community	
Write Community 1	private

Apply | ClearReadAll | ClearWriteAll

Notice: The SNMP support 5 Read/Write Community.

This media converter supports up to 5 SNMP Read/Write Communities.

SNMP Read Community

Add Read Community: Click in "Add Read Community" text box and type a read community name.

Delete Read Community: Click in "Delete Read Community" text box and type a read community name to be deleted.

SNMP Write Community

Add Write Community: Click in "Add Write Community" text box and type a write community name.

Delete Write Community: Click in "Delete Write Community" text box and type a write community name to be deleted.

ClearReadAll: Click "ClearReadAll" button to clear all read community names.

ClearWriteAll: Click "ClearWriteAll" button to clear all write community names.

Apply: Click "Apply" button when you have finished SNMP Community Setting.

VLAN

VLAN Group:

802.1Q VLAN Group

VLAN Mode: Enable ▾

VLAN Group	VID	Member		
		TP	FX	CPU
0	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8	8	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9	9	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11	11	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
12	12	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13	13	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
14	14	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
15	15	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Apply

Network Information

Local Setting

- IP Configuration
- Password Setting
- Converter Configuration
- Port Configuration
- MIB Counter
- SNMP Configuration
- SNMP Community Setting
- VLAN
 - VLAN Group
 - VLAN Per Port Setting
 - Q-in-Q

Remote Setting

Tools

Logout

VLAN Mode: Click “VLAN Mode” drop-down menu to choose “Disable” or “Enable” from the “VLAN Mode” drop-down list to disable or enable 802.1Q VLAN Group. There are 16 VLAN entries available if 802.1Q VLAN Group function is enabled.. Each VLAN entry could set VID and member port. The VID should be 1~4094.

Apply: Click “Apply” button when you have finished VLAN Group setting.

VLAN Per Port Setting:



EtherWAN

Network Information

Local Setting

- IP Configuration
- Password Setting
- Converter Configuration
- Port Configuration
- MIB Counter
- SNMP Configuration
- SNMP Community Setting
- VLAN
 - VLAN Group
 - VLAN Per Port Setting
 - Q-in-Q

Remote Setting

Tools

Logout

802.1Q VLAN Per Port Setting

Port	Egress Link Type	Port VLAN Entry
TP	Don't Touch Tag	0
FX	Don't Touch Tag	1
CPU	Don't Touch Tag	2
Ingress Filter		Disable

Apply

Notice: Please make sure the VLAN port entry can go through CPU port.

Egress Link Type:

Replace Tag: The media converter will remove VLAN tags from packets then add new tags to them. The inserted tag is the ingress port's "Default tag", which is indexed by port "Port based VLAN index". This is a replacement processing for tagged packets and an insertion for untagged packets.

Remove Tag: The media converter will remove VLAN tags from packets if they are tagged when these packets are output. The media converter will not modify packets received without tags.

Add Tag: The media converter will add VLAN tags to packets if they are not tagged when these packets are output on this port. The media converter will not add tags to packets already tagged. The inserted tag is the ingress port's "Default tag", which is indexed by port's "Port based VLAN index".

Don't Touch Tag: Do not insert or remove VLAN tags to/from packet which is output on this port.

Port VLAN Entry: Select Port based VLAN index. The number refers to the VLAN table entry index, not VID.

Ingress Filter: Click "Ingress Filter" drop-down menu to choose "Disable" or "Enable" from the "Ingress Filter" drop-down list to disable or enable VLAN ingress filter.

Apply: Click "Apply" button when you have finished VLAN Group setting.

Please make sure the VLAN port entry can go through CPU port.

Q-in-Q

EtherWAN

Network Information

Local Setting

- IP Configuration
- Password Setting
- Converter Configuration
- Port Configuration
- MIB Counter
- SNMP Configuration
- SNMP Community Setting
- VLAN
- VLAN Group
- VLAN Per Port Setting
- Q-in-Q

Remote Setting

Tools

[Logout](#)

Q in Q Functions Configuration

Q in Q Enable	Disable ▾
Out Layer VLAN Tag EtherType (HEX)	0x8100
Out Layer VLAN VID (DEC)	0
Q in Q direction	TP Add QinQ Tag, FX Remove Tag ▾

Warning: If enable Q-in-Q, web connection may be lost because of the VLAN tag

Q in Q Enable: Click “Q in Q Enable” drop-down menu to choose “Disable” or “Enable” from the “Q in Q Enable” drop-down list to disable or enable Q in Q function.

