LevelOne

FSW-1640TX

FSW-2440TX

16/24-Port 10/100Mbps 11" Fast Ethernet Smart Switch

User's Guide

Version: 1.0

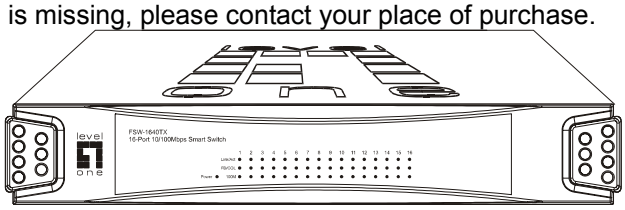
TABLE OF CONTENTS

1 UNPACKING INFORMATION

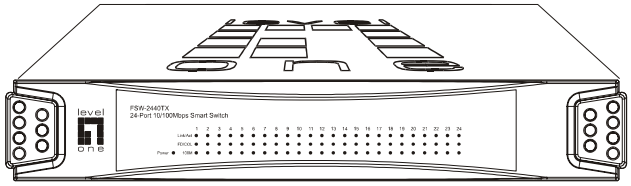
Thank you for purchasing LevelOne 11" Fast Ethernet Switch. Before continuing, please check the contents of the product package. This product package should contain the following items:

- One (1) Switch
- One (1) Power Cord
- One (1) Console Cable
- Four (4) Rubber Feet
- Rackmount Kit
- This User's Guide

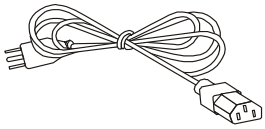
If anything is missing, please contact your place of purchase.



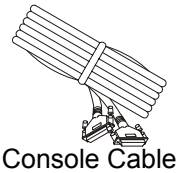
16-Port 100BASE-TX Fast Ethernet Switch



24-Port 100BASE-TX Fast Ethernet Switch



Power Cord



Console Cable

Rackmount Kit

Rubber Feet

User's Guide

2 PRODUCT INTRODUCTION

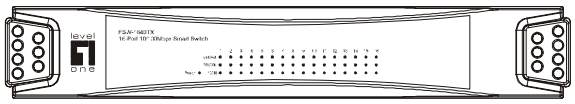
2.1 Models

These LevelOne 11" Fast Ethernet Switches are multi-speed, versatile network devices combining both standard and "Big-Pipe" ports under the same hood. The Switches are Twenty-Four (24) ports and Sixteen (16) ports Fast Ethernet Switches.

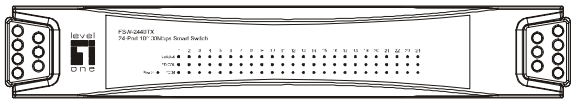
2.2 Key Features

- Store-and-Forward technology filtering/forwarding is used to eliminate bad packets.
- Back-Pressure Flow-Control support for Half-Duplex operation.
- IEEE802.3x Flow-Control support for Full-Duplex operation.
- LEDs on front panel for easy access and real time viewing of Switch status.
- All TP ports support Auto-MDI/MDIX, and Auto-Negotiation function.

2.3 Front Panel



16-Port 100BASE-TX Fast Ethernet Switch



24-Port 100BASE-TX Fast Ethernet Switch

2.3.1 10/100Mbps TP Ports

Each 10/100Mbps TP port provides an Auto-Negotiation function that senses for the attached device's maximum operating speed and automatically sets the Switch to operate at that speed. Users only need to connect a network device into any TP port. Auto-MDIX is also supported on all TP ports which allows uplinking to another Switch free of cross-over or straight cable selection hassle.

2.3.2 Cabling

10Mbps -When transmitting at 10Mbps Category 3, 4 or 5 TP cabling with RJ-45 sockets can be used.

100Mbps -To transmit at 100Mbps requires Category 5 TP cabling.

Port Type	Cable Type	Connector
10BASE-T	Category 3, 4 or 5 TP	RJ-45
100BASE-TX	Cat.5 TP	RJ-45

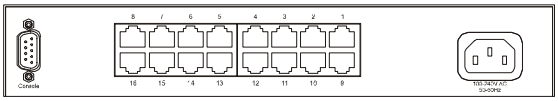
Note: Category 5 TP cable is recommended whenever installing new cabling.

2.3.3 Status LEDs

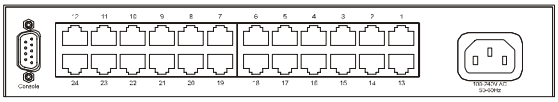
The Switches come with a complete range of LEDs. The table below lists each LEDs name, color and a brief description of its function.

Name	Color	Function
Pwr	Green	Lit: Power "On"
LINK/ACT	Green	Lit: When the port has a valid physical connection with another device. Blinks: When the port is sending or receiving data (Activity).
FD/Half	Green	Lit: When the port is set to Full-Duplex mode. OFF: When the port is in Half-Duplex mode.
Speed	Green	Lit: When the port is operating at 100Mbps. Off: When the port is operating at 10Mbps.

2.4 Rear Panel



16-Port 100BASE-TX Fast Ethernet Switch



24-Port 100BASE-TX Fast Ethernet Switch

2.4.1 Power Socket

The Power Socket is designed to be used with the power cord included in the product package.

- Attach the female end of the cord to the power connector on the back panel.
- Attach the male end of the cord to a grounded power outlet.

3 INSTALLATION

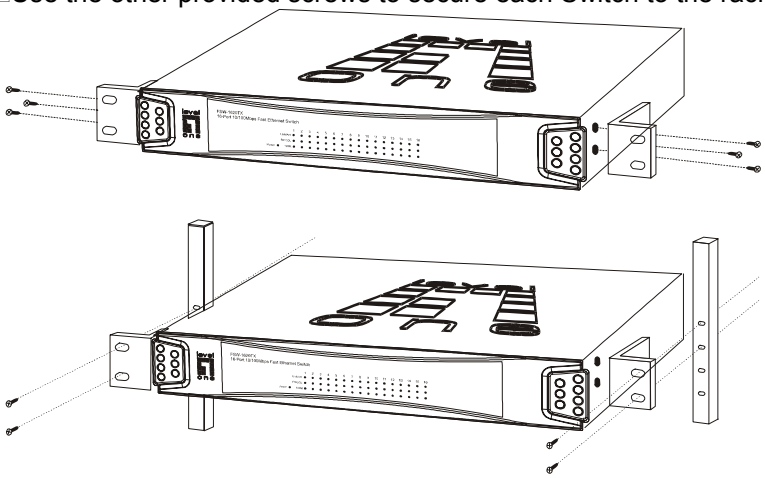
The LevelOne 11" Fast Ethernet Smart Switch is "Plug-&-Play". It does not require software configuration. Users can immediately use any of the features of this product simply by attaching the cables and turning on the power.

