

# SFP Transceiver Installation Guide

1000BASE-SX (3CSFP91)  
1000BASE-LX (3CSFP92)  
1000BASE-T (3CSFP93)  
1000BASE-LH70 (3CSFP97)

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## Introduction

This guide covers installation, removal and technical information for the

- 1000BASE-SX SFP Transceiver (3CSFP91)
- 1000BASE-LX SFP Transceiver (3CSFP92)
- 1000BASE-T SFP Transceiver (3CSFP93)
- 1000BASE-LH70 SFP Transceiver (3CSFP97)

Each transceiver, when installed into a 3Com Switch, provides a high-speed Gigabit Ethernet connection. They can be installed and removed with your system powered up.

## Installation and Removal

### Safety Precautions

Be sure you follow all safety precautions when you install or replace an SFP Transceiver. To avoid electric shocks and burns to yourself and damage to the equipment, read and follow these warnings:

- ⚠ **WARNING:** When the system is on:
  - Never insert a metal object such as a screwdriver or a finger with jewelry into open module slots
  - Do not touch any connections inside the chassis with your hands or fingers.

- ⚠ **WARNING:** Fiber Optic ports - Optical Safety.



Never look at the transmit laser while it is powered-up. Never look directly at the fiber TX port and fiber cable ends when they are powered-up.

- ⚠ **WARNING:** Use of controls or adjustments of performance or procedures other than those specified herein may result in hazardous laser emissions.
- ⚠ **WARNING:** RJ-45 Ports. These are shielded RJ-45 data sockets. They cannot be used as standard traditional telephone sockets, or to connect the unit to a traditional PBX or public telephone network. Only connect RJ-45 data connectors, network telephony systems, or network telephones to these sockets. Either shielded or unshielded data cables with shielded or unshielded jacks can be connected to these data sockets.
- ⚠ **AVERTISSEMENT:** Quand le système est allumé:
  - Ne jamais introduire d'objet métallique, tel qu'un tourne vis ou même votre doigt si vous portez un bijou dans le réserve au module.
  - Ne touchez aucun engrenage à l'intérieur du châssis avec le doigt ou la main.

- ⚠ **AVERTISSEMENT:** Ports pour fibres optiques – sécurité sur le plan optique.



Ne regardez jamais le laser tant qu'il est sous tension. Ne regardez jamais directement le port TX (Transmission) à fibres optiques et les embouts de câbles à fibres optiques tant qu'ils sont sous tension.

- ⚠ **AVERTISSEMENT:** L'utilisation de contrôles, de réglages de performances ou de procédures autres

que ceux qui sont spécifiés au sein du présent document risquent d'entraîner l'exposition à des rayonnements laser dangereux.

- ⚠ **AVERTISSEMENT:** Points d'accès RJ-45. Ceux-ci sont protégés par des prises de données. Ils ne peuvent pas être utilisés comme prises de téléphone conventionnelles standard, ni pour la connexion de l'unité à un réseau téléphonique central privé ou public. Raccorder seulement connecteurs de données RJ-45, systèmes de réseaux de téléphonie ou téléphones de réseaux à ces prises. Il est possible de raccorder des câbles protégés ou non protégés avec des jacks protégés ou non protégés à ces prises de données.

- ⚠ **VORSICHT:** Wenn das Betriebssystem angeschaltet ist:

- Führen Sie niemals einen Metallgegenstand wie z.B. einen Schraubenzieher oder einen beringten Finger in den offenen Modulschlitz ein.
- Berühren Sie keine Verbindungen innerhalb des Gehäuses mit Ihren Händen oder Fingern.

- ⚠ **VORSICHT:** Faseroptikanschlüsse – Optische Sicherheit.



Niemals ein Übertragungslaser betrachten, während dieses eingeschaltet ist. Niemals direkt auf den Faser-TX-Anschluss und auf die Faserkabelenden schauen, während diese eingeschaltet sind.

- ⚠ **VORSICHT:** Die Verwendung von Steuerelementen oder die Anpassung von Leistungen und Verfahren in anderer als der hierin genannten Weise kann zu gefährlichen Laseremissionen führen.

- ⚠ **VORSICHT:** RJ-45-Porte. Diese Ports sind geschützte Datensteckdosen. Sie dürfen weder wie normale traditionelle Telefonsteckdosen noch für die Verbindung der Einheit mit einem traditionellem privatem oder öffentlichem Telefonnetzwerk gebraucht werden. Nur RJ-45-Datenanschlüsse, Telefonnetzsysteme oder Netztelefone an diese Steckdosen anschließen. Entweder geschützte oder ungeschützte Buchsen dürfen an diese Datensteckdosen angeschlossen werden.

