

# Industrial Lite Managed Ethernet Switch

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## TES-250-M12 User's Manual



Version 2.0

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# **Getting to Know Your Switch**

## **1.1 About the TES-250-M12 Entry-Level Managed Industrial Switch**

ORing's Transporter™ series Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. TES-250-M12 is a lite-managed redundant ring Ethernet switch with 5x10/100Base-T(X) ports which is compliant with EN50155 request. With completely support of Ethernet redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), Open-Ring, O-Chain and STP/RSTP (IEEE802.1w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technologies. It is specifically designed for the toughest industrial environments. TES-250-M12 EN50155 Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. TES-250-M12 can be managed centralized by a powerful windows utility — Open-Vision. In addition, the wide operating temperature range from -40°C to 70°C can satisfy most of operating environment. The TES-250-M12 can be easily adopted in almost all kinds of applications and provides the most rugged solutions for managing your network. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed Ethernet application.

## **1.2 Software Features**

- World's fastest Redundant Ethernet Ring (Recovery time < 10ms over 250 units connection)
- Supports Ring Coupling, Dual Homing and RSTP over O-Ring
- Open-Ring support the other vendor's ring technology in open architecture
- O-Chain support the multiple redundant ring technology
- Support fast recovery mode
- Easy-to-configure: Web / Windows utility
- Windows utility (Open-Vision) for network management

## **1.3 Hardware Features**

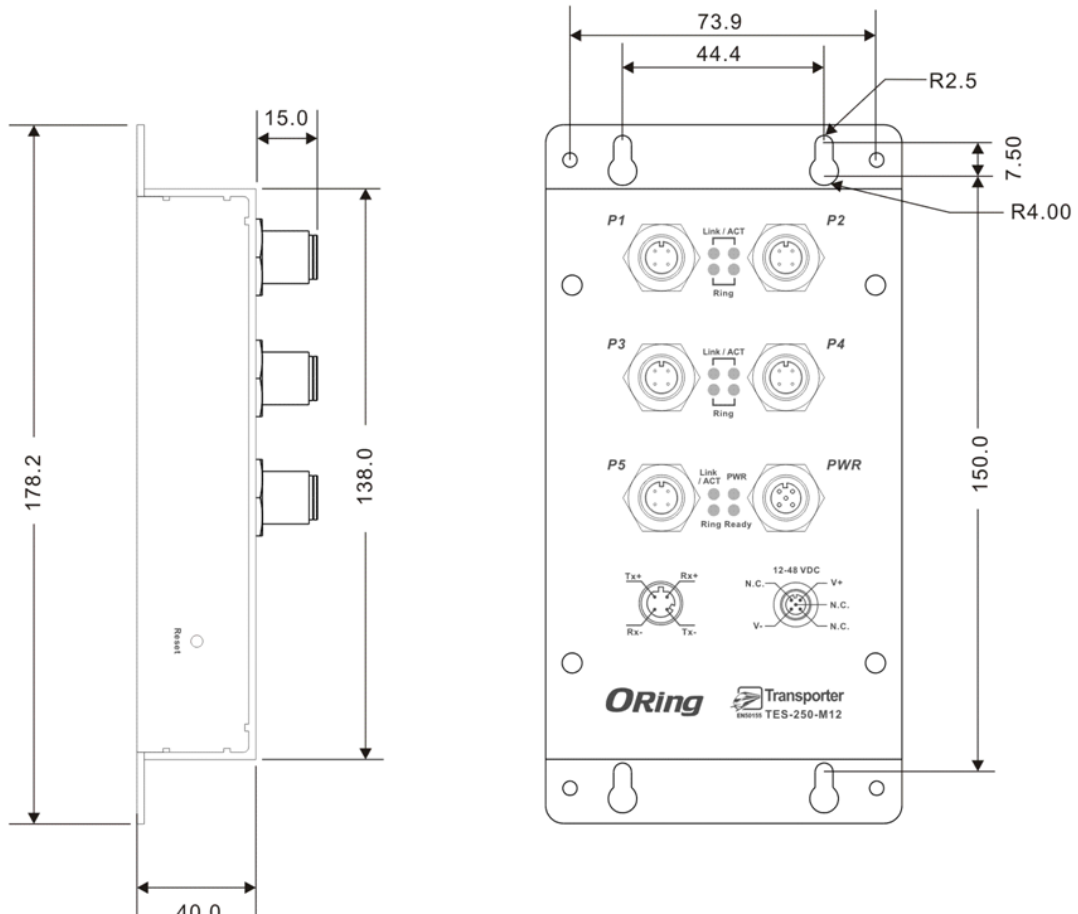
- Wide Operating Temperature: -40 to 70 °C
- Storage Temperature: -40 to 85 °C
- Operating Humidity: 5% to 95%, non-condensing



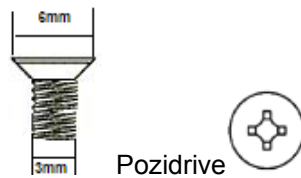
- 10/100Base-T(X) Ethernet port

# Hardware Installation

## 2.1 Wall Mounting Installation



The screws specification shows in the following two pictures. In order to prevent switch from any damage, the screws should not larger than the size that used in TES-250-M12 switch.



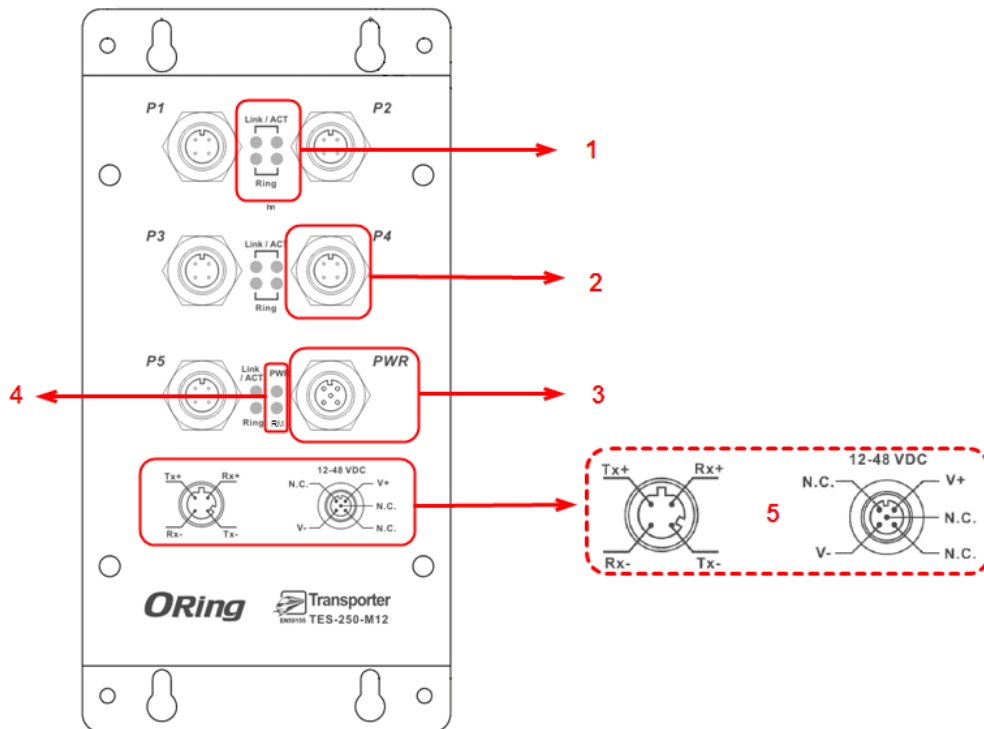
# Hardware Overview

## 3.1 Front Panel

The following table describes the labels that stick on the TES-250-M12.