3.1 To locate the switch on a desktop

- Attach the Four (4) rubber feet included in the product package to the bottom of the Switch, one in each corner.
- Place the Switch on a clean, flat desk or tabletop close to a power outlet.
- Plug in all network connections and the power cord.

3.2 Rackmount placement

- Attach One (1) rackmounting bracket on each side of the Switch front panel and secure each bracket with the provided screws.
- Use the other provided screws to secure each Switch to the rack.



4 HELPFUL SUGGESTIONS

4.1 Prior to Installation

Before installing the Switch and connecting network devices, it is important to plan the network's layout. Things you should consider include:

- **Dedicated Bandwidth:** File servers and other high-traffic hardware improve their performance if they have their own dedicated 10Mbps or 100Mbps bandwidth.
- **Full-Duplex:** Determine which devices support Full-Duplex connections.
- **Fast Ethernet:** Make sure rules for cable lengths and categories are followed.
- **Auto-Negotiation**: Devices with different speeds may be easily swapped when the other end of the cable is fixed to a port with Auto-Negotiation.

4.2 Half- and Full-Duplex

The Switch supports both Half- and Full-Duplex modes for 10BASE-T and 100BASE-TX.

- **In Half-Duplex mode:** Data cannot be transmitted and received at the same time. Attached devices must finish transmitting data before they can receive data.
- **In Full-Duplex mode:** Data can be transmitted and received at the same time.

However:

- Full-Duplex transmission is only possible between two devices with a dedicated link (ex: Switch-Switch, Switch-PC)
- Both devices must have Full-Duplex capability
- Both devices must be set to Full-Duplex (ex: Auto-Negotiation – Auto-Negotiation, Non-Auto-Negotiation to Non-Auto-Negotiation)

The 100BASE-TX/10BASE-T ports on the Switch detect and set the line's operating mode by using their Auto-Negotiation function.

4.3 Fast Ethernet

100BASE-TX is called "Fast Ethernet". In Fast Ethernet data travels ten times faster (100Mbps) than in traditional Ethernet (10Mbps).
Below is a list of the cable types and connectors supported by the Switch for 10BASE-T and 100BASE-TX networks.

Port Type	Cable Type	Connector
10BASE-T	Category 3, 4 or 5 TP	RJ-45
100BASE-TX	Cat. 5 TP	RJ-45

Note: If your 10BASE-T network currently uses Category 5 TP cabling, you can instantly upgrade the network to a 100BASE-TX network by changing network devices.

4.4 Auto-Negotiation

Every 10/100Mbps dual speed port on the Switch has a Built-In "Auto-Negotiation" function. This technology automatically sets the best possible bandwidth as soon as a connection is established with another network device. This capability is achieved via the Switch's Auto-Negotiation function that automatically detects the modes and speeds the second

(attached) device is capable of.
Evaluating Auto-Negotiation Capability:

If attached device is:	The Switch will automatically set its TP ports to operate at:
100Mbps,no Auto-Negotiation	100Mbps (100BASE-TX, Half-Duplex)
100Mbps,with Auto-Negotiation	200Mbps (100BASE-TX, Full-Duplex)
10Mbps,no Auto-Negotiation	10Mbps (10BASE-T, Half-Duplex)
10Mbps,with Auto-Negotiation	20Mbps (10BASE-T, Full-Duplex)

Note: If the attached device is set to a fixed mode (ex: Forced Full-Duplex) it will not operate as an Auto-Negotiation device.

4.5 MAC Address Table

Every Ethernet data packet includes both source and destination addresses. This Six (6)-bytes ID is called the MAC (Media Access Control) Address. The Switch can automatically learn and store MAC addresses. However, the MAC address table is volatile: it disappears when the Switch is powered “Off” or reset.

Note: When the network needs reconfiguration, we recommend turning off the power first. After all nodes have been moved, turn the Switch back "On" to rebuild the internal MAC address table.

5 SMART FUNCTION SETTINGS

5.1 Start Smart Function

The Switch has a smart function that you can use to manage your local area network (LAN) more effectively. You also can use the default setting to make the Switch operate as a dumb switch.

If you want to use smart function, install the Switch as below:

Use the “RS-232” connector to connect the Switch to a computer. Connect one (1) cable end to the Switch, and connect the other end to the computer’s “COM1” or “COM2” port.

Note: If your Windows program doesn’t have a hyper terminal, you have to install it first.

Power “ON” the Switch

Execute the “HyperTerminal” program:

Start Menu → Application Program → Communication → Hyper Terminal

Setup the connection content of Hyper Terminal:

- In connection tag, select which “COM” port is used to connect PC and the Switch.
- Then press the “SETUP” button, set “Bits per second” to 9600, “Data bits” to 8, “Parity” to None, “Stop bits” to 1, “Flow control” to None.

After finishing the setting-up action in Hyper Terminal window, press any key to continue. Now the computer can connect to Switch and use the user interface menu to select control function.

Note: If you also have “Term95”, it could be easier to use the following procedures:

(a). Execute the “Term95” program;

(b). Select the “Setting” / “Line” into the ”RS232 settings” menu;

(c). RS232 settings: set as the following and select “Ok”.

Item	Setting
Port	COM
Baud rate	9600
Data bits	8 bits
Parity	None
Stop bits	1
Flow control	NA

(d). Power “ON” the Switch.

6 USE FUNCTION MENU

6.1 Main menu

Now we use the 24 ports switch as an example for explanation; the functions of 16 ports switch is the same as 24 ports switch.
The main menu function selections are listed below:

1. Aging Time
2. Port Status
3. Mirror Function
4. VLAN Function
5. QOS Function
6. Trunking Function
7. Load Default
8. Save

After you connect the Switch through the console port, the following screen shows up on the monitor:

```
                    LevelOne FSW-2440TX
                    24-Port Smart Switch
                    ====================
                    Main Menu
                    ====================
                    1. Aging Time

                    2. Port Status

                    3. Mirror Function

                    4. VLAN Function

                    5. QOS Function

                    6. Trunking Function

                    7. Load Default

                    8. Save

                    [TAB]: Next Item        [BACKSPACE]: Back

                    [ENTER]: Enter Sub Menu
Version:A1.0
```

Control Keys are displayed on the bottom of each menu:

Key	Function
TAB	Next Item
BACKSPACE	Back
Enter	Enter Sub Menu / Next Page
ESC	Exit from Sub Menu

6.2 Aging Time

You can Enable or Disable the Aging Time setting. The Aging Time setting is from 1 to 65535 seconds.

```
                  LevelOne FSW-2440TX
                  24-Port Smart Switch
                  ====================

      Current AGE_TIME : 00300   (unit : 1 second)

      ---> (E)nable/(D)isable Aging Time?
           (ESC): Exit
      ---> Please select: E
      ---> Enter Aging Time (1 ~ 65535): 300

      Set Age Time to 00300......OK!


Press 'SPACE BAR' to continue
```