Out Layer VLAN Tag EtherType (HEX): Click in “Out Layer VLAN Tag EtherType” text box and type user defined Q-in-Q out layer VLAN tag Ether type.

Out Layer VLAN VID (DEC): Click in “Out Layer VLAN VID” text box and type user defined Q-in-Q out layer VLAN tag VID.

Q in Q direction: Click “Q in Q direction” drop-down menu to choose “TP Add QinQ Tag, FX Remove Tag.” or “FX Add QinQ Tag, TP Remove Tag.” from the “Q in Q direction” drop-down list to select Q in Q direction.

Apply: Click “Apply” button when you have finished VLAN Group setting.

When Q-in-Q is enabled, web connection may be lost due to the addition of the VLAN tag.

Remote Setting

802.3ah Functions

This converter supports IEEE 802.3ah, an OAM (Operations, Administration and Maintenance) protocol that provides a uniform way to detect, confirm, and isolate faults.

OAM only works point-to-point over the fiber link. In addition to standard 802.3ah functions like loop back and dying gasp, the EL2321 implements OAM to provide complete provisioning of the remote fiber connected converter, without using Layer 3 IP protocol. The 802.3ah auto-discovery function uses OAM PDUs, sent periodically, to detect the presence of another 802.3ah device in the link.

802.3ah Configuration

Use this section to configure OAM settings.

802.3ah Function: Choose “Disable” or “Enable” to disable or enable 802.3ah function.

802.3ah Mode: This field is used when configuring an OAM pair. One unit of the pair is set to ‘active’, and the other set to ‘passive’. In most situations, the remote converter is the passive one.

Remote Loopback: In order to perform remote loopback test, this option must be enabled in both converters. Choose “Disable” or “Enable” to disable or enable remote loopback.

Apply: Click “Apply” button to save settings.

Refresh: If you have made changes to the configuration settings, click “Refresh” button to show the **Discovery Status** and the **Fiber Port Status**, displayed in the window below.

Loopback Test

The loopback test is a non-intrusive test which uses OAM packets. This test will not affect normal transmission.

The screenshot shows the '802.3ah Loop Back Test' configuration page. On the left is a navigation menu with the following items: EtherWAN logo, Network Information, Local Setting, Remote Setting (with sub-items: 802.3ah Functions, 802.3ah Configuration, Loopback Test, 802.3ah Status), Tools, and Logout. The main content area has an orange background and contains the title '802.3ah Loop Back Test'. Below the title is a table with two rows: 'Send Packet Number' with a value of 16 and a range of (1~255), and 'Packet Length(Not include CRC)' with a value of 60 and a range of (60~1514). Below the table is an 'Apply' button.

Send Packet Number	16	(1~255)
Packet Length(Not include CRC)	60	(60~1514)

Apply

Send Packet Number (1~255): This number represents the amount of OAM frames that will be sent for loopback testing. Enter the number of packets to be sent. Default is 1.

Packet Length (Not include CRC) (60~1514): Enter a value in this field to set the packet size of the OAM frames used for loop back testing, in addition to the standard 4 bytes used by Ethernet CRC (cyclic redundancy check). A Layer 2 Ethernet packet ranges in size from 64 - 1518 bytes. A VLAN tag adds another 4 bytes and 802.1Q tunneling (Q in Q) can add another 4 bytes, bringing the maximum total packet size to 1526 bytes. Frames with a size larger than this are jumbo frames.

NOTE: The loopback test must be performed from the media converter in "active" mode. The test result will always be "Fail" if performed from the media converter in passive mode.

Apply: Click "Apply" button to perform the loop back test. The results will display immediately on the same screen:

802.3ah Loop Back Test	
Send Packet Number	16 (1~255)
Packet Length(Not include CRC)	60 (60~1514)
Apply	
Loop Back Test Result	
Result	Fail

802.3ah Loop Back Test	
Send Packet Number	16 (1~255)
Packet Length(Not include CRC)	60 (60~1514)
Apply	
Loop Back Test Result	
Result	Pass
TX Counter	16
RX Counter	16
RX Error Counter	0

Loop Back Test Result

Result: Read-only field that displays "Pass" or "Fail". If the loopback test was successful (Pass), the fields for "TX Counter", "RX Counter", and "RX Error Counter" will be shown. If the loopback test result is "Fail," only the result field will be shown.