Port	Description
<b>10/100 M12 Connector Ethernet ports</b>	10/100Base-T(X) M12 Connector Ethernet ports support auto-negotiation. Default Setting : Speed: auto Duplex: auto Flow control : disable

TES-250-M12



1. LED for Ethernet ports in Link/Act & Ring mode indicator.
2. 5x10/100Base-T(X) Ethernet ports.
3. Single DC 12~48V power input.
4. Power and R.M (Ring master) LED, When Power on / Ring Master enable the LED light on.
5. Power & Port PIN Description

# Cables

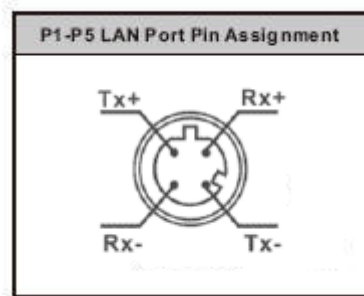
## 4.1 Ethernet Cables

The TES-250-M12 switch has standard Ethernet ports. According to the link type, the switch use CAT 3, 4, 5, 5e UTP cables to connect to any other network device (PCs, servers, switches, routers, or hubs). Please refer to the following table for cable specifications.

Cable Types and Specifications

Cable	Type	Max. Length	Connector
10BASE-T	Cat. 3, 4, 5 100-ohm	UTP 100 m (328 ft)	RJ-45
100BASE-TX	Cat. 5 100-ohm UTP	UTP 100 m (328 ft)	RJ-45

### 4.1.1 100BASE-TX/10BASE-T Pin Assignments



Pin Number	Assignment
1	Tx +
2	Rx -
3	Tx -
4	Rx +



# WEB Management



## 5.1 Configuration by Web Browser

This section introduces the configuration by Web browser.

### 5.1.1 About Web-based Management

An embedded HTML web site resides in flash memory on the CPU board. It contains advanced management features and allows you to manage the switch from anywhere on the network through a standard web browser such as Microsoft Internet Explorer.

The Web-Based Management function supports Internet Explorer 5.0 or later. It is based on Java Applets with an aim to reduce network bandwidth consumption, enhance access speed and present an easy viewing screen.

**Note:** By default, IE5.0 or later version does not allow Java Applets to open sockets. You need to explicitly modify the browser setting in order to enable Java Applets to use network ports.

### Preparing for Web Management

The default value is as below:

IP Address: **192.168.10.1**

Subnet Mask: **255.255.255.0**

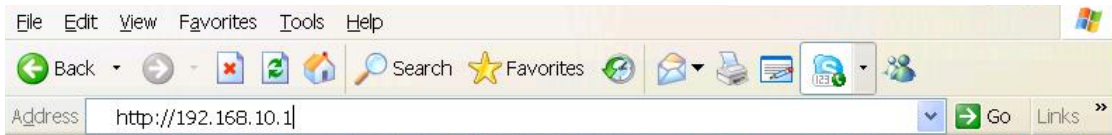
Default Gateway: **192.168.10.254**

User Name: **admin**

Password: **admin**

### System Login

1. Launch the Internet Explorer.
2. Type http:// and the IP address of the switch. Press "**Enter**".

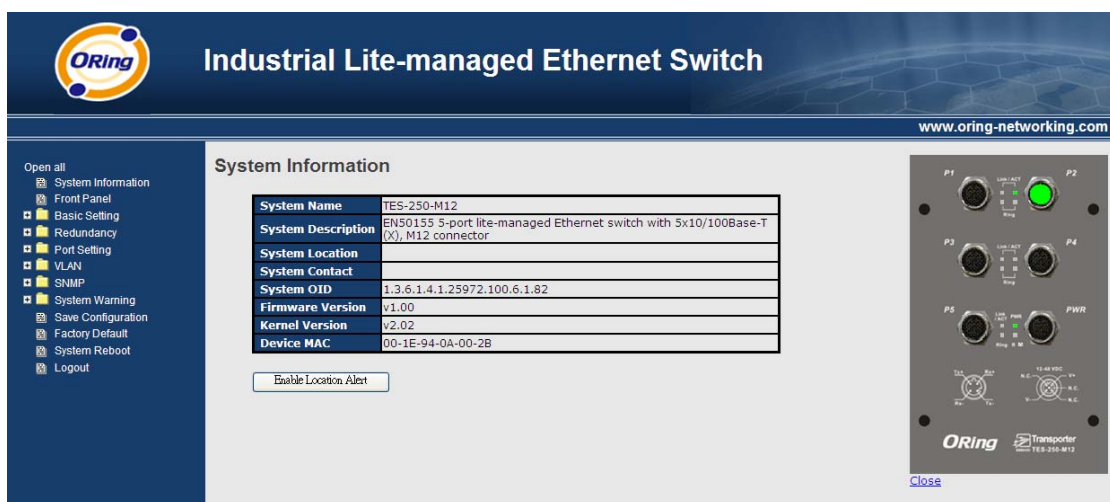


3. The login screen appears.
4. Key-in the username and password. The default username and password is “admin”.
5. Click “Enter” or “OK” button, then the main interface of the Web-based management appears.



Login screen

## Main Interface



Main interface

## 5.1.2 Basic Setting

### 5.1.2.1 Switch setting

**Switch Setting**

<b>System Name</b>	TES-250-M12
<b>System Description</b>	EN50155 5-port lite-managed Ethernet switch with 5x10/100Base-T(X), M12 connector
<b>System Location</b>	
<b>System Contact</b>	

Switch setting interface

The following table describes the labels in this screen.

Label	Description
<b>System Name</b>	Assign the name of switch. The maximum length is 64 bytes
<b>System Description</b>	Display the description of switch.
<b>System Location</b>	Assign the switch physical location. The maximum length is 64 bytes
<b>System Contact</b>	Enter the name of contact person or organization

### 5.1.2.2 Admin Password

Change web management login username and password for the management security issue

**Admin Password**

<b>User Name</b>	admin
<b>New Password</b>	
<b>Confirm Password</b>	

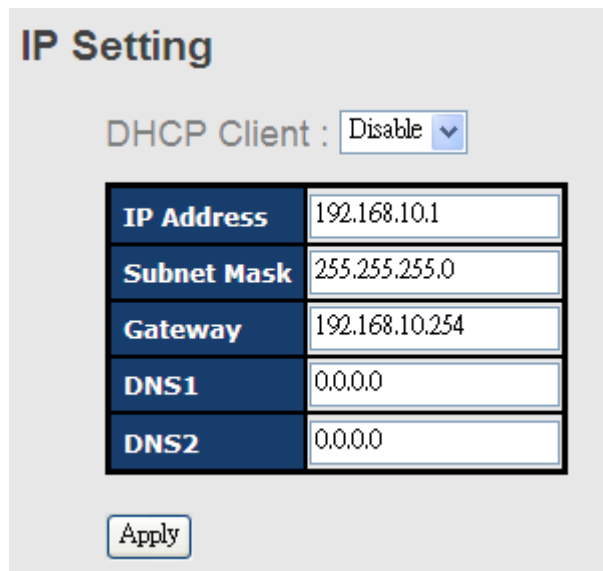
Admin Password interface

The following table describes the labels in this screen.

Label	Description
<b>User name</b>	Key in the new username (The default is “ <b>admin</b> ”)
<b>New Password</b>	Key in the new password (The default is “ <b>admin</b> ”)
<b>Confirm password</b>	Re-type the new password.
<b>Apply</b>	Click “ <b>Apply</b> ” to activate the configurations.

### 5.1.2.3 IP configuration

You can configure the IP Settings and DHCP client function through IP configuration.



IP Configuration interface

The following table describes the labels in this screen.

Label	Description
<b>DHCP Client</b>	To enable or disable the DHCP client function. When DHCP client function is enabling, the switch will assign the IP address from the network DHCP server. The default IP address will be replaced by the IP address which the DHCP server has assigned. After clicking “ <b>Apply</b> ” button, a popup dialog will show up to inform you when the DHCP client is enabling. The current IP will lose and you should find the new IP on the DHCP server.
<b>IP Address</b>	Assign the IP address that the network is using. If DHCP client function is enabling, you do not need to assign the IP address.