6.3 Port Status

When you enter Port Status, the first menu you will see is as below:

```
                  LevelOne FSW-2440TX
                  24-Port Smart Switch
                  ====================

Port    01    02    03    04    05    06    07    08    09    10    11
12
-------------------------------------------------------------------------
-------
LINK   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF
OFF

En      ON    ON    ON    ON    ON    ON    ON    ON    ON    ON    ON
ON

An      ON    ON    ON    ON    ON    ON    ON    ON    ON    ON    ON
ON

Rate   ---   ---   ---   ---   ---   ---   ---   ---   ---   ---   ---
---

Duplex ---   ---   ---   ---   ---   ---   ---   ---   ---   ---   ---
---

Flow    ON    ON    ON    ON    ON    ON    ON    ON    ON    ON    ON
ON

Mirror OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF
OFF


[E]:Rx/Tx Enable/Disable [A]:Auto-Negotiation [R]:Data Rate [D]:Duplex
Mode
[F]:Flow Control         [ESC]:Exit           [Enter]: Next Page
```

You can press “Enter” for viewing the status of the rest of the ports.

```
                  LevelOne FSW-2440TX
                  24-Port Smart Switch
                  ====================

Port     13    14    15    16    17    18    19    20    21    22    23
24
-------------------------------------------------------------------------
-------
LINK    OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF
OFF

En       ON    ON    ON    ON    ON    ON    ON    ON    ON    ON    ON
ON

An       ON    ON    ON    ON    ON    ON    ON    ON    ON    ON    ON
ON

Rate    ---   ---   ---   ---   ---   ---   ---   ---   ---   ---   ---
---

Duplex  ---   ---   ---   ---   ---   ---   ---   ---   ---   ---   ---
---

Flow     ON    ON    ON    ON    ON    ON    ON    ON    ON    ON    ON
ON

Mirror  OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF
OFF


[E]:Rx/Tx Enable/Disable [A]:Auto-Negotiation [R]:Data Rate [D]:Duplex
Mode
[F]:Flow Control         [ESC]:Exit           [Enter]: Next Page
```

E: set port Rx/Tx ENABLE/DISABLE, the operating status of the port. Use this screen to enable or disable the selected port. Press ‘E’ to enable Rx and Tx or ‘D’ to disable Rx and Tx or press ‘R’ or ’T’ to change Rx/Tx current status. A disabled port does not transmit any packets to the connected segment, nor forward any received packets to the switching back-plane.

A: set AN function ENABLE/DISABLE, the Auto Negotiation status for the port. Use this screen to enable or disable the Auto Negotiation function for the port.

R: set data rate 10/100, the current connection speed specified for the port. Use this screen to set the speed of a port. Port speed can be either 100Mbps or 10Mbps. If Auto Negotiation is enable there has no effect on the speed selection. Force to change data rate if and only if the Auto Negotiation mode will be disabled.

D: set duplex full/half mode, the current connection speed specified for the port. Use this screen to set the speed of a port. Port speed can be either 100Mbps or 10Mbps. If Auto Negotiation is enable there has no effect on the

duplex mode selection. Force to change duplex mode if and only if the Auto Negotiation mode will be disabled.

F: set flow control ENABLE/DISABLE, the Flow Control capability for the port. Use this screen to enable or disable Flow Control capability of full duplex mode for the port. The flow control result will depend on the result of Auto Negotiation. For Smart Switch, pause enable or disable will depend on link partner's Flow Control Capability.

6.3.1 E: Port Enable/Disable

This function can disable or enable transmit and receive of select port, default value is port enabled.

For example: Select port#01 and press 'D' to disable port 1.

```
                    LevelOne FSW-2440TX
                    24-Port Smart Switch
                    ====================

      Set Port Rx/Tx Enable/Disable

      ---> Select port # : 1


      Select Port is Tx/Rx Disabled now

      ---> [D]: Disable
           [E]: Enable
           [ESC]: Exit
      ---> Please select: D Disable.

      Set Port # 01


Press 'SPACE BAR' to continue
```

6.3.2 A: Port AN Enable/Disable or Reset

Which indicates the current auto-negotiation status of the ports. Enable or disable the auto-negotiation when connect with another device. The default value is auto-negotiation enable.

For example: disable port#02's AN function.

```
                  LevelOne FSW-2440TX
                  24-Port Smart Switch
                  ====================

      Set Port Auto-Negotiation Enable/Disable

      ---> Select port # : 2



      ---> [D]: Disable
           [E]: Enable
           [ESC]: Exit
      ---> Please select: D Disable.

      Set Port # 02 Auto-Negotiation


Press 'SPACE BAR' to continue
```

6.3.3 R: port rate control 10/100M

Which can change data rate of the ports. Data rate is changed only when auto-negotiation function is disabled. The default value of data rate is 10Mb.
For example: force port#03's data rate to 10Mb.

```
                  LevelOne FSW-2440TX
                  24-Port Smart Switch
                  ====================

      Set Data Rate 100Mb/10Mb

      ---> Select port # : 3


      Warnning : Auto-Negotiation is Enable on this port
      force to change will disable AN !


      ---> [0]: 10Mb
           [1]: 100Mb
           [ESC]: Exit
      ---> Please select: 0 Speed 10Mb.

      Set Port # 03


Press 'SPACE BAR' to continue
```

6.3.4 D: Port duplex mode Half/Full

Which can force full/half duplex mode of the ports. Duplex mode is changed only when the corresponding port's auto-negotiation function is disabled. The default value of duplex mode is half duplex mode.
For example: set port#04 to half duplex mode.

```
                  LevelOne FSW-2440TX
                  24-Port Smart Switch
                  ====================

      Set Port Duplex Mode

      ---> Select port # : 4


      Warnning : Auto-Negotiation is Enable on this port
      force to change will disable AN !


      ---> [F]: Full duplex
           [H]: Half duplex
           [ESC]:Exit
      ---> Please select: H Half Duplex Mode.



      Set Port # 04


Press 'SPACE BAR' to continue
```

6.3.5 F: Flow control enable/disable

Which can show and set the flow control capability of the ports. The default value for flow control capability is enabled.

For example: disable port#5's flow control capability.

```
                  LevelOne FSW-2440TX
                  24-Port Smart Switch
                  ====================

      Set Port Flow Control Capability

      ---> Select port # : 5



      ---> [E]: Enable flow control capability
           [D]: Disable flow control capability
           [ESC]:Exit

           NOTE : flow control capability only apply to full-duplex mode
      ---> Please select: D Flow Control Capability Disable.



      Set Port # 05


Press 'SPACE BAR' to continue
```

NOTE: Until the cables connect to the corresponding ports (it means the LINK status should display as UP), the port status shown above are now ineffective. If Auto-Negotiation is enable, the function has no effect on the speed selection and duplex-mode setting.