TX Counter: Read-only field that shows the number of packets transmitted.

RX Counter: Read-only field that shows the number of packets received.

RX Error Counter: Read-only field that shows the number of error packets received.

802.3ah Status

The **Global Config** fields are read-only, and display the enabled/disabled OAM state, the Fiber Port state and the MAC addresses of the local and remote units in the OAM manageable pair.

The **Flags Field** display the local and remote results of individual events. The **Remote Stable** (Local and Remote) fields are used with the **Remote Evaluating** (Local and Remote) fields to show the current discovery status. Refer to the table below.

	Remote/Local Stable	Remote/Local Evaluating	Definition
VALUE	FALSE	FALSE	Discovery cannot be completed.
	FALSE	TRUE	Discovery process not yet completed.
	TRUE	FALSE	Discovery process completed.
	TRUE	TRUE	Reserved for future use.

Critical Event: A value of "True" indicates that a critical event has occurred. "False" indicates that a critical event has not occurred.

Dying Gasp: A value of "True" indicates that an unrecoverable failure condition (such as power loss) has occurred. "False" indicates that no failure condition has occurred.

Link Fault: A value of "True" indicates that the local device's receive path has detected a fault. "False" indicates that no fault was detected.

The **Discovery Information** panel displays the results of negotiation between two OAM devices. (see below)

Discovery Information	
Discovery State	SEND_ANY
Local PDU	ANY
Local Satisfied	TRUE
Remote State Valid	TRUE
Local Lost Link Timer Done	FALSE
Local Link Status	TRUE

Discovery State: There are six possible states in the Discovery process:

— **FAULT** state: The link cannot be established (Local Link Status is False).

— **ACTIVE_SEND_LOCAL** state: When the link is established (Local Link Status is True), the device configured in Active mode sends OAM PDUs with Local Information TLVs to the (Passive) remote device, and waits to receive OAM PDUs in response.

— **PASSIVE_WAIT** state: A device configured in Passive mode waits until receiving OAM PDUs from a device in Active mode, then responds by sending OAM PDUs with Local Information TLVs. Two devices both in Passive mode will not be able to complete Discovery.

— **SEND_LOCAL_REMOTE** state: Once the device has received OAM PDUs with the Local Information TLV from the remote device, the local device begins sending OAM PDUs that contain both the local and remote Information TLVs. If settings on the local or remote device are changed so that the local OAM client becomes unsatisfied with the settings, the Discovery process reverts to the SEND_LOCAL_REMOTE state.

— **SEND_LOCAL_REMOTE_OK** state: If the local OAM client is satisfied with the settings on both the local and remote device, it enters the SEND_LOCAL_REMOTE_OK state. If settings on the local OAM client are changed so that the remote OAM client is not satisfied with the settings, the Discovery process returns to the SEND_LOCAL_REMOTE_OK state.

— **SEND_ANY** state: The device enters the SEND_ANY state when an OAM PDU has been received indicating the remote device is satisfied with the settings. SEND_ANY is the normal operating state.

Local PDU: The Local PDU displays one of four values that are used in the transmission and reception of OAM PDUs as part of the Discovery process:

— **LF_INFO**: Only Information OAM PDUs with the Link Fault critical link event set and not containing Information TLVs are transmitted, and only Information OAM PDUs are received.

— **RX_INFO**: No OAM PDUs are transmitted; only Information OAM PDUs are received.

— **INFO**: Only Information OAM PDUs are transmitted and received.

— **ANY**: Any OAM PDU is allowed to be transmitted and received.

Local Satisfied: Read-only field that shows whether OAM Client has determined local and remote OAM configuration settings are in agreement or not. "True" indicates that OAM Client is satisfied with the local and remote settings, while "False" indicates that OAM Client is not satisfied with the local and remote settings.

Remote State Valid: Read-only field that shows whether OAM Client has received remote state information. "True" indicates that OAM Client has received remote state information, while "False" indicates that it has not.