	The network DHCP server will assign the IP address for the switch and it will be displayed in this column. The default IP is 192.168.10.1
<b>Subnet Mask</b>	Assign the subnet mask for the IP address. If DHCP client function is enabling, you do not need to assign the subnet mask.
<b>Gateway</b>	Assign the network gateway for the switch. The default gateway is 192.168.10.254
<b>DNS1</b>	Assign the primary DNS IP address
<b>DNS2</b>	Assign the secondary DNS IP address
<b>Apply</b>	Click " <b>Apply</b> " to activate the configurations.

### 5.1.2.4 SNTP Configuration

The SNTP (Simple Network Time Protocol) settings allow you to synchronize switch clocks in the Internet.

#### SNTP (Time)

SNTP Client :

Daylight Saving Time :

<b>UTC Timezone</b>	(GMT)Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London
<b>SNTP Server IP Address</b>	192.168.10.66
<b>Current System Time</b>	1970年1月1日 上午 12:00:04
<b>Daylight Saving Period</b>	2006 / Jan / 2 00 ~ 2006 / Jan / 2 00
<b>Daylight Saving Offset</b>	0 (hours)

SNTP Configuration interface

The following table describes the labels in this screen.

Label	Description
<b>SNTP Client</b>	Enable or disable SNTP function to get the time from the SNTP server.
<b>Daylight Saving Time</b>	Enable or disable daylight saving time function. When daylight saving time is enabling, you need to configure the daylight saving time period.



<b>UTC Time zone</b>	Set the switch location time zone. The following table lists the different location time zone for your reference.
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Local Time Zone	Conversion from UTC	Time at 12:00 UTC
November Time Zone	- 1 hour	11 am
Oscar Time Zone	-2 hours	10 am
ADT - Atlantic Daylight	-3 hours	9 am
AST - Atlantic Standard EDT - Eastern Daylight	-4 hours	8 am
EST - Eastern Standard CDT - Central Daylight	-5 hours	7 am
CST - Central Standard MDT - Mountain Daylight	-6 hours	6 am
MST - Mountain Standard PDT - Pacific Daylight	-7 hours	5 am
PST - Pacific Standard ADT - Alaskan Daylight	-8 hours	4 am
ALA - Alaskan Standard	-9 hours	3 am
HAW - Hawaiian Standard	-10 hours	2 am
Nome, Alaska	-11 hours	1 am
CET - Central European FWT - French Winter MET - Middle European MEWT - Middle European Winter SWT - Swedish Winter	+1 hour	1 pm
EET - Eastern European, USSR Zone 1	+2 hours	2 pm
BT - Baghdad, USSR Zone 2	+3 hours	3 pm



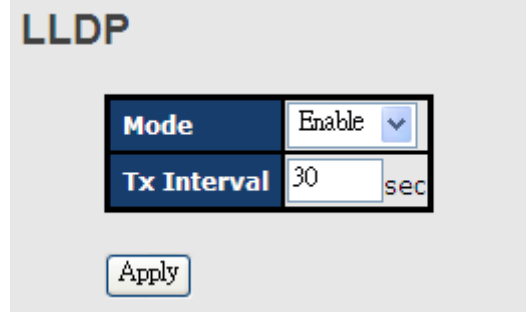
ZP4 - USSR Zone 3	+4 hours	4 pm
ZP5 - USSR Zone 4	+5 hours	5 pm
ZP6 - USSR Zone 5	+6 hours	6 pm
WAST - West Australian Standard	+7 hours	7 pm
CCT - China Coast, USSR Zone 7	+8 hours	8 pm
JST - Japan Standard, USSR Zone 8	+9 hours	9 pm
EAST - East Australian Standard GST Guam Standard, USSR Zone 9	+10 hours	10 pm
IDLE - International Date Line NZST - New Zealand Standard NZT - New Zealand	+12 hours	Midnight

The following table describes the labels in this screen.

Label	Description
<b>SNTP Sever IP Address</b>	Set the SNTP server IP address.
<b>Daylight Saving Period</b>	Set up the Daylight Saving beginning time and Daylight Saving ending time. Both will be different each year.
<b>Daylight Saving Offset</b>	Set up the offset time.
<b>Switch Timer</b>	Display the switch current time.
<b>Apply</b>	Click " <b>Apply</b> " to activate the configurations.

### 5.1.2.5 LLDP

LLDP (Link Layer Discovery Protocol) function allows the switch to advertise its information to other nodes on the network and store the information it discovers.



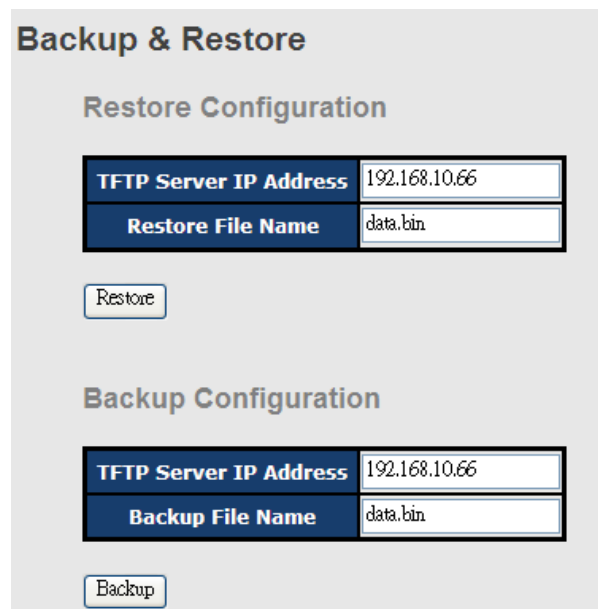
LLDP interface

The following table describes the labels in this screen.

Label	Description
LLDP Protocol	“Enable” or “Disable” LLDP function.
LLDP Interval	The interval of resend LLDP (by default at 30 seconds)
Apply	Click “Apply” to activate the configurations.
Help	Show help file.

### 5.1.2.6 Backup & Restore

You can save current EEPROM value of the switch to TFTP server, then go to the TFTP restore configuration page to restore the EEPROM value.



Backup & Restore interface

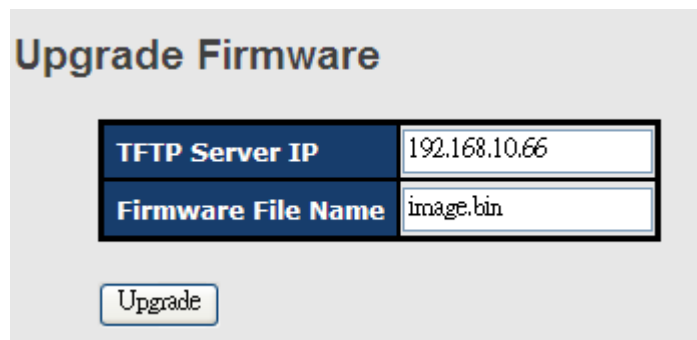


The following table describes the labels in this screen.

Label	Description
<b>TFTP Server IP Address</b>	Fill in the TFTP server IP
<b>Restore File Name</b>	Fill the file name.
<b>Restore</b>	Click " <b>restore</b> " to restore the configurations.
<b>Restore File Name</b>	Fill the file name.
<b>Restore</b>	Click " <b>restore</b> " to restore the configurations.
<b>Backup</b>	Click " <b>backup</b> " to backup the configurations.

### 5.1.2.7 Upgrade Firmware

Upgrade Firmware allows you to update the switch firmware. Before updating, make sure you have your TFTP server ready and the firmware image is on the TFTP server.



