# LSW2F8, LSW2F16 10/100 Ethernet Switch

## Installation Guide

# Table of Contents

# CHAPTER 1 Introduction

## 1.1 Product Introduction

Congratulations on your purchase of the Lantronix 10/100Mbps 10-port or 18-port switch. The LSW2F8 and LSW2F16 10/100 Ethernet Switches are designed to give you the ultimate in performance, flexibility, ease-of-use, and reliability.

The LSW 10/100 switches can increase performance on your network by bringing full Ethernet bandwidth to individual workgroups or straight to the desktop instead of requiring all stations to share the bandwidth of a single network. The LSW switch's 100Mbps Fast Ethernet capability can eliminate bottlenecks in connection to servers, or can link 10Mbps workgroups to a 100Mbps Fast Ethernet network backbone.

For straight-through 10BASE-T/100BASE-TX connections to servers and workstations, the LSW switches support full-duplex connections, effectively doubling the total throughput on individual links. The LSW switch's store-and-forward switching architecture forwards packets to their destination with a minimum of delay and eliminates bad packets from the network.

The LSW2F8/LSW2F16 switch can be placed on a tabletop or rack-mounted, and provides the ideal solution for your small, medium, or large Ethernet/Fast Ethernet network. These devices are designed to comply fully with the IEEE 802.3 Ethernet and 802.3u Fast Ethernet standards.

## 1.2 Features

- The LSW2F8 provides two 100BASE-TX ports and eight 10BASE-T ports for Ethernet and Fast Ethernet connectivity
- The LSW2F8/LSW2F16 comply with the IEEE 802.3 Ethernet and IEEE 802.3u Fast Ethernet standards
- An Uplink switch on the front panel enables the LSW switch to be cascaded to another 10Mbps or 100Mbps hub using a straight-through cable
- Store-and-forward switching architecture for filtering bad packets
- Total bandwidth up to 280Mbps (LSW2F8I) and 360Mbps (LSW2F16)
- Automatic address learning with 8K addresses per port
- Memory–LSW2F8: 1MB total
  LSW2F16: 3MB total
- Per-port frame filtering and forwarding capability
- Filtering and forwarding rate 14880 packets per second for 10Mbps ports, 148800 per second for 100Mbps ports
- Global Power and individual Collision, Link/Activity LEDs monitor system status
- The internal power supply automatically adjusts to the voltage range of the AC power being supplied (100VAC/60Hz to 240VAC/50Hz), with no change in settings or fuse required
- FCC Class A, CE, UL, CUL, TUV certifications
- Five year limited warranty

### 1.3 Product Specifications

| | |
|---|---|
| Standards | IEEE 802.3 10BASE-T Ethernet<br>IEEE 802.3u 100BASE-TX Fast Ethernet |
| Architecture | Store and forward switching |
| Connectors | LSW2F8 8x10BASE-T/2 100BASE-TX (RJ-45) Fast Ethernet ports<br>LSW2F16 16x10BASE-T/2 100BASE-TX (RJ-45) Fast Ethernet ports |
| Uplink ports | Push button to select Uplink or Normal connections: Port 1 and Port 10 |
| Duplex mode | Autonegotiates to highest setting on 10/100 ports (Ports 1 and 2)<br>Switch-selectable on 10Mbps ports |
| LED indicators | Power (device)<br>Link/Act, Full/Col (per port) |
| Power | 100–240VAC, 50/60Hz |
| EMI Approval | FCC Class A, CE, UL, CUL, TUV |
| Dimensions | 220mm x 330mm x 44mm (L x W x H) |
| Environment | Operating: 0°C to 40°C, 10% to 80% humidity<br>Storage: -20°C to 70°C, 5% to 90% humidity |
| Warranty | 5-year limited |

# Chapter 2 Using the LSW  Switch

## 2.1 Packing Checklist

Your switch product package should contain the following:

- ✓ An LSW2F8 or LSW2F16 10/100 Ethernet Switch
- ✓ One AC Power Cable
- ✓ Four self-adhesive standoffs
- ✓ Rackmount brackets and screws
- ✓ Installation Guide

If any of these items are missing, contact your dealer immediately.