### Handling SFPs

To prevent potential damage from electrostatic discharge, always observe the following when handling SFP Transceivers:

- Always wear an anti-static wristband connected to a suitable earth point.
- Do not remove an SFP Transceiver from its packaging until you are ready to install it into a switch.
- Do not touch any of the pins, connections or components of an SFP Transceiver.
- Always store or transport an SFP Transceiver in anti-static packaging.

### Regulatory Compliance

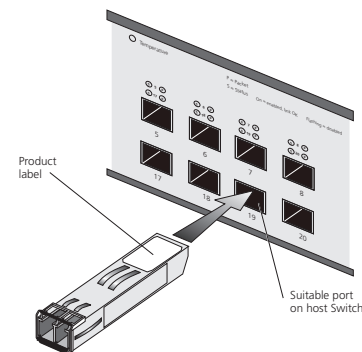
Laser Eye Safety: FDA 21(J) CFR, EN 60825-1/2.

Electrical Safety: EN/UL 60950

### Inserting the Transceiver

The SFP Transceiver is keyed and there is only one way in which it can be installed correctly. It is not necessary to power-down your Switch.

- 1 Read and follow all safety precautions stated earlier in this guide.
- 2 Hold the transceiver so that the connector is toward you and the product label is visible. Ensure the wire release lever is closed (in the upright position). See Figure 1.
- 3 Gently slide the transceiver into the SFP port until it clicks. If the transceiver does not click into place, remove it, turn it over and re-insert.
- 4 Remove the plastic protective cover if fitted.
- 5 Use an appropriate cable to connect the transceiver to a suitable device.



**Figure 1** Inserting the Transceiver (for example purposes only, this figure shows a 1000BASE-SX SFP Transceiver)

### Removing the Transceiver

It is not necessary to power-down your Switch.

- 1 Disconnect the cable from the transceiver.
- 2 Move the wire release lever downwards until it is pointing toward you.
- 3 Pull the wire release lever toward you to release the catch mechanism; the transceiver will then easily slide out.

## Problem Solving

If you suspect a problem, carry out these steps before contacting your supplier:

- Refer to the documentation supplied with your Switch for general problem solving information.
- Ensure that you have followed the installation instructions in this guide, and the transceiver is correctly installed in the Switch.
- Ensure that the Switch in which the transceiver is fitted is powered-up.
- Ensure that the device at the far end of the link is powered-up and operating correctly.
- Ensure that all connectors on the fiber optic segment are correctly engaged (1000BASE-SX, 1000BASE-LX, 1000BASE-LH70 SFP Transceivers only).
- Clean the fiber terminators by wiping them gently with a clean tissue or cotton bud moistened with a little ethanol. Dirty fiber terminators on the fiber optic segment impair the quality of the light transmitted through the cable (1000BASE-SX, 1000BASE-LX, 1000BASE-LH70 SFP Transceivers only).
- To remove an LH70 SFP Transceiver that has been inserted with the wire release lever pointing down, push the blue plastic at the base of the transceiver inwards towards the unit to release the catch mechanism.

For information about obtaining technical support, refer to "Technical Support" in this guide.

## Technical Specifications

### 1000BASE-LH70, 1000BASE-SX, 1000BASE-LX SFP Transceivers

The 1000BASE-LH70 SFP Transceiver supports a direct connection to single-mode fiber-optic cable, the 1000BASE-SX SFP Transceiver supports a direct connection to multi-mode fiber-optic cable and the 1000BASE-LX SFP Transceiver supports a direct connection to both. Table 1 shows the ranges for each connection.

**Table 1** Transmission Ranges

Fiber Type	Diameter (microns)	Modal Bandwidth (MHz • km)	Minimum Connector End Polish	Transmission Range
<i>1000BASE-SX</i>				
Multimode	62.5	160	-	2 m - 220 m (6.6 ft - 721.8 ft)
Multimode	62.5	200	-	2 m - 275 m (6.6 ft - 902.3 ft)
Multimode	50	400	-	2 m - 500 m (6.6 ft - 1640.5 ft)
Multimode	50	500	-	2 m - 550 m (6.6 ft - 1804.6 ft)
<i>1000BASE-LX</i>				
Multimode	62.5	500	-	2 m - 550 m (6.6 ft - 1804.6 ft)
Multimode	50	400	-	2 m - 550 m (6.6 ft - 1804.6 ft)
Multimode	50	500	-	2 m - 550 m (6.6 ft - 1804.6 ft)
Single-mode	9	-	-	2 m - 10,000 m (6.6 ft - 32,810 ft)
<i>1000BASE-LH70</i>				
Single-mode	9 core	-	PC	2 m - 70 km (6.6 ft - 43 miles)

Table 2 shows the optical characteristics for the transmitter and receiver for each Transceiver.