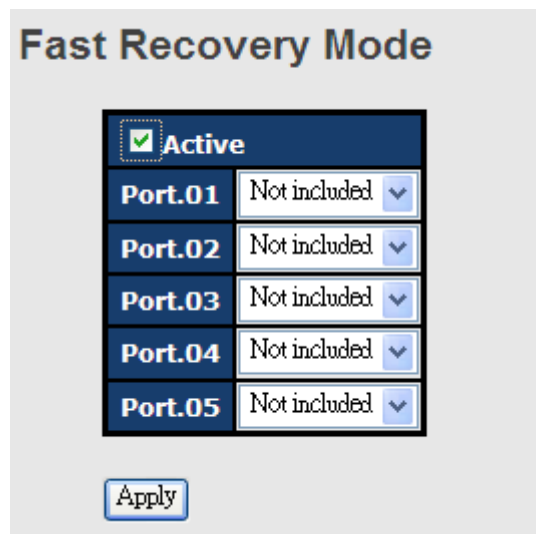
The screenshot shows a web interface titled "Upgrade Firmware". It contains two input fields: "TFTP Server IP" with the value "192.168.10.66" and "Firmware File Name" with the value "image.bin". Below these fields is an "Upgrade" button.

Update Firmware interface

## 5.1.3 Redundancy

### 5.1.3.1 Fast Recovery Mode

The Fast Recovery Mode can be set to connect multiple ports to one or more switches. The TES-250-M12 with its fast recovery mode will provide redundant links. Fast Recovery mode supports 5 priorities, only the first priority will be the act port, the other ports configured with other priority will be the backup ports.



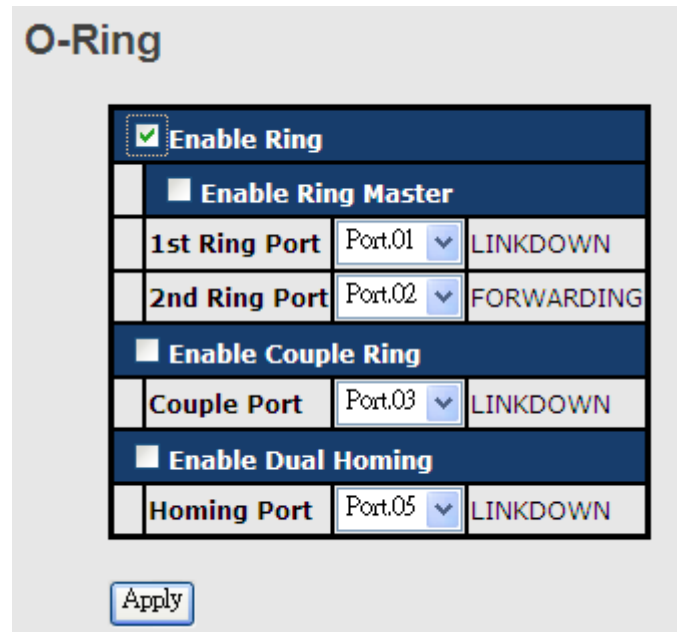
Fast Recovery Mode interface

The following table describes the labels in this screen.

Label	Description
<b>Active</b>	Activate the fast recovery mode.
<b>port</b>	Port can be configured as 5 priorities. Only the port with highest priority will be the active port. 1st Priority is the highest.
<b>Apply</b>	Click " <b>Apply</b> " to activate the configurations.

### 5.1.3.2 O-Ring

O-Ring is one of the most powerful Redundant Ring technologies in the world. The recovery time of O-Ring is less than 10 ms over 250 units of connections. It can reduce unexpected malfunction caused by network topology change. O-Ring technology supports three Ring topologies for network redundancy: O-Ring, Coupling Ring and Dual Homing.



O-Ring interface

The following table describes the labels in this screen.

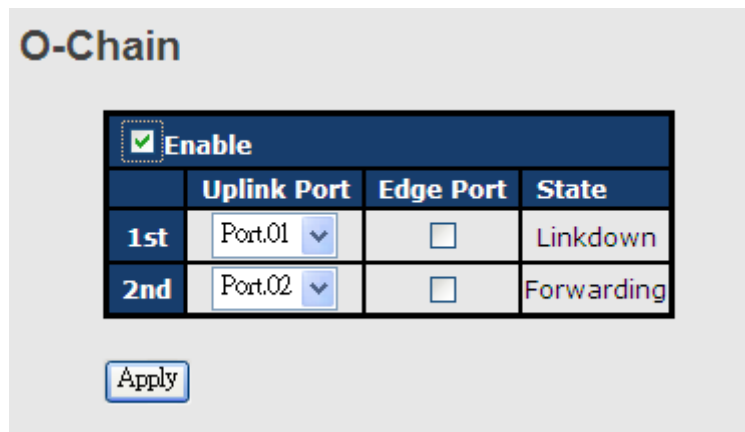
Label	Description
<b>O-Ring</b>	Mark to enable O-Ring.
<b>Ring Master</b>	There should be one and only one Ring Master in a ring. However if there are two or more switches which set Ring Master to enable, the switch with the lowest MAC address will be the actual Ring Master and others will be Backup Masters.
<b>1<sup>st</sup> Ring Port</b>	The primary port, when this switch is Ring Master.
<b>2<sup>nd</sup> Ring Port</b>	The backup port, when this switch is Ring Master.
<b>Coupling Ring</b>	Mark to enable Coupling Ring. Coupling Ring can be used to divide a big ring into two smaller rings to avoid effecting all switches when network topology change. It is a good application for connecting two O-Rings.
<b>Coupling Port</b>	Link to Coupling Port of the switch in another ring. Coupling Ring need four switch to build an active and a backup link.

	Set a port as coupling port. The coupled four ports of four switches will be run at active/backup mode.
<b>Dual Homing</b>	Mark to enable Dual Homing. By selecting Dual Homing mode, O-Ring will be connected to normal switches through two RSTP links (ex: backbone Switch). The two links work as active/backup mode, and connect each O-Ring to the normal switches in RSTP mode.
<b>Apply</b>	Click “ <b>Apply</b> ” to activate the configurations.

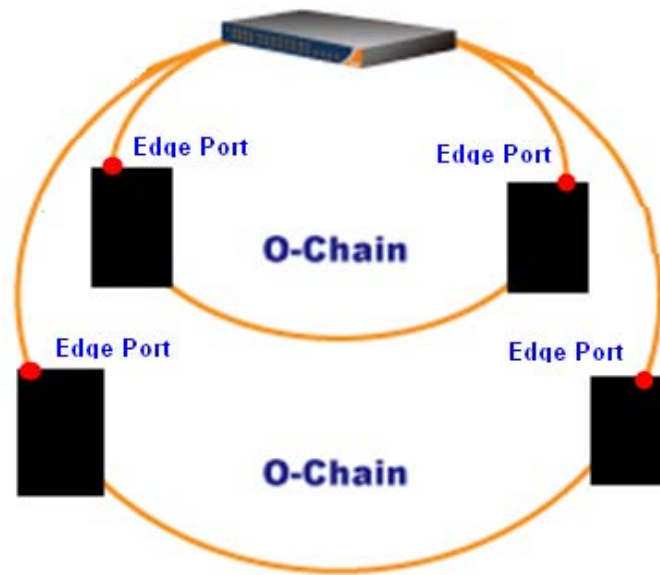
**Note:** We don't suggest you to set one switch as a Ring Master and a Coupling Ring at the same time due to heavy load.

### 5.1.3.3 O-Chain

O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topologies O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology, i.e. the creation of multiple redundant networks beyond the limitations of current redundant ring technology.



Label	Description
<b>Enable</b>	Enabling the O-Chain function
<b>1<sup>st</sup> Ring Port</b>	Choosing the port which connect to the ring
<b>2<sup>nd</sup> Ring Port</b>	Choosing the port which connect to the ring
<b>Edge Port</b>	In the O-Chain application, the head and tail of two Switch Port, must start the Edge,MAC smaller Switch, Edge port will be the backup and RM LED Light.



### 5.1.3.4 OPEN-Ring

Open-Ring technology can be applied for other vendor's proprietary ring. Thus, you can add switches of ORing into the network constructed by other ring technology and enable Open-Ring to co-operate with other vendor's managed switch.