After change the port control configuration, the brief summary status will show as below.

```
                    LevelOne FSW-2440TX
                    24-Port Smart Switch
                    ====================

Port     01    02    03    04    05    06    07    08    09    10    11
12
-------------------------------------------------------------------------
-------
LINK    OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF
OFF

En      OFF    ON    ON    ON    ON    ON    ON    ON    ON    ON    ON
ON

An       ON   OFF   OFF   OFF    ON    ON    ON    ON    ON    ON    ON
ON

Rate    ---   100    10   100   ---   ---   ---   ---   ---   ---   ---
---

Duplex  ---     H     H     H   ---   ---   ---   ---   ---   ---   ---
---

Flow     ON    ON    ON    ON   OFF    ON    ON    ON    ON    ON    ON
ON

Mirror  OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF
OFF


[E]:Rx/Tx Enable/Disable [A]:Auto-Negotiation [R]:Data Rate [D]:Duplex
Mode
[F]:Flow Control         [ESC]:Exit           [Enter]: Next Page
```

6.4 Mirror Function

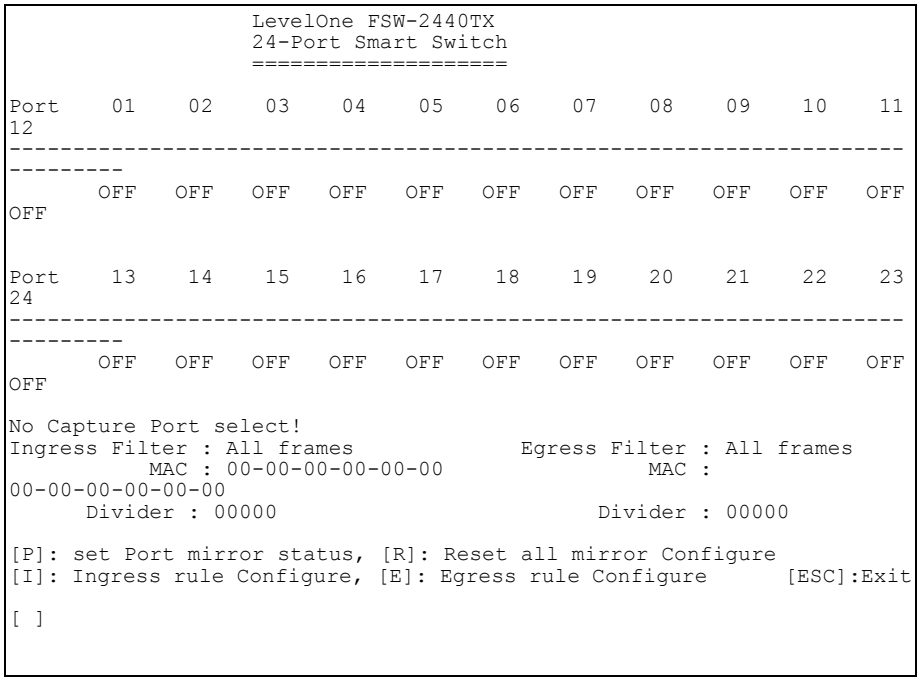
With the Port Mirror Control, you can perform the following:

P: set Port mirror status

R: Reset all mirror Configure

I: Ingress rule Configure

E: Egress rule Configure



6.4.1 P: set Port mirror status

P: set port mirror status to be the capture port or mirror ingress, egress or both ingress and egress frames on the selected port.
After select one port, you have 5 settings to the selected port.
C: set the Capture port.
B: mirror both Ingress and Egress frames of the selected port.
O: set to OFF.
I: only mirror ingress frames.
E: only mirror egress frames.

For example: Set port#01 as capture port and mirror both ingress and egress frames of port#02.
Choose port#01 as Mirror Capture Port.

```
Port    01    02    03    04    05    06    07    08    09    10    11
12
-------------------------------------------------------------------------
---------
       OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF
OFF


Port    13    14    15    16    17    18    19    20    21    22    23
24
-------------------------------------------------------------------------
---------
       OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF
OFF

No Capture Port select!
Ingress Filter : All frames             Egress Filter : All frames
          MAC : 00-00-00-00-00-00               MAC :
00-00-00-00-00-00
      Divider : 00000                         Divider : 00000

[P]: set Port mirror status, [R]: Reset all mirror Configure
[I]: Ingress rule Configure, [E]: Egress rule Configure      [ESC]:Exit

[P]    ---> Please select port : 1


      ---> [C]: Capture,      [B]: In/Egress.  [O]: Off
           [I]: Ingress only, [E]: Egress only [ESC]:Exit
[C]
```

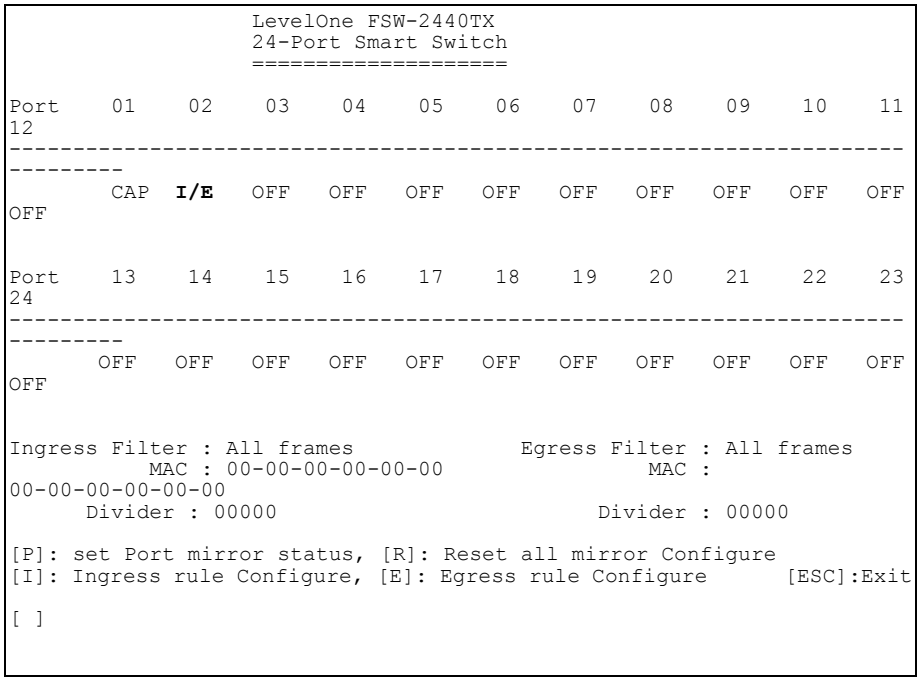
You can see Port 1 is marked as “CAP”

```
                  LevelOne FSW-2440TX
                  24-Port Smart Switch
                  ====================

Port    01    02    03    04    05    06    07    08    09    10    11
12
-------------------------------------------------------------------------
---------
        CAP  OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF
OFF


Port    13    14    15    16    17    18    19    20    21    22    23
24
-------------------------------------------------------------------------
---------
       OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF
OFF


Ingress Filter : All frames             Egress Filter : All frames
          MAC : 00-00-00-00-00-00               MAC :
00-00-00-00-00-00
      Divider : 00000                         Divider : 00000

[P]: set Port mirror status, [R]: Reset all mirror Configure
[I]: Ingress rule Configure, [E]: Egress rule Configure      [ESC]:Exit

[ ]
```