**CAUTION:** If using cable lengths shorter than 25 km with the 1000BASE-LH70 SFP Transceiver, you must ensure that a single-mode fiber attenuator is used to avoid signal saturation.

**Table 2** Optical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit
<i>1000BASE-SX</i>					
Transmitter:					
Output Optical Power (Average)	Pout	-9.5	-6.5	0	dBm
Receiver:					
Optical Input Power	PR	-17	-	0	dBm
<i>1000BASE-LX</i>					
Transmitter:					
Output Optical Power (Average)	Pout	9.5	-	-3	dBm
Receiver:					
Optical Input Power	PIN	-20	-	-3	dBm
<i>1000BASE-LH70</i>					
Transmitter:					
Output Optical Power (Average)	Pout	0	-	+3	dBm
Receiver:					
Optical Input Power	PIN	-24	-	-3	dBm

### 1000BASE-T SFP Transceiver

The 1000BASE-T SFP Transceiver port uses Category 5 copper cabling with RJ-45 connectors, and supports segment lengths of up to 100 m (328 ft), as specified in the Gigabit Ethernet standard IEEE802.3-2000.

### CE Statement (Europe)



This product complies with the European Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC as amended by European Directive 93/68/EEC.

## Technical Support

To obtain telephone support as part of your warranty and other service benefits, you must first register your product at <http://eSupport.3com.com/>

The following options are available for technical support:

- Contact your network supplier.
- Check the 3Com knowledgebase at <http://knowledgebase.3com.com>
- Browse the 3Com web site at <http://www.3com.com>

Please have your product model name, part number and serial number (found on underside of transceiver) along with all relevant details of the problem to hand before calling your network supplier or 3Com.

Telephone numbers are correct at the time of publication. Find a current directory of support telephone numbers posted on the 3Com web site at <http://csoweb4.3com.com/contactus/>.

Country	Telephone Number
<b>Asia, Pacific Rim</b>	
Australia	1 800 678 515
Hong Kong	800 933 486
India	+61 2 9424 5179 or 000800 650 1111
Indonesia	001 803 61009
Japan	00531 616 439 or 03 5977 7991
Malaysia	1800 801 777
New Zealand	0800 446 398
Pakistan	+61 2 9937 5083
Philippines	1235 61 266 2602 or 1800 1 888 9469
P.R. of China	10800 61 00137 or 021 6350 1590 or 00800 0638 3266
Singapore	800 6161 463
S. Korea	080 333 3308
Taiwan	00801 611 261
Thailand	001 800 611 2000

You can also obtain support in this region using the following e-mail: [apr\\_technical\\_support@3com.com](mailto:apr_technical_support@3com.com)  
Or request a repair authorization number (RMA) by fax using this number: + 65 543 6348

### Europe, Middle East, and Africa

From anywhere in these regions, call: +44 (0)1442 435529

From the following countries, you may use the numbers shown:

Austria	01 7956 7124
Belgium	070 700 770
Denmark	7010 7289
Finland	01080 2783
France	0825 809 622
Germany	01805 404 747
Hungary	06800 12813
Ireland	01407 3387
Israel	1800 945 3794
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South Africa	0800 995 014
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Sweden	07711 14453
Switzerland	08488 50112
U.K.	0870 909 3266

You can also obtain support in this region using the following URL: <http://emea.3com.com/support/email.html>

Country	Telephone Number
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Antigua	1 800 988 2112
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Bermuda	1 800 998 2112
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Salvador	AT&T +800 998 2112
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You can also obtain support in this region using the following:

Spanish speakers, enter the URL:  
<http://lat.3com.com/lat/support/form.html>

Portuguese speakers, enter the URL:  
<http://lat.3com.com/br/support/form.html>

English speakers in Latin America should send e-mail to:  
[lat\\_support\\_anc@3com.com](mailto:lat_support_anc@3com.com)

**North America & Canada** 1 800 876 3266

## Register Your Product

To take advantage of warranty and other service benefits, you must first register your product at <http://eSupport.3com.com/>. 3Com eSupport services are based on accounts that you create or have authorization to access. First time users must apply for a user name and password that provides access to a number of eSupport features including Product Registration, Repair Services, and Service Request.

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To learn more about 3Com products and services, visit our Word Wide Web site at [www.3com.com](http://www.3com.com).

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