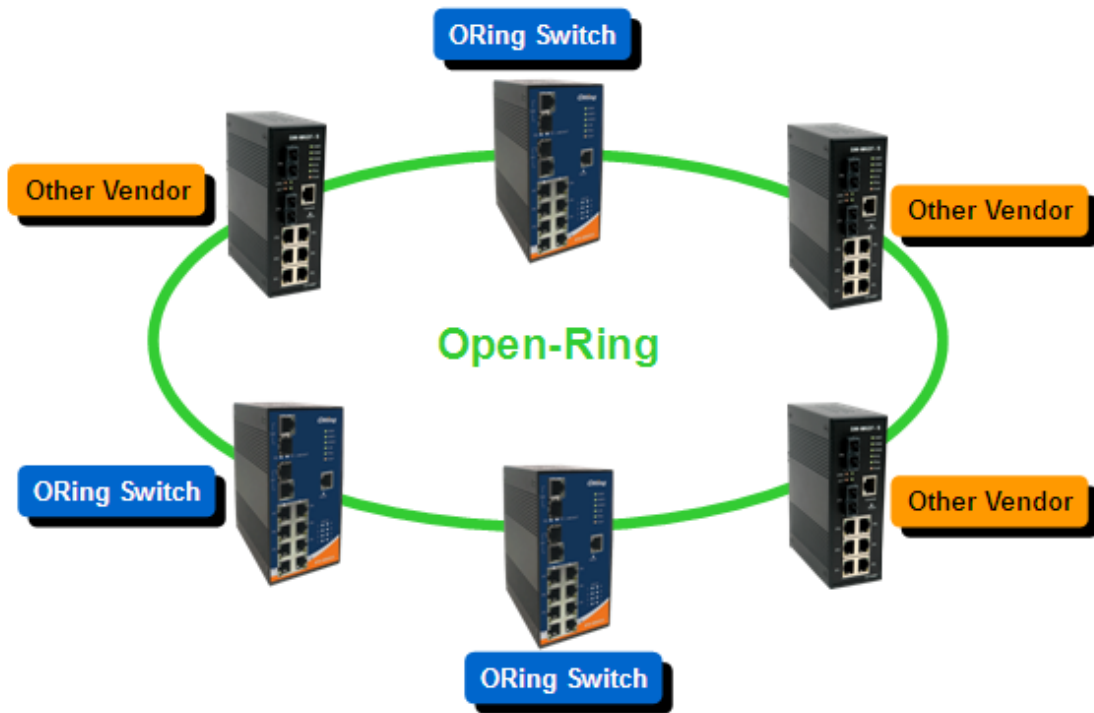
### Open-Ring

<input checked="" type="checkbox"/>	Enable
<b>Vender</b>	Moxik <span style="float: right;">▼</span>
<b>1st Ring Port</b>	Port.01 <span style="float: right;">▼</span>
<b>2nd RingPort</b>	Port.02 <span style="float: right;">▼</span>

Open-Ring interface

Label	Description
<b>Enable</b>	Enabling the Open-Ring function
<b>Vender</b>	Choosing the vendors that you want to join to their ring
<b>1<sup>st</sup> Ring Port</b>	Choosing the port which connect to the ring
<b>2<sup>nd</sup> Ring Port</b>	Choosing the port which connect to the ring

The application of Open-Ring is shown as below.



Open-Ring connection

### 5.1.3.5 RSTP

The Rapid Spanning Tree Protocol (RSTP) is an evolution of the Spanning Tree Protocol. It provides faster spanning tree convergence after a topology change. The system also supports STP and the system will auto detect the connected device that is running STP or RSTP protocol.

#### RSTP setting

You can enable/disable the RSTP function, and set the parameters for each port.

### RSTP - Setting

RSTP Mode :

#### Bridge Configuration

Priority (0-61440)	<input type="text" value="32768"/>
Max Age Time(6-40)	<input type="text" value="20"/>
Hello Time (1-10)	<input type="text" value="2"/>
Forward Delay Time (4-30)	<input type="text" value="15"/>

#### Port Configuration

Port	Path Cost (1-200000000)	Priority (0-240)	Admin P2P	Admin Edge	Admin Non STP
1	<input type="text" value="200000"/>	<input type="text" value="128"/>	<input type="text" value="Auto"/>	<input type="text" value="True"/>	<input type="text" value="False"/>
2	<input type="text" value="200000"/>	<input type="text" value="128"/>	<input type="text" value="Auto"/>	<input type="text" value="True"/>	<input type="text" value="False"/>
3	<input type="text" value="200000"/>	<input type="text" value="128"/>	<input type="text" value="Auto"/>	<input type="text" value="True"/>	<input type="text" value="False"/>
4	<input type="text" value="200000"/>	<input type="text" value="128"/>	<input type="text" value="Auto"/>	<input type="text" value="True"/>	<input type="text" value="False"/>
5	<input type="text" value="200000"/>	<input type="text" value="128"/>	<input type="text" value="Auto"/>	<input type="text" value="True"/>	<input type="text" value="False"/>

RSTP Setting interface

The following table describes the labels in this screen.

Label	Description
<b>RSTP mode</b>	You must enable or disable RSTP function before configuring the related parameters.
<b>Priority (0-61440)</b>	A value used to identify the root bridge. The bridge with the lowest value has the highest priority and is selected as the root. If the value changes, you must reboot the switch. The value must be multiple of 4096 according to the protocol standard rule.
<b>Max Age (6-40)</b>	The number of seconds a bridge waits without receiving Spanning-tree Protocol configuration messages before attempting a reconfiguration. Enter a value between 6 through 40.
<b>Hello Time (1-10)</b>	The time that controls switch sends out the BPDU packet to check RSTP current status. Enter a value between 1 through 10.



<b>Forwarding Delay Time (4-30)</b>	The number of seconds a port waits before changing from its Rapid Spanning-Tree Protocol learning and listening states to the forwarding state. Enter a value between 4 through 30.
<b>Path Cost (1-200000000)</b>	The cost of the path to the other bridge from this transmitting bridge at the specified port. Enter a number 1 through 200000000.
<b>Priority (0-240)</b>	Decide which port should be blocked by priority in LAN. Enter a number 0 through 240. The value of priority must be the multiple of 16
<b>Admin P2P</b>	Some of the rapid state transactions that are possible within RSTP are dependent upon whether the port concerned can only be connected to exactly one other bridge (i.e. It is served by a point-to-point LAN segment), or it can be connected to two or more bridges (i.e. It is served by a shared medium LAN segment). This function allows the P2P status of the link to be manipulated administratively. True means P2P enabling. False means P2P disabling.
<b>Admin Edge</b>	The port is directly connected to end stations, and it cannot create bridging loop in the network. To configure the port as an edge port, set the port to " <b>True</b> ".
<b>Admin Non STP</b>	The port includes the STP mathematic calculation. <b>True</b> is not including STP mathematic calculation. <b>False</b> is including the STP mathematic calculation.
<b>Apply</b>	Click " <b>Apply</b> " to activate the configurations.

**NOTE:** Follow the rule to configure the MAX Age, Hello Time, and Forward Delay Time:

$$2 \times (\text{Forward Delay Time value} - 1) \geq \text{Max Age value} \geq 2 \times (\text{Hello Time value} + 1)$$

### RSTP Information

Show RSTP algorithm result at this table.



### RSTP - Information

#### Root Bridge Information

Bridge ID	8000-001E940A002B
Root Priority	32768
Root Port	Root
Root Path Cost	0
Max Age Time	20
Hello Time	2
Forward Delay Time	15

#### Port Information

Port	Path Cost	Port Priority	OperP2P	OperEdge	STP Neighbor	State	Role
Port.01	200000	128	True	True	False	Disabled	Disabled
Port.02	200000	128	True	True	False	Forwarding	Designated
Port.03	200000	128	True	True	False	Disabled	Disabled
Port.04	200000	128	True	True	False	Disabled	Disabled
Port.05	200000	128	True	True	False	Disabled	Disabled

RSTP Information interface

## 5.1.4 Port Configuration

### 5.1.4.1 Port Control

By this function, you can set the state, speed/duplex, flow control, and security of the port.