Choose port#02 as mirrored port for both ingress and egress frames.

```
Port    01    02    03    04    05    06    07    08    09    10    11
12
--------------------------------------------------------------------------
---------
        CAP  OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF
OFF


Port    13    14    15    16    17    18    19    20    21    22    23
24
--------------------------------------------------------------------------
---------
       OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF
OFF


Ingress Filter : All frames             Egress Filter : All frames
           MAC : 00-00-00-00-00-00               MAC :
00-00-00-00-00-00
      Divider : 00000                         Divider : 00000

[P]: set Port mirror status, [R]: Reset all mirror Configure
[I]: Ingress rule Configure, [E]: Egress rule Configure      [ESC]:Exit

[P]    ---> Please select port : 2


      ---> [C]: Capture,      [B]: In/Egress.  [O]: Off
           [I]: Ingress only, [E]: Egress only [ESC]:Exit
[B]
```

You can see Port 2 is marked as “I/E”



6.4.2 R: Reset all mirror Configure

R: Reset all mirror Configure, use this function to disable all mirror configuration.

6.4.3 I/E: Ingress/Egress rule Configure

I/E: Ingress/Egress mirror rule Configure, use this function to select mirror rules of all system.

After you press “I” or “E”, you have 5 settings to Ingress or Egress.

P: mirror all port's frames

Press ‘P‘ to monitor all frames of all ports that are set as Ingress/Egress ports.(default will mirror all frames of selected ports)

D: mirror Dest. MAC Address

Select ‘D’ to mirror all Ingress/Egress frames that has specific Destination MAC Address(Setup in ‘M’ enter MAC Address) of all ports that be chosen set as Ingress/Egress ports.

S: mirror Source MAC Address

Select ‘S’ to mirror all Ingress/Egress frames that has specific Source MAC Address(Setup in ‘M’ enter MAC Address) of all ports that be chosen as

Ingress/Egress ports.

M: enter MAC Address
Press ‘M‘ to setup the MAC Address.

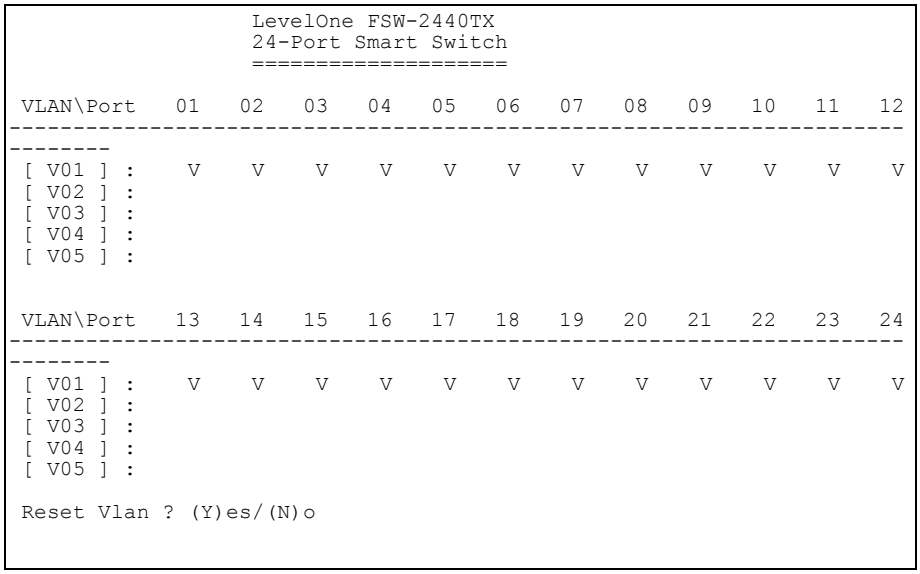
V: set Divider
Press ‘V‘ to set Ingress/Egress mirror divider. The value indicates receive/transmit frames that have passed the device and divided by the value only one in n frames.

```
Port     01     02     03     04     05     06     07     08     09     10     11
12
------------------------------------------------------------------------------
---------
         CAP  OFF    OFF    OFF    OFF    OFF    OFF    OFF    OFF    OFF    OFF
OFF


Port     13     14     15     16     17     18     19     20     21     22     23
24
------------------------------------------------------------------------------
---------
        OFF    OFF    OFF    OFF    OFF    OFF    OFF    OFF    OFF    OFF    OFF
OFF


Ingress Filter : All frames             Egress Filter : All frames
             MAC : 00-00-00-00-00-00                MAC :
00-00-00-00-00-00
       Divider : 00000                          Divider : 00000

[P]: set Port mirror status, [R]: Reset all mirror Configure
[I]: Ingress rule Configure, [E]: Egress rule Configure      [ESC]:Exit

[I]     ---> [P]: mirror all port's frames
             [D]: mirror Dest. MAC Address
             [S]: mirror Source MAC Address
             [M]: enter MAC Address
             [V]: set Divider
             [ESC]: Exit
[ ]
```