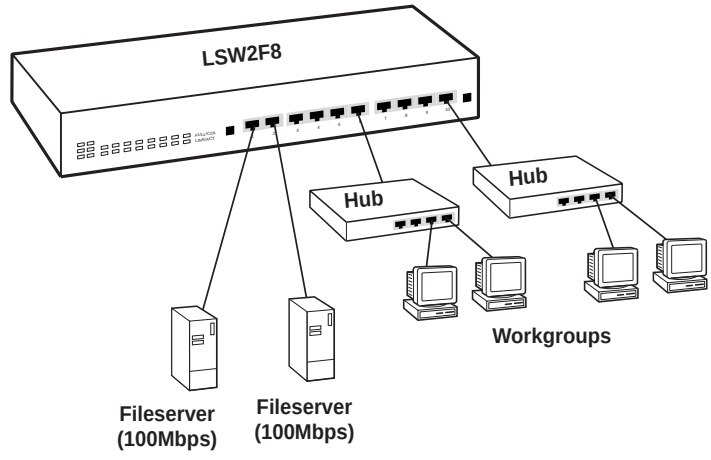
## 2.2 Planning Your Network

Before you install your 10/100Mbps network, you should plan out how you wish to organize your network to take maximum advantage of its switching capabilities. This section discusses typical applications for the switch.

### 2.2.1 Fileserver Link

The LSW switch can be used to greatly increase the bandwidth between one or more fileservers and the workgroups they serve. Individual 10Mbps workgroup switches can be connected to the ports on the LSW switch, ensuring that traffic in one workgroup will not interfere with the performance of another workgroup. Full-duplex 100Mbps links to fileservers guarantee that full bandwidth is delivered to each work-group. High-performance workstations needing extra throughput can connect directly to the switch using a full-duplex 10BASE-T connection, giving 20Mbps of effective throughput.

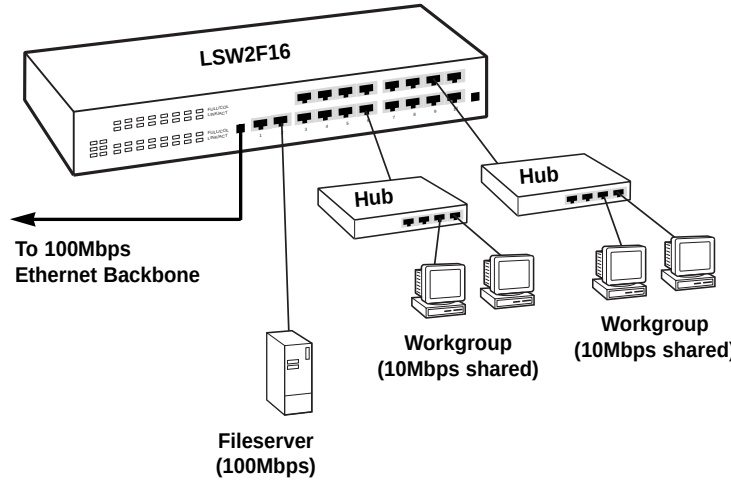
*Figure 2-1 Fileserver Link Application*



### 2.2.2 Backbone Link

Traditionally, bridges and routers have been used to link individual local area networks into an interconnected network. Routers and traditional bridges introduce relatively large delays when forwarding traffic from one network to another, in addition to being difficult to manage. Bridge architecture based on two-port bridges may require traffic to pass through several bridges before reaching its destination. Ethernet switches now perform these functions with especially small delays, making them ideal for backbone link applications. Compared to routers, Lantronix's LSW Ethernet switches are easy to set up and maintain. Several networks can be connected together with a single Ethernet switch, and the forwarding delay is negligible. One or more of the LSW switch's 100Mbps links can be used as a high-speed backbone link to other switches serving as collapsed backbones.

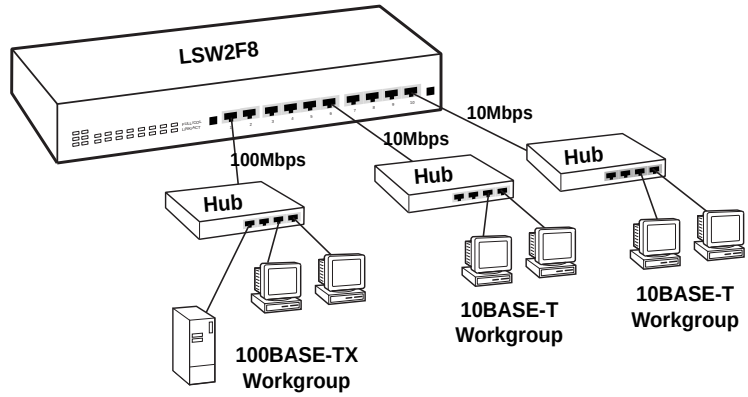
*Figure 2-2 Collapsed Backbone Application*



### 2.2.3 10/100Mbps Bridging

The LSW 10/100 Ethernet Switch can allow you to gradually transition between traditional 10Mbps Ethernet and newer 100Mbps Fast Ethernet. The addition of the LSW switch can give immediate increases in performance on the 10Mbps networks, and allows connectivity to be maintained when network stations are transitioned over to 100Mbps Fast Ethernet.