### Port Control

Port No.	State	Speed/Duplex	Flow Control
Port.01	Enable ▾	AutoNegotiation ▾	Disable ▾
Port.02	Enable ▾	AutoNegotiation ▾	Disable ▾
Port.03	Enable ▾	AutoNegotiation ▾	Disable ▾
Port.04	Enable ▾	AutoNegotiation ▾	Disable ▾
Port.05	Enable ▾	AutoNegotiation ▾	Disable ▾

Apply

Port Control interface

The following table describes the labels in this screen.

Label	Description
<b>Port NO.</b>	Port number for setting.
<b>State</b>	Enable/Disable the port.

<b>Speed/Duplex</b>	You can set Auto-negotiation, 100-full, 100-half, 10-full, 10-half mode.
<b>Flow Control</b>	Support symmetric and asymmetric mode to avoid packet loss when congestion occurred.
<b>Apply</b>	Click " <b>Apply</b> " to activate the configurations.

### 5.1.4.2 Port Status

The following information provides the current port status.

**Port Status**

Port No.	Type	Link	State	Speed/Duplex	Flow Control
Port.01	100TX	Down	Enable	N/A	N/A
Port.02	100TX	UP	Enable	100 Full	Disable
Port.03	100TX	Down	Enable	N/A	N/A
Port.04	100TX	Down	Enable	N/A	N/A
Port.05	100TX	Down	Enable	N/A	N/A

Port Status interface

### 5.1.4.3 Port Alias

The user can define the name of every Ports. Can let user, convenient management every Port.

**Port Alias**

Port No.	Port Alias
Port.01	<input type="text"/>
Port.02	<input type="text"/>
Port.03	<input type="text"/>
Port.04	<input type="text"/>
Port.05	<input type="text"/>

## 5.1.5 VLAN

A Virtual LAN (VLAN) is a logical network grouping that limits the broadcast domain, which allows you to isolate network traffic. Only the members of the VLAN will receive traffic from the same members of VLAN. Basically, creating a VLAN from a switch is logically equivalent of reconnecting a group of network devices to another Layer 2 switch. However, all the network devices are still plugged into the same switch physically.

The switch supports port-based VLAN only.

### 5.1.5.1 VLAN Configuration – Port Based

Traffic is forwarded to the member ports of the same vlan group. vlan port based startup, set in the same group of the port, can be a normal transmission packet, without restricting the types of packets.

### Port-Based VLAN

	Port.01	Port.02	Port.03	Port.04	Port.05
Group.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Group.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Group.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Group.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Group.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

VLAN Configuration – Port Based VLAN interface

The following table describes the labels in this screen.

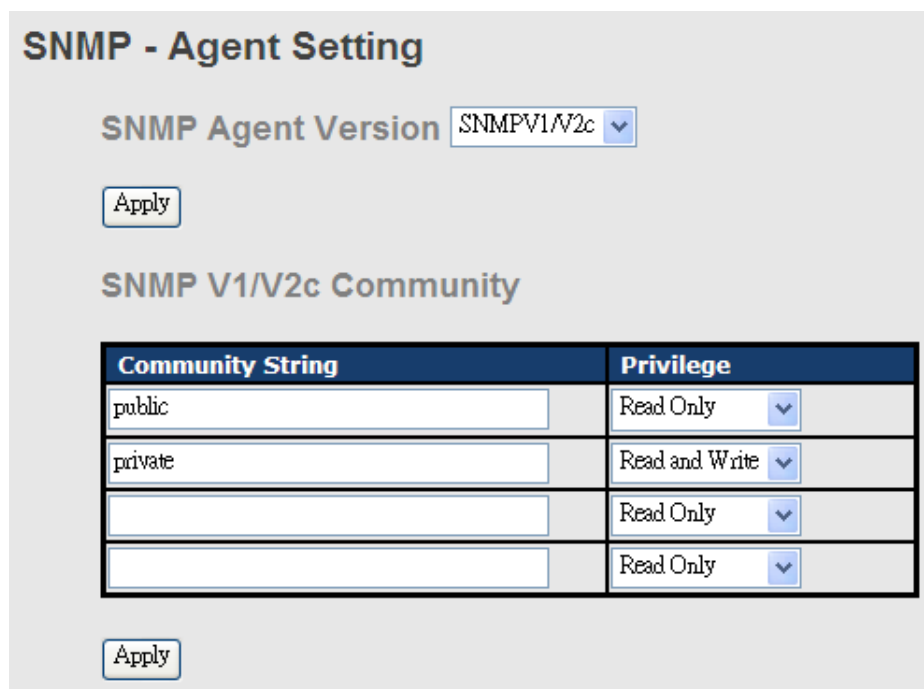
Label	Description
<b>Group</b>	Mark the blank to assign the port into VLAN group.
<b>Apply</b>	Click " <b>Apply</b> " to activate the configurations.
<b>Help</b>	Show help file.

## 5.1.6 SNMP Configuration

Simple Network Management Protocol (SNMP) is the protocol developed to manage nodes (servers, workstations, routers, switches and hubs etc.) on an IP network. SNMP enables network administrators to manage network performance, find and solve network problems, and plan for network growth. Network management systems learn of problems by receiving traps or change notices from network devices implementing SNMP.

### 5.1.6.1. SNMP – Agent Setting

You can set SNMP agent related information by Agent Setting Function.



**SNMP - Agent Setting**

SNMP Agent Version

**SNMP V1/V2c Community**

Community String	Privilege
public	Read Only
private	Read and Write
	Read Only
	Read Only

SNMP – Agent setting interface

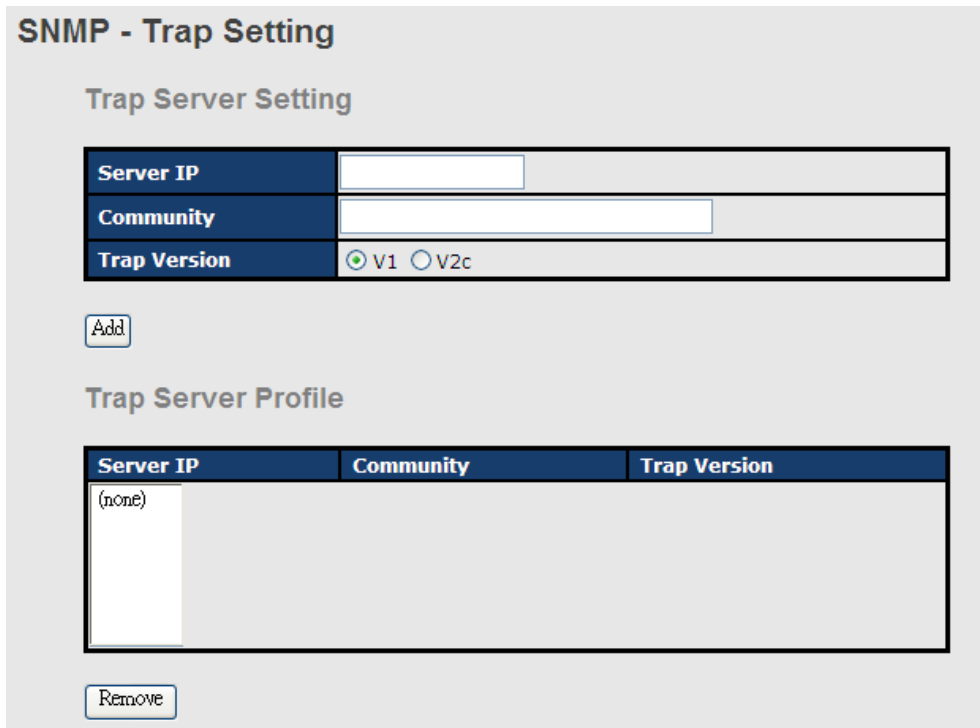
The following table describes the labels in this screen.