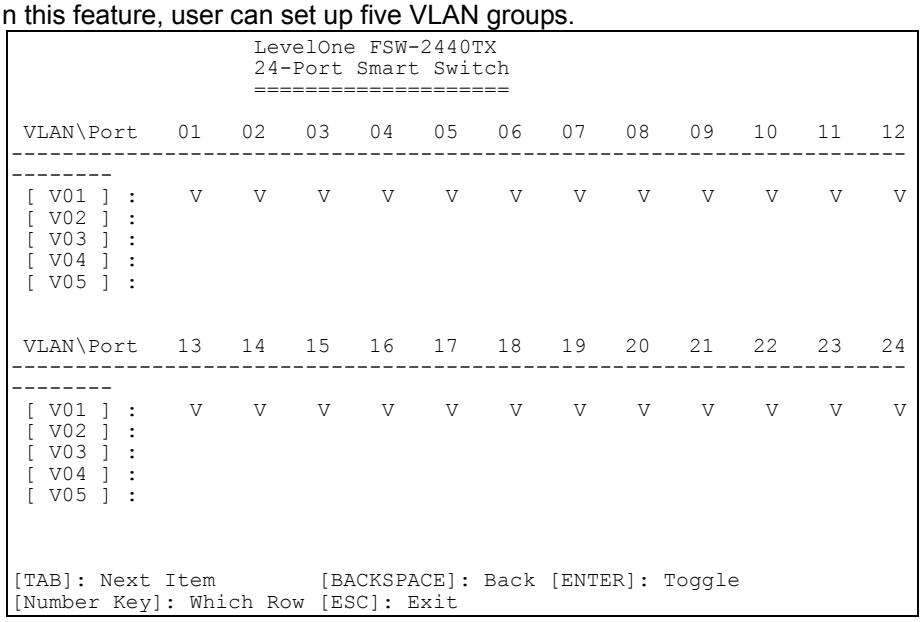
NOTE:
1. Only one port can be chosen as capture port at the same time.
2. Mirror multi-ports is possible but can create congestion at the mirror capture port.
3. The Ingress/Egress mirror divider indicate that all frames pass to/through the device will be captured to the monitor port in n frames, the n value will display in decimal and the range is from 0 to 1023.

6.5 VLAN Function

Every time select this submenu, we have to check whether to reset the original VLAN Configure. Select (Y)es to reset VLAN group. It means that system will clear all VLAN group after select (Y)es.



In this feature, user can set up five VLAN groups.



Press Number “1” to “5” for selecting VLAN group.
Press “Tab” for moving to next port and “Enter” to Enable or Disable VLAN of the port.
Press “Back Space” for moving to pre-port.

Note: Each port has to set to its belonging VLAN group, or it will be considered as one independent VLAN group. For example, it can not

communicate with each other.

6.6 QOS Function

With the System Submenu, you can perform the following:
E/D: enable/disable port base setting. Set Enable will open all QOS Functions. It means the device will have such ability to receiving 802.1p frames and accept the Configure under below setting.
T: Setting TCI THRESHOLD of 802.1p frame. If 802.1p frame pri[2:0 >= TCI THRESHOLD. Then it will be qualified as high priority frame.
W: Setting the high/low priority queue weighting.
P: Port Based setting. Set high or low priority to decided ports.

6.6.1 T: TCI THRESHOLD.

Change the threshold for 802.1p frame. If 802.1p frame pri[2:0] >= TCI THRESHOLD then it will be qualified as high priority frame.
The default TCI THRESHOLD is 4. When an incoming 802.1p priority tag value is greater than or equal to 4, the incoming packet will be classified as high priority.

```
                    LevelOne FSW-2440TX
                    24-Port Smart Switch
                    ====================

 Current TCI THRESHOLD is : 04

 (default:4, pri[2:0]>=TCI THRESHOLD will be qualified as high priority
frame)

 Change TCI THRESHOLD : 4

 802.1p frame pri[2:0] >= 04 will be qualified as high priority frame!


Press 'SPACE BAR' to continue
```

6.6.2 W: Set High/Low queue weight.

Set high queue to "15" and low queue to "1". It means the system will transmit 15 packets in high queue then transmit 1 packet in low queue. You must set up Hign/Low queue weight respectively.

```
                  LevelOne FSW-2440TX
                  24-Port Smart Switch
                  ====================

 High/Low Queue Weight : 15 : 01

 Select (H)igh queue weight / (L)ow queue weight : H
 Change the weight value ( 0 ~ 15, 0: Lowest, 15: Highest) : 15
```

6.6.3 P: Port Based Qos.

Set decided port as high or low priority port. If set Port 1 as high priority port, it means all packets received by port 1 will be treat as high priority packets.

```
                  LevelOne FSW-2440TX
                  24-Port Smart Switch
                  ====================

 [Port Base QOS]


Port    01    02    03    04    05    06    07    08    09    10    11    12
--------------------------------------------------------------------------------
        Low   Low   Low   Low   Low   Low   Low   Low   Low   Low   Low   Low

Port    13    14    15    16    17    18    19    20    21    22    23    24
--------------------------------------------------------------------------------
        Low   Low   Low   Low   Low   Low   Low   Low   Low   Low   Low   Low




[TAB]: Next Item        [BACKSPACE]: Back [ENTER]: Toggle
[Number Key]: Which Row [ESC]: Exit
```

6.7 Trunking Function

With the System Submenu, you can perform the following:

```
                    LevelOne FSW-2440TX
                    24-Port Smart Switch
            [ Chip 00 : Disable Trunking ]
Trunk\Port    09    10    11    12    21    22    23    24
-------------------------------------------------------------------------
--------
T_G[01]
T_G[02]
T_G[03]
T_G[04]
            [ Chip 01 : Disable Trunking ]
Trunk\Port    05    06    07    08    17    18    19    20
-------------------------------------------------------------------------
--------
T_G[05]
T_G[06]
T_G[07]
T_G[08]
            [ Chip 02 : Disable Trunking ]
Trunk\Port    01    02    03    04    13    14    15    16
-------------------------------------------------------------------------
--------
T_G[09]
T_G[10]
T_G[11]
T_G[12]
 Select Chip (0~2):
```

Select Chip: select chip number. It means the specific chip will have such ability of port trunking after setting Trunk group and Forwarding table.
After you select one chip, you can press “E” or “D” to Enable or Disable the Trunking function to the selected chip.

```
                    LevelOne FSW-2440TX
                    24-Port Smart Switch
            [ Chip 00 : Disable Trunking ]
Trunk\Port    09    10    11    12    21    22    23    24
-------------------------------------------------------------------------
--------
T_G[01]
T_G[02]
T_G[03]
T_G[04]
            [ Chip 01 : Disable Trunking ]
Trunk\Port    05    06    07    08    17    18    19    20
-------------------------------------------------------------------------
--------
T_G[05]
T_G[06]
T_G[07]
T_G[08]
            [ Chip 02 : Disable Trunking ]
Trunk\Port    01    02    03    04    13    14    15    16
-------------------------------------------------------------------------
--------
T_G[09]
T_G[10]
T_G[11]
T_G[12]
 Select Chip (0~2): (E)nable/(D)isable Trunking
```

For the selected chip, you can now set up the Trunking port.
T: Setting trunk group. Per chip provide 4 trunk groups and there are at least

two ports in one trunk group.
F: Assign forwarding table.

```
                  LevelOne FSW-2440TX
                  24-Port Smart Switch
                  ====================

            [ Chip 00 : Enable Trunking ]

Trunk\Port    09    10    11    12    21    22    23    24
-------------------------------------------------------------------------
--------
T_G[01]

T_G[02]

T_G[03]

T_G[04]




 Set (T)runk group or (F)orwarding table :
```