Local Lost Link Timer Done: Read-only field that shows if the Local Lost Link Timer has expired. "True" indicates that the Local Lost Link Timer has expired, while "False" indicates that it has not.

Local Link Status: Read-only field that shows a link fault condition. "True" indicates that a link fault condition does not exist, while "False" indicates a link fault condition.

The Information TLV panel and Remote Dying Gasp

The screenshot shows the EtherWAN web interface. On the left is a navigation menu with categories: Network Information, Local Setting (IP Configuration, Password Setting, Converter Configuration, Port Configuration, MIB Counter, SNMP Configuration, SNMP Community Setting, VLAN, VLAN Group, VLAN Per Port Setting, Q-in-Q), Remote Setting (802.3ah Functions, 802.3ah Configuration, Loopback Test, 802.3ah Status), and Tools (Logout). The main content area is titled 'Information TLV' and contains a table comparing Local and Remote settings for various parameters. Below the table is a 'Remote Dying Gasp' section with a text input field for 'Remote Dying Gasp Count' set to 0, and 'Clear' and 'Refresh' buttons.

	Local	Remote
State Mux	FWD	FWD
State Par	FWD	FWD
Revision	0x0	0x0
Variable	FALSE	FALSE
Link Events	TRUE	TRUE
Loopback	TRUE	TRUE
Unidir	FALSE	FALSE
Mode	PASSIVE	ACTIVE

Remote Dying Gasp

Remote Dying Gasp Count:

Clear Refresh

State MUX: (Multiplexer) Read-only field with value of FWD or DISCARD. "FWD" indicates that MAC client frames are passed to the subordinate sublayer. "DISCARD" indicates that MAC frames are discarded by the multiplexer.

State Par: (Parser) Read-only field with values of FWD, LB, or DISCARD. "FWD" indicates that Parser passes received non-OAM PDUs to the superior sublayer. "LB" indicates that parser passes received non-OAM PDUs to multiplexer during remote loopback test. "DISCARD" indicates that parser discards all non-OAM PDUs received.

Revision: Read-only field that shows the current revision (number of changes) of Information TLVs. Starting value is zero.

Variable: Currently not used.

Link Events: Read-only field that shows whether the device is able to interpret Link Events.

Loopback: View-only field that shows whether the device is able to perform loopback.

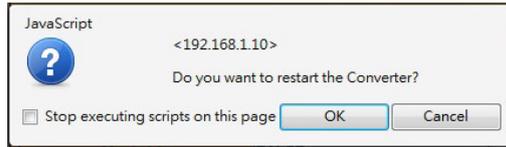
Unidir: Read-only field that shows whether the device is able to send OAM PDUs when the link in the receive path (RX) is not operational. A value of "True" indicates that the device can send OAM PDUs when the receive path is not operational, while "False" indicates that it cannot.

Mode: Read-only field that shows the mode (Active or Passive) of the local and remote device.

Remote Dying Gasp

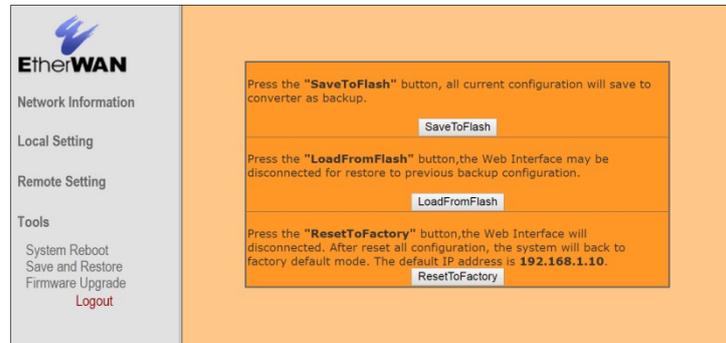
Remote Dying Gasp Count: Indicates the number of unrecoverable failure conditions that have occurred (e.g. power failure).

Tools

System Reboot

OK: Click "OK" button to restart the media converter.

OK: Click "Cancel" button to cancel the media converter restarting.