Label	Description
<b>SNMP agent Version</b>	Three SNMP versions are supported such as SNMP V1/SNMP V2c, and SNMP V3. SNMP V1/SNMP V2c agent use a community string match for authentication, that means SNMP servers access objects with read-only or read/write permissions with the community default string public/private. SNMP V3 requires an authentication level of MD5 or DES to encrypt data to enhance data security.
<b>SNMP V1/V2c Community</b>	SNMP Community should be set for SNMP V1/V2c. Four sets of "Community String/Privilege" are supported. Each Community

	String is maximum 32 characters. Keep empty to remove this Community string.
<b>Apply</b>	Click " <b>Apply</b> " to activate the configurations.
<b>Help</b>	Show help file.

### 5.1.6.2 SNMP –Trap Setting

A trap manager is a management station that receives traps, the system alerts generated by the switch. If no trap manager is defined, no traps will issue. Create a trap manager by entering the IP address of the station and a community string. To define management stations as trap manager and enter SNMP community strings and selects the SNMP version.



SNMP –Trap Setting interface

The following table describes the labels in this screen.

Label	Description
<b>Server IP</b>	The server IP address to receive Trap
<b>Community</b>	Community for authentication
<b>Trap Version</b>	Trap Version supports V1 and V2c and V3
<b>Add</b>	Add trap server profile.
<b>Remove</b>	Remove trap server profile.
<b>Help</b>	Show help file.

### 5.1.6.3 SNMPV3

#### NMP - SNMPv3 Setting

SNMPv3 Engine ID: f465000003001e940a002b

##### Context Table

Context Name :	<input type="text"/>	<input type="button" value="Apply"/>
----------------	----------------------	--------------------------------------

##### User Table

Current User Profiles :	New User Profile :	
<input type="button" value="Remove"/>	<input type="button" value="Add"/>	
(none)	User ID:	<input type="text"/>
	Authentication Password:	<input type="text"/>
	Privacy Password:	<input type="text"/>

##### Group Table

Current Group content :	New Group Table:	
<input type="button" value="Remove"/>	<input type="button" value="Add"/>	
(none)	Security Name (User ID):	<input type="text"/>
	Group Name:	<input type="text"/>

Current Access Tables :	New Access Table :	
<input type="button" value="Remove"/>	<input type="button" value="Add"/>	
(none)	Context Prefix:	<input type="text"/>
	Group Name:	<input type="text"/>
	Security Level:	<input type="radio"/> NoAuthNoPriv. <input type="radio"/> AuthNoPriv. <input type="radio"/> AuthPriv.
	Context Match Rule	<input type="radio"/> Exact <input type="radio"/> Prefix
	Read View Name:	<input type="text"/>
	Write View Name:	<input type="text"/>
	Notify View Name:	<input type="text"/>

##### MIBView Table

Current MIBTables :	New MIBView Table :	
<input type="button" value="Remove"/>	<input type="button" value="Add"/>	
(none)	View Name:	<input type="text"/>
	SubOid-Tree:	<input type="text"/>
	Type:	<input type="radio"/> Excluded <input type="radio"/> Included

**Note:**  
Any modification of SNMPv3 tables might cause MIB accessing rejection. Please take notice of the causality between the tables before you modify these tables.



The following table describes the labels in this screen

Label	Description
<b>Context Table</b>	Configure SNMP v3 context table. Assign the context name of context table. Click "Apply" to change context name
<b>User Table</b>	<ol style="list-style-type: none"> <li>1. Configure SNMP v3 user table.</li> <li>2. <b>User ID:</b> set up the user name.</li> <li>3. <b>Authentication Password:</b> set up the authentication password.</li> <li>4. <b>Privacy Password:</b> set up the private password.</li> <li>5. Click "Add" to add context name.</li> <li>6. Click "Remove" to remove unwanted context name.</li> </ol>
<b>Group Table</b>	<ol style="list-style-type: none"> <li>1. Configure SNMP v3 group table.</li> <li>2. <b>Security Name (User ID):</b> assign the user name that you have set up in user table.</li> <li>3. <b>Group Name:</b> set up the group name.</li> <li>4. Click "Add" to add context name.</li> <li>5. Click "Remove" to remove unwanted context name.</li> </ol>
<b>Access Table</b>	<ol style="list-style-type: none"> <li>1. Configure SNMP v3 access table.</li> <li>2. <b>Context Prefix:</b> set up the context name.</li> <li>3. <b>Group Name:</b> set up the group.</li> <li>4. <b>Security Level:</b> select the access level.</li> <li>5. <b>Context Match Rule:</b> select the context match rule.</li> <li>6. <b>Read View Name:</b> set up the read view.</li> <li>7. <b>Write View Name:</b> set up the write view.</li> <li>8. <b>Notify View Name:</b> set up the notify view.</li> <li>9. Click "Add" to add context name.</li> <li>10. Click "Remove" to remove unwanted context name.</li> </ol>
<b>MIBview Table</b>	<ol style="list-style-type: none"> <li>1. Configure MIB view table.</li> <li>2. <b>ViewName:</b> set up the name.</li> <li>3. <b>Sub-Oid Tree:</b> fill the Sub OID.</li> <li>4. <b>Type:</b> select the type – exclude or included.</li> <li>5. Click "Add" to add context name.</li> <li>6. Click "Remove" to remove unwanted context name.</li> </ol>
<b>Help</b>	Show help file.

## 5.1.7 System Warning

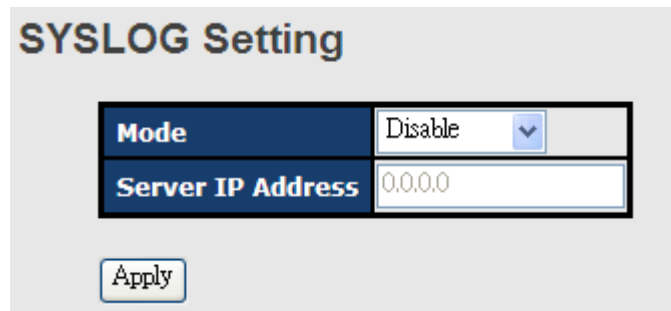
Warning function is very important for managing switch. You can manage switch by SYSLOG and E-MAIL. It helps you to monitor the switch status on remote site. When events occurred, the warning message will send to your appointed server and E-MAIL

### 5.1.7.1 Syslog Setting

#### System Warning – SYSLOG Setting

The SYSLOG is a protocol to transmit event notification messages across networks.

Please refer to RFC 3164 - The BSD SYSLOG Protocol



System Warning – SYSLOG Setting interface

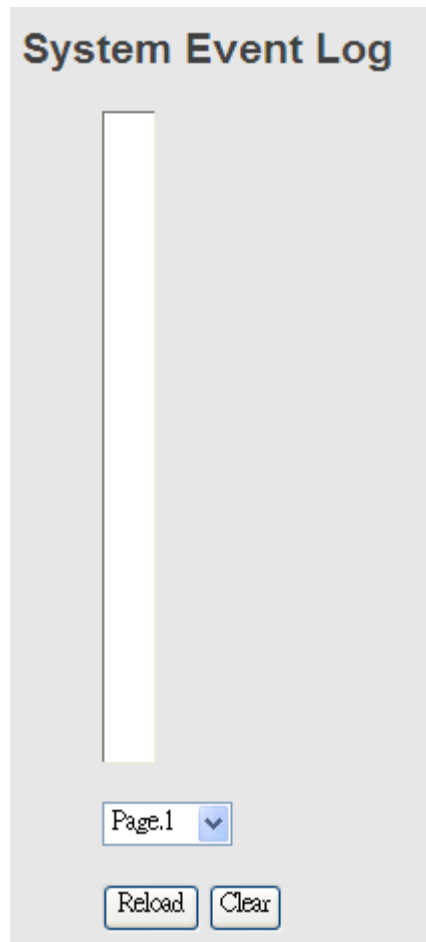
The following table describes the labels in this screen.