For example: Select Trunk group 1 and choose port 9, 10, 21, 22 as a trunking port.
1. Select Chip 0 and Enable the trunking function.

```
                     LevelOne FSW-2440TX
                     24-Port Smart Switch
            [ Chip 00 : Disable Trunking ]
Trunk\Port    09    10    11    12    21    22    23    24
-------------------------------------------------------------------------
--------
T_G[01]
T_G[02]
T_G[03]
T_G[04]
            [ Chip 01 : Disable Trunking ]
Trunk\Port    05    06    07    08    17    18    19    20
-------------------------------------------------------------------------
--------
T_G[05]
T_G[06]
T_G[07]
T_G[08]
            [ Chip 02 : Disable Trunking ]
Trunk\Port    01    02    03    04    13    14    15    16
-------------------------------------------------------------------------
--------
T_G[09]
T_G[10]
T_G[11]
T_G[12]
 Select Chip (0~2): (E)nable/(D)isable Trunking
```

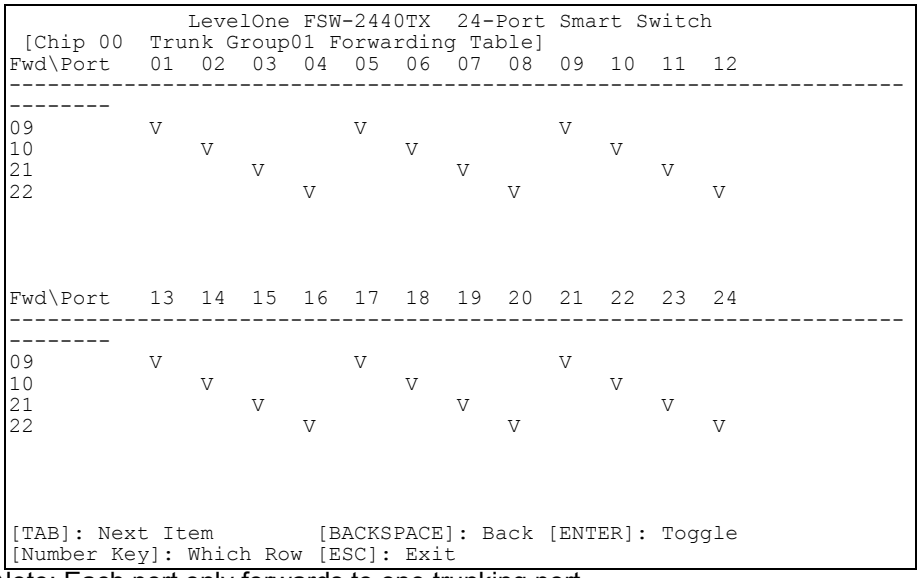
2. Select Trunk group 1 and choose port 9, 10, 21, 22 as a trunking port.

```
                  LevelOne FSW-2440TX
                  24-Port Smart Switch
                  ====================

            [ Chip 00 : Enable Trunking ]

Trunk\Port    09    10    11    12    21    22    23    24
-------------------------------------------------------------------------
--------
T_G[01]       V     V                 V     V

T_G[02]

T_G[03]

T_G[04]




 Set (T)runk group or (F)orwarding table :T

[TAB]: Next Item        [BACKSPACE]: Back [ENTER]: Toggle
[Number Key]: Which Row [ESC]: Exit
```

3. Set Forwarding Table. All Ports except trunking ports have to assign one forwarding table.
For example:
Select (F)orwarding table for Trunk Group 1.

```
                  LevelOne FSW-2440TX
                  24-Port Smart Switch
                  ====================

            [ Chip 00 : Enable Trunking ]

Trunk\Port    09    10    11    12    21    22    23    24
-------------------------------------------------------------------------
--------
T_G[01]       V     V                 V     V

T_G[02]

T_G[03]

T_G[04]




 Set (T)runk group or (F)orwarding table :F

 Select Trunk Group :1
```

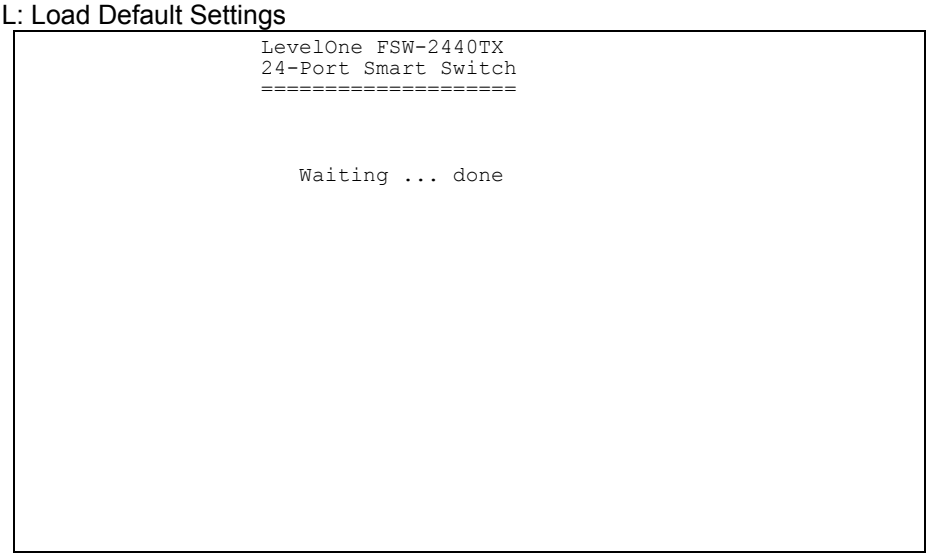
You can set port 1, 5, 9, 13, 17, 21 packet forwarding to [01] trunking port.
The rest may be deduced by analogy.



Note: Each port only forwards to one trunking port.