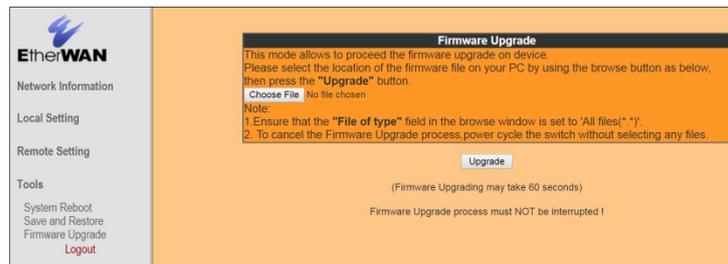
Save and Restore

SaveToFlash: Click "SaveToFlash" button to save all current configurations to media converter as backup.

LoadFromFlash: Click "LoadFromFlash" button to restore to previous backup configuration. The Web Interface may be disconnected after restoration.

ResetToFactory: Click "ResetToFactory" button. The Web Interface will be disconnected. The system will revert back to factory default settings after media converter resets all configurations. The default IP address is 192.168.1.10.

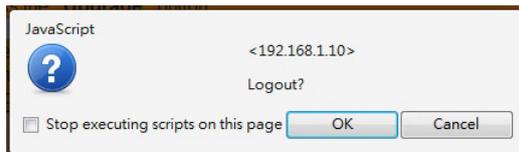
Firmware Upgrade



Choose: Click the "Choose" button to select the location and file of the new firmware image file on your computer.

Upgrade: Click the "Upgrade" button. The new firmware image file will be burned into the flash. Reset the media converter to use the new firmware.

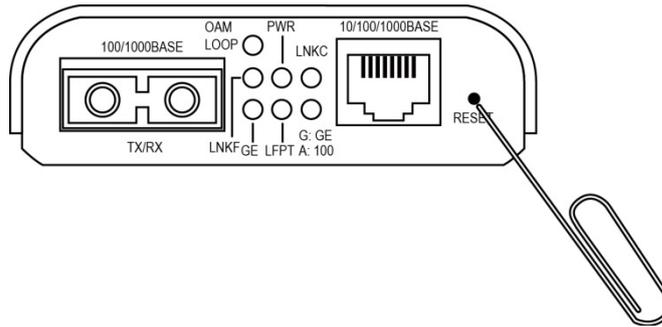
Logout



OK: Click "OK" button to log out of the media converter. Click "Cancel" button to cancel the log out.

Reset Button

The reset button is used to reset the web-interface IP or device settings.



Reset the device:

Insert a paper clip or a similar object into the reset hole to press the reset button.

Reset the web-interface IP to 192.168.1.10:

Insert a paper clip or a similar object into the reset hole. Press and hold the reset button for 5~10 seconds.

Reset to factory default:

Insert a paper clip or a similar object into the reset hole. Press and hold the reset button for 10 seconds until the OAM LOOP LED slowly blinks.

Specifications

Applicable Standards	IEEE802.3 10BASE-T IEEE802.3u 100BASE-TX IEEE802.3ab 1000BASE-T IEEE802.3z 1000BASE-SX/1000BASE-LX IEEE802.3x
Fixed Ports	1 10/100/1000Base-TX port 1 dual rate 100Base-FX/BX or 1000Base-SX/LX/BX fiber interface

Speed	
10Base-T	10/20Mbps for half/full-duplex
100Base-TX/FX	100/200Mbps for half/full-duplex
1000Base-T	2000Mbps for full-duplex
1000Base-SX/LX/BX	2000Mbps for full-duplex
Forwarding rate	14,880pps for 10Mbps 148,810pps for 100Mbps 1,488,100pps for 1000Mbps
LED Indicators	PWR; Copper Port Speed; LNK; OAM LOOP; GE; LNKF; LFPT
Dimensions	80.3 × 109.2 × 23.8mm (W x D X H) (3.16" × 4.3" × 0.94")
Weight	0.5Kg (1.76lbs.)
Power	Input Voltage: 12VDC
Power Consumption	3W Max. 0.25A @ 12VDC
Operating Temperature	0 ~ 50°C (32 ~ 122°F)
Storage Temperature	-20 ~ 70°C (-4 ~ 158°F)
Humidity	5 ~ 95%, non-condensing
Emissions	FCC part 15 Class A, CE Mark Class A, VCCI Class A