Label	Description
<b>SYSLOG Mode</b>	<ul style="list-style-type: none"> <li>■ <b>Disable:</b> disable SYSLOG.</li> <li>■ <b>Client Only:</b> log to local system.</li> <li>■ <b>Server Only:</b> log to a remote SYSLOG server.</li> <li>■ <b>Both:</b> log to both of local and remote server.</li> </ul>
<b>SYSLOG Server IP Address</b>	The remote SYSLOG Server IP address.
<b>Apply</b>	Click " <b>Apply</b> " to activate the configurations.
<b>Help</b>	Show help file.



## System Event LOG

If system log client is enabled, the system event logs will show in this table.



System event log interface

The following table describes the labels in this screen.

Label	Description
<b>Page</b>	Select LOG page.
<b>Reload</b>	To get the newest event logs and refresh this page.
<b>Clear</b>	Clear log.
<b>Help</b>	Show help file.

### System Warning – SMTP Setting

The SMTP is Short for Simple Mail Transfer Protocol. It is a protocol for e-mail transmission across the Internet. Please refer to RFC 821 - Simple Mail Transfer Protocol.

#### SMTP Setting

E-mail Alert :

#### SMTP Configuration

<b>SMTP Server IP Address</b>	<input type="text" value="192.168.10.66"/>
<b>Sender E-mail Address</b>	<input type="text"/>
<b>Mail Subject</b>	<input type="text" value="Automated Email Alert"/>
<b>■ Authentication</b>	
<b>Recipient E-mail Address 1</b>	<input type="text"/>
<b>Recipient E-mail Address 2</b>	<input type="text"/>
<b>Recipient E-mail Address 3</b>	<input type="text"/>
<b>Recipient E-mail Address 4</b>	<input type="text"/>

System Warning – SMTP Setting interface

The following table describes the labels in this screen.

Label	Description
<b>E-mail Alarm</b>	Enable/Disable transmission system warning events by e-mail.
<b>Sender E-mail Address</b>	The SMTP server IP address
<b>Mail Subject</b>	The Subject of the mail
<b>Authentication</b>	<ul style="list-style-type: none"> <li>■ <b>Username:</b> the authentication username.</li> <li>■ <b>Password:</b> the authentication password.</li> <li>■ <b>Confirm Password:</b> re-enter password.</li> </ul>
<b>Recipient E-mail Address</b>	The recipient's E-mail address. It supports up to 6 recipients per mail.
<b>Apply</b>	Click " <b>Apply</b> " to activate the configurations.
<b>Help</b>	Show help file.

### System Warning – Event Selection

SYSLOG and SMTP are the two warning methods that supported by the system.

Check the corresponding box to enable system event warning method you wish to choose. Please note that the checkbox can not be checked when SYSLOG or SMTP is disabled.

### Event Selection

#### System Event

Event	SYSLOG	SMTP
System Restart	<input checked="" type="checkbox"/>	<input type="checkbox"/>
O-Ring Topology Change	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### Port Event

Port No.	SYSLOG	SMTP
Port.01	Disable <span style="font-size: 0.8em;">▼</span>	Disable <span style="font-size: 0.8em;">▼</span>
Port.02	Disable <span style="font-size: 0.8em;">▼</span>	Link Up & Link Down <span style="font-size: 0.8em;">▼</span>
Port.03	Disable <span style="font-size: 0.8em;">▼</span>	Disable <span style="font-size: 0.8em;">▼</span>
Port.04	Disable <span style="font-size: 0.8em;">▼</span>	Disable <span style="font-size: 0.8em;">▼</span>
Port.05	Link Up & Link Down <span style="font-size: 0.8em;">▼</span>	Disable <span style="font-size: 0.8em;">▼</span>

System Warning – Event Selection interface

The following table describes the labels in this screen.

Label	Description
<b>System Event</b>	
<b>System Cold Start</b>	Alert when system restart
<b>O-Ring Topology Change</b>	Alert when O-Ring topology change
<b>Port Event</b>	<ul style="list-style-type: none"> <li>■ <b>Disable</b></li> <li>■ <b>Link Up</b></li> <li>■ <b>Link Down</b></li> <li>■ <b>Link Up &amp; Link Down</b></li> </ul>
<b>Apply</b>	Click " <b>Apply</b> " to activate the configurations.
<b>Help</b>	Show help file.

### 5.1.8 Front Panel

Show TES-250-M12 panel. Click **“Close”** to close panel on web.



Front panel interface

### 5.1.9 Save Configuration

If any configuration changed, **“Save Configuration”** should be clicked to save current configuration data into the permanent flash memory. Otherwise, the current configuration will be lost when power off or system reset.

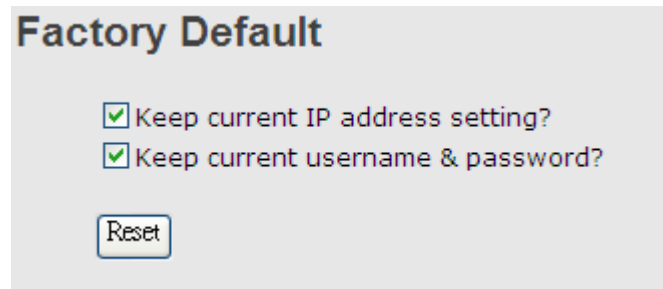


System Configuration interface

The following table describes the labels in this screen.

Label	Description
<b>Save</b>	Save all configurations.
<b>Help</b>	Show help file.

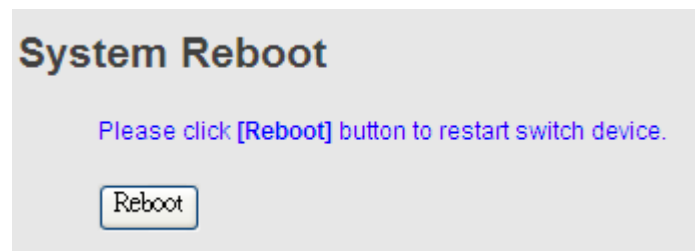
### 5.1.10 Factory Default



Factory Default interface

Reset switch to default configuration. Click **Reset** to reset all configurations to the default value. You can select “**Keep current IP address setting**” and “**Keep current username & password**” to prevent IP and username & password from default.

### 5.1.11 System Reboot



System Reboot interface



# Technical Specifications

<b>ORing Switch Model</b>	TES-250-M12
<b>Physical Ports</b>	
10/100 Base-T(X) Ports in M12 Auto MDI/MDIX	5 x M12 connector (D-coding)
<b>Technology</b>	
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	1024 MAC addresses
Priority Queues	4
Processing	Store-and-Forward
Switch Properties	Switching bandwidth: 1.0Gbps VLAN: Port Based
Security Features	Enable/Disable ports VLAN to segregate and secure network traffic SNMP v3 encrypted authentication and access security
Software Features	STP/RSTP (IEEE 802.1D/w) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units Port configuration, status, statistics, monitoring, security
Network Redundancy	O-Ring Open-Ring O-chain Fast recovery STP RSTP
<b>LED indicators</b>	
Power Indicator	Green : Power LED x 1
Ring Master Indicator	Green : Indicate system operated in O-Ring Master mode
O-Ring Indicator	Amber : Indicate port operated in O-Ring mode (per port)
10/100Base-T(X) RJ45 Port Indicator	Green for port Link/Act. (per port)
<b>Power</b>	
Input Power	12~ 48 VDC power input in M12 connector (A-coding)
Power Consumption (Typ.)	3 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
<b>Physical Characteristic</b>	
Enclosure	IP-40
Dimension (W x D x H)	88.9 x 40 x 178.2 mm
Weight (g)	454 g
<b>Environmental</b>	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 70°C (-40 to 158°F)
Operating Humidity	5% to 95% Non-condensing
<b>Regulatory approvals</b>	
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)



EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27, EN61373
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6, EN61373
Safety	EN60950-1
<b>Warranty</b>	<b>5 years</b>