



IFS SFP Transceiver User Manual

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Version

This document applies to IFS SFP Transceiver version 02.02

Certification**FCC compliance**

Class B: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

There is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

European Union directives

2004/108/EC (EMC directive): Hereby, UTC Building & Industrial Systems, Inc. declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 2004/108/EC



2002/96/EC (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: www.recyclethis.info.

Contact information

For contact information, see www.interlogix.com or www.utcssecurityproducts.eu

Safety Notices

The fiber optic SFP transceiver modules are equipped with a Class 1 laser, which emits invisible radiation. Read the following safety warnings carefully.



Class 1 Laser Product
Complies with FDA Regulation 21 CFR 1040.10 and 1040.11



Class 1 radiation is present when the device or system is powered up. Do not look directly into a laser aperture, as prolonged exposure may cause eye damage.



Only trained and qualified personnel should be allowed to install or replace these SFP modules

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Overview



Thank you for purchasing an IFS SFP transceiver. The IFS SFP transceiver can be installed into any IFS network equipment with a 100Base-FX or 1000Base-SX/LX mini-GBIC interface. This user guide provides an overview of the various IFS SFPs (also known as mini-GBIC) transceiver modules available from Interlogix. This user guide also provides instructions for installing, connecting and removing these transceivers. These SFP transceiver modules are hot-pluggable, which means you can insert and remove these modules into any IFS network equipment with a mini-GBIC port without interrupting the host system. The IFS SFP line also features a selection of environmentally hardened SFPs designed for operating in environments from -40~75 degrees Celsius.

Checklist

The SFP package should contain the following items:

- The SFP Transceiver Module x1
- This User Manual x1

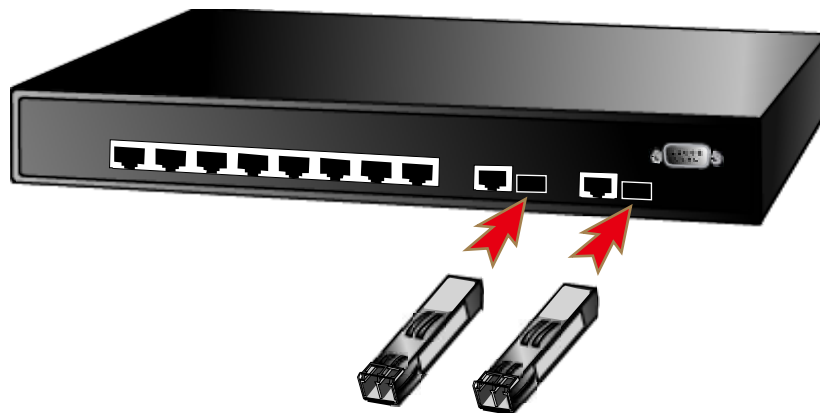
If any items are missing or damaged, please consult Interlogix or the dealer/distributor from whom you purchased your SFP transceiver module.

Installing an IFS SFP Module

This section describes how to insert an IFS SFP transceiver into a mini-GBIC slot.

The IFS SFP transceivers are hot-pluggable and hot-swappable. You can insert and remove an IFS SFP transceiver in any IFS network equipment with a mini-GBIC port without having to power down the switch or media converter. As shown in Figure 1.

Figure 1: Inserting an IFS SFP transceiver



Install the IFS SFP into an IFS network switch or media converter before connecting a cable coming from another switch, workstation or media converter.

1. Make sure both pieces of network equipment that you are connecting together are using the same media type SFP. For example: 100Base-FX to 100Base-FX or 1000Base-SX to 1000Base-SX.
2. Check to make sure that the fiber-optic cable type matches the SFP transceiver model.
 - S20 Series and S25 Series optics operate with multimode OM1, OM2 or OM3 fiber. LC type fiber connectors are required.
 - S30 Series and S35 Series optics operate with single mode fiber. LC type fiber connectors are required.

Connecting the fiber cable

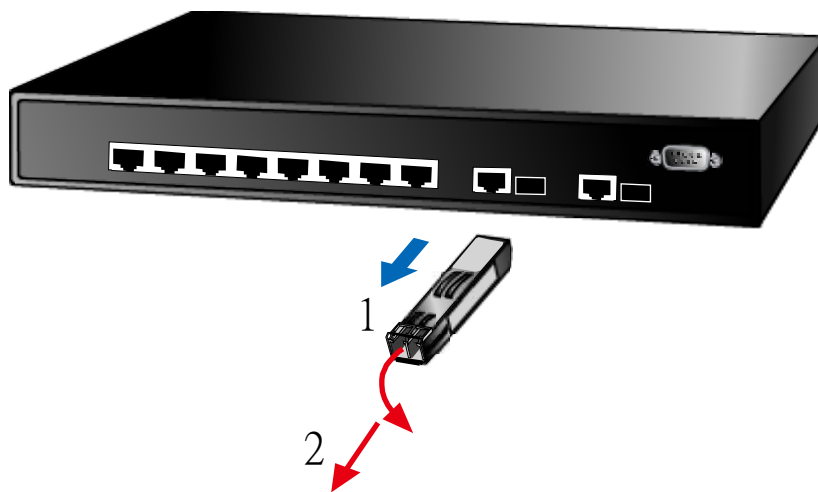
1. Insert the duplex LC connector from the network fiber cable into the SFP transceiver.