*Figure 2-3 10/100Mbps Bridge Application*




### 2.3 Installation

The LSW 10/100 Ethernet Switch is easy to install and requires no special training. You should, however, read the following instructions carefully before proceeding to install your switch. Figure 2-4 and Figure 2-5 show the layout of the front panels.

*Figure 2-4 LSW2F8 Switch Front Panel*

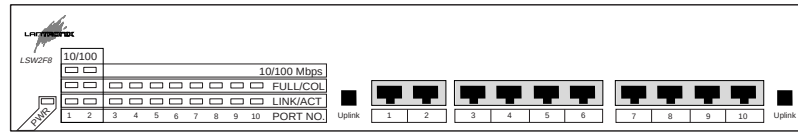
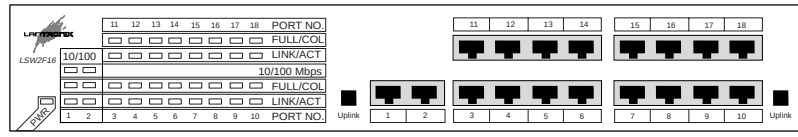



*Figure 2-5 LSW2F16 Switch Front Panel*



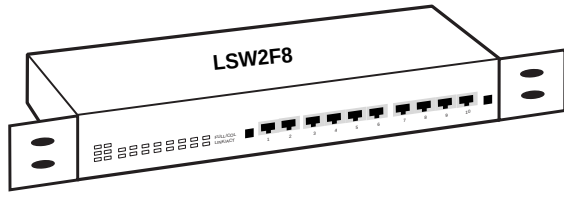

The LSW 10/100 switches were designed for easy "plug and play" installation. Before you connect your switch to other devices, there are several issues you should keep in mind:

- When connecting the LSW switch to a device using unshielded twisted pair cable, you must make sure that the cable length is not greater than 100 meters
- 10BASE-T Twisted Pair Ethernet cabling should be Category 3 or better
- 100BASE-TX Twisted Pair Fast Ethernet cabling should use tested Category 5 cabling
- Network cable segments can be connected to or disconnected from the LSW 10/100 switch while the power is on
- When placing your LSW switch, you need to avoid dusty locations and electromagnetically noisy areas

## 2.4 Mounting

Your LSW2F8 or LSW2F16 switch is delivered with two brackets for mounting the switch in an EIA standard 19-inch rack. Secure the mounting brackets onto the sides of the LSW switch, fastening them with screws as shown in Figure 2-6.

*Figure 2-6 Mounting Bracket Installation*




If your site uses only a few switches and is not equipped with a mounting rack, you may choose to place the LSW switch on a table or wiring closet shelf. In this case, use the four self-adhesive rubber feet, which are provided with the switch for cushioning purposes. Stick them at the four corners of the bottom surface of the LSW switch to cushion it against vibration.

## 2.5 Connecting the LSW Switch

Use the following procedures to connect 10BASE-T or 100BASE-TX network devices to the LSW switch:

| LSW2F8<br>LSW2F16 | Ports 2-9<br>Ports 2-18 | Port 1 & Port 10<br>Normal | <br>Uplink |
|---|---|---|---|
| PC, Workstation | S | S | C |
| Server | S | S | C |
| Hub, Switch port | C | C | S |
| Hub, Switch uplink port | S | S | C |
| S = Straight Cable C = Crossover cable | | | |

The following table describes the two cable types:

| | Straight cable | Crossover cable |
|---|---|---|
| Pin 1 | TD+ | RD+ |
| Pin 2 | TD- | RD- |
| Pin 3 | RD+ | TD+ |
| Pin 6 | RD- | TD- |

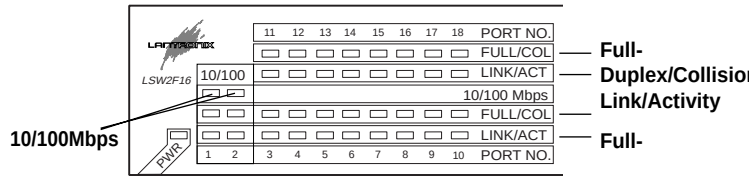
Make sure that the length of the straight-through cable between the switch and the other device does not exceed 100 meters, including all patch cables and cross-connect wires.

Duplex mode: each 10/100 port (Ports 1 and 2) can detect duplex mode automatically – the device being connected to must support 802.3u autonegotiation for full duplex to be used; duplex mode for 10Mbps ports can be selected via switches on the back of the unit.

# Chapter 3 LED Indicators

Figure 3-1 shows the LED indicators, which indicate the link status of each of the ports, whether the LSW switch is receiving power, and the presence of network activity and collisions on the network.