6.8 Load Default

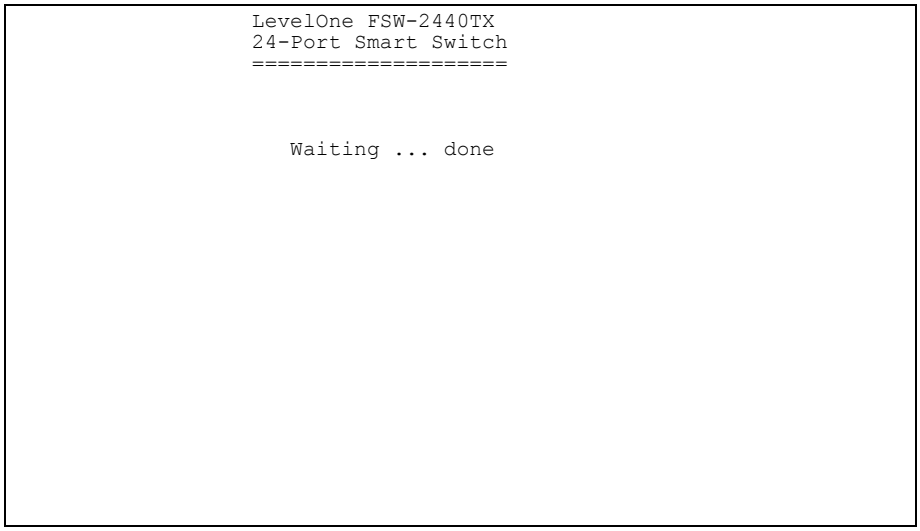
L: Load Default Settings



Note: For load default settings, it will not save the settings. You need to press “Save” to save current settings.

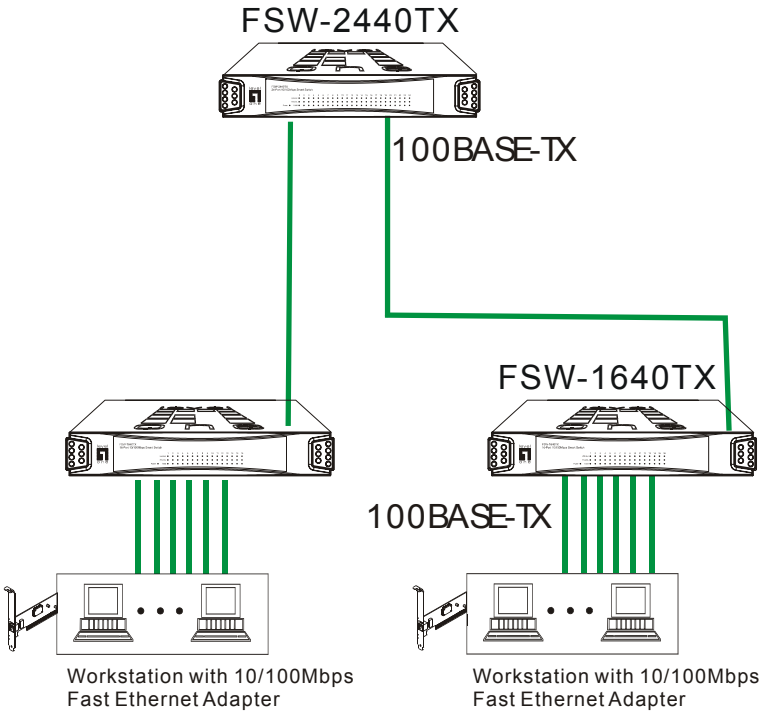
6.9 Save

Save the current settings.


LevelOne FSW-2440TX
24-Port Smart Switch
Waiting ... done

7 Sample Application

The optimal application for the Switch is as a "big pipe" backbone interconnecting file servers with bandwidth-hungry workgroups, departments, and offices.



8 PRODUCT SPECIFICATIONS

Model	FSW-1640TX
Standards	□IEEE 802.3: 10BASE-T □IEEE 802.3u: 100BASE-TX □IEEE 802.3x: Flow-Control for Full-Duplex operation □IEEE 802.1p
Ports	□Sixteen port 100BASE-TX (Copper)
Media Support	□10BASE-T: Category 3, 4 or 5 TP □100BASE-TX: Category 5 TP
Bandwidth	□100BASE-TX: 200/100Mbps □10BASE-T: 20/10Mbps
Forwarding/Filtering Rate	□148810 packets/second per port @ 100Mbps, maximum □14881 packets/second per port @ 10Mbps, maximum
Latency	□10 μsec @100Mbps, minimum □75 μsec @ 10Mbps, minimum
MAC Addresses	□4K MAC address, Self-Learning
Buffer Memory	□512K Bytes Packet Memory
Duplex Modes	□TP ports have 10/100Mbps Full/Half-Duplex Auto-Negotiation function
Crossover	□All the TP ports support Auto-MDIX function
LED Indicators	□One (1) for Power □One (1) per port for Link/ACT □One (1) per port for Full/Half-Duplex □One (1) per port for 10/100Mbps (speed)
Power Supply	□Input voltage: 100 ~ 240 +/-10% VAC/ 50 ~ 60 Hz
Power Consumption	□16.5 watt maximum
Environment	□Operating Temperature: 0° ~ 45°C (32° ~ 113°F) □Storage Temperature: -20° ~ 70°C (-4° ~ 158°F) □Humidity: 10% ~ 90% Non-Condensing
Certifications	□FCC Class A □CE Mark
Dimensions	□263x187x43mm(10.4x7.4x1.7inches)

Model	FSW-2440TX
Standards	□IEEE 802.3: 10BASE-T □IEEE 802.3u: 100BASE-TX □IEEE 802.3x: Flow-Control for Full-Duplex operation □IEEE 802.1p
Ports	□Twenty-Four (24) 100BASE-TX (Copper)
Media Support	□10BASE-T: Category 3, 4 or 5 TP □100BASE-TX: Category 5 TP
Bandwidth	□100BASE-TX: 200/100Mbps □10BASE-T: 20/10Mbps
Forwarding/Filtering Rate	□148810 packets/second per port @ 100Mbps, maximum □14881 packets/second per port @ 10Mbps, maximum
Latency	□10 μsec @100Mbps, minimum □75 μsec @ 10Mbps, minimum
MAC Addresses	□4K MAC address, Self-Learning
Buffer Memory	□768K Bytes Packet Memory
Duplex Modes	□TP ports have 10/100Mbps Full/Half-Duplex Auto-Negotiation function
Crossover	□All the TP ports support Auto-MDIX function
LED Indicators	□One (1) for Power □One (1) per port for Link/ACT □One (1) per port for Full/Half-Duplex □One (1) per port for 10/100Mbps (speed)
Power Supply	□Input voltage: 100 ~ 240 +/-10% VAC/ 50 ~ 60 Hz
Power Consumption	□16.5 watt maximum
Environment	□Operating Temperature: 0° ~ 45°C (32° ~ 113°F) □Storage Temperature: -20° ~ 70°C (-4° ~ 158°F) □Humidity: 10% ~ 90% Non-Condensing
Certifications	□FCC Class A □CE Mark
Dimensions	□265x185x44mm (10.4x7.3x1.7inches)

FCC WARNING

This equipment has been tested and found to comply with the limits for a Class A computing device pursuant to Part 15 of FCC Rules, which are designed to provide reasonable protection against electromagnetic interference in a commercial environment.

Changes or modifications to the equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CE MARK WARNING

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.