*Figure 3-1 LSW2F16 Front Panel LED Indicators*




## 3.1 Power LED

The LED on the front panel labeled **PWR** is used to indicate that the switch is receiving power and is turned on. If the LED is off, check the following to isolate the problem:

- Make sure the power cord is properly connected to the power outlet and is properly inserted into the power connection on the switch
- Determine whether or not the outlet is functional by plugging another device into the receptacle
- Turn the power switch to the ON position. If there are no problems and the LED still does not light, contact your dealer

## 3.2 10/100 Mbps LEDs

Each 10/100 port (Ports 1 and 2) have the **10/100Mbps** LED on the front panel. When the LED is ON, it indicates the port is in 100Mbps mode. Otherwise, its working in 10Mbps mode.

### 3.3 Full/Col: Full or Half Duplex/Collision LEDs

Each port has a full duplex/half duplex/Collision LED on the front panel labeled **Full/Col**. On normal status, this LED indicates that transmission of selected ports is full duplex or half duplex (ON: Full duplex, OFF: Half duplex). Also this LED is used to indicate collision status. When two or more stations on the network segment attempted to transmit at the same time, a collision occurs, all of the stations involved in the collision will recognize the collision, wait a random amount of time, and retransmit. At this moment, this LED will blink on briefly.

### 3.4 Link/Activity LEDs

Each port on the LSW2F8 and LSW2F16 has a Link/Activity LED which indicates whether a device is detected on the other end.

When the port is in Link OK status, this LED also used to indicate activity on the network segment. Whenever data is transmitted and/or received through the network segment that the port is connected to, the LED should blink on briefly.

| LED summary table | | |
|---|---|---|
| PWR | Green | ON=Unit is receiving power |
| 10/100Mbps | Green | ON=100Mbps; OFF=10Mbps |
| Full/Col | Yellow | ON=Full Duplex; OFF=Half Duplex; Flashing=Collision |
| Link/Act | Green | ON=Good Link; Flashing=Activity |

## Limited Warranty

The LSW2F8 and LSW2F16 come with 5-year limited warranties. To obtain Lantronix's full warranty statement or if you experience problems with your unit, check our website (www.lantronix.com) or call Lantronix for assistance.



## Technical Support

If problems occur during product operation, please check the adaptor configuration settings, cables, connectors, network terminators and other network components for compatibility.

Write a description of the problem, including what problems occurred and when they occurred. Also, please have the following information ready if calling for support services:

**Model number & serial number**
**Purchase date**
**Network configuration**
**Application environment**
**Hardware, software (NOS) and the DOS version**

Contact Lantronix technical support at 800-422-7044 within the United States or 949-453-3990 outside of the United States. Lantronix's technical support can also be reached via email at support@lantronix.com, and via the World Wide Web at www.lantronix.com or via fax at 949-450-7226.

**WARNING!**

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including that which may cause undesired operation. Operation of this equipment in a residential area is likely to cause interference in which case the user, at his or her own expense, will be required to take whatever measures may be required to correct the interference.

NOTE: The RJ45 ports are not for telephone use.

**CAUTION:**

Not for installation in air ducts, plenums or other environmental air handling spaces. Changes or modifications to this device not explicitly approved by Lantronix will void the user's authority to operate this device.

## Declaration of Conformity

(according to ISO/IEC Guide 22 and EN 45014)

| | |
|---|---|
| Manufacturer's Name: | Lantronix |
| Manufacturer's Address: | 15353 Barranca Parkway<br>Irvine, CA 92618 USA |

declares, that the product:

| | |
|---|---|
| Product Name: | 10/100 Ethernet Switches |
| Model Number: | LSW2F8, LSW2F16 |

conforms to the following standards:

| | | |
|---|---|---|
| EMC: | EN55022(1988)/CISPR 22(1985) | Class B |
| | EN60555-2(1987) | Class A |
| | prEN55024-2(1990)/IE801-2(1991) | 4KV CD, 8KV AD |
| | prEN55024-3(1991)/IE801-3(1984) | 3V V/m |
| | prEN55024-4(1992)/IE801-4(1988) | 1KV - (power line)<br>0.5KV - (signal line) |


Manufacturer's Contact: Director of Quality Assurance
Lantronix
15353 Barranca Parkway
Irvine, CA 92618 USA
Tel: 949-453-3990
Fax: 949-453-3995

LANTRONIX

15353 Barranca Parkway, Irvine, CA 92618
949-453-3990 ▼ Fax: 949-453-3995 ▼ Sales: 800-422-7055 ▼ Support: 800-422-7044

PART NO. 900-140 Rev.A