2. Connect the other end of the cable to a device – i.e. switches with an SFP installed, fiber NIC on a workstation or a Media Converter.
3. Check the LNK/ACT LED of the SFP slot of the switch / converter. Ensure that the SFP transceiver is operating correctly.
4. Check the link mode of the SFP port to see if there is any link failure. With some fiber-NICs or Media Converters, setting the link mode to “**1000 Force**” or “**100 Force**” may be needed for proper operation.

Removing the SFP transceiver

1. Make sure there is no network activity by consulting with a network administrator before removing the SFP or use the switch or media converters management interface (if available) to disable the port in advance.
2. Gently remove the fiber optic cable connector.
3. Flip the wire handle of the SFP module out to a horizontal position.
4. Pull out the SFP module gently out of the mini-GIBIC slot with the wire handle.

Figure 2: Pull out the SFP transceiver



Caution: Never pull out the SFP transceiver module without using the pull handle or the push bolts on the module. Directly pulling out the SFP module with force could damage the SFP module and mini-GIBIC slot of the network device.

SFP Specifications

The IFS SFP transceivers are available in the following models.

| Twisted Pair SFP | | 1000 Base TX | GigE | |
|-------------------------|-----------|---------------------|---------------|--|
| Part # | Connector | Wire Type | Max Distance | |
| S30-RJ | RJ 45 | Cat 5e | 100M (328 ft) | |

| Fast Ethernet | | 100 Base FX | | | | | | | |
|----------------------|-----------------|--------------------|------------|--------------|-------------|----------------------|---------------------|----------------------------|---------------------------|
| Part # | Fiber Connector | # of Fibers | Fiber Type | Max Distance | Wave Length | Optical Budget (dBm) | Optical Power (dBm) | Receiver Sensitivity (dBm) | Operating Temperature |
| S20-2MLC2 | LC | 2 | Multimode | 2km (1.2mi) | 1310nm | 12 | -20 ~ -14 | -32 | 0 to + 50C (32 to 122F) |
| S25-2MLC2 | LC | 2 | Multimode | 2km (1.2mi) | 1310nm | 12 | -20 ~ -14 | -32 | -40 to +75C (-40 to 167F) |

| Fast Ethernet | | 100 Base LX | | | | | | | |
|----------------------|-----------------|--------------------|-------------|--------------|-------------|----------------------|---------------------|----------------------------|---------------------------|
| Part # | Fiber Connector | # of Fibers | Fiber Type | Max Distance | Wave Length | Optical Budget (dBm) | Optical Power (dBm) | Receiver Sensitivity (dBm) | Operating Temperature |
| S20-2SLC20 | LC | 2 | Single Mode | 20km (12mi) | 1310nm | 19 | -15 ~ -8 | -34 | 0 to + 50C (32 to 122F) |
| S25-2SLC20 | LC | 2 | Single Mode | 20km (12mi) | 1310nm | 19 | -15 ~ -8 | -34 | -40 to +75C (-40 to 167F) |

| Fast Ethernet | | 100 Base BX | | | | | | | |
|----------------------|-----------------|--------------------|-------------|--------------|-------------------|----------------------|---------------------|----------------------------|---------------------------|
| Part # | Fiber Connector | # of Fibers | Fiber Type | Max Distance | Wave Length TX RX | Optical Budget (dBm) | Optical Power (dBm) | Receiver Sensitivity (dBm) | Operating Temperature |
| S20-1SLC/A-20 | LC | 1 | Single Mode | 20km (12mi) | 1310/1550nm | 18 | -14 ~ -8 | -32 | 0 to + 50C (32 to 122F) |
| S25-1SLC/B-20 | LC | 1 | Single Mode | 20km (12mi) | 1550/1310nm | 18 | -14 ~ -8 | -32 | -40 to +75C (-40 to 167F) |

Gigabit Ethernet 1000 Base SX

| Part # | Fiber Connector | # of Fibers | Fiber Type OM1 & OM2 | Max Distance OM1/OM2 | Wave Length | Optical Budget (dBm) | Optical Power (dBm) | Receiver Sensitivity (dBm) | Operating Temperature |
|----------|-----------------|-------------|----------------------|--------------------------|-------------|----------------------|---------------------|----------------------------|------------------------------|
| S30-2MLC | LC | 2 | Multimode | 220/550m (720/1800ft) | 850nm | 7.5 | -9.5 ~ -1 | -17 | 0 to + 50C (32 to 122F) |
| S35-2MLC | LC | 2 | Multimode | 220/550m (720/1800ft) | 850nm | 7.5 | -14 ~ -8 | -17 | -40 to +75C (-40 to 167F) |

OM1 Multimode fiber @ 200/500MHz-km

OM2 Multimode fiber @ 500.500MHZ-km Laser Rated for GbE LANs

Gigabit Ethernet 1000 Base SX

| Part # | Fiber Connector | # of Fibers | Fiber Type OM3 | Max Distance OM3 | Wave Length | Optical Budget (dBm) | Optical Power (dBm) | Receiver Sensitivity (dBm) | Operating Temperature |
|------------|-----------------|-------------|----------------|------------------|-------------|----------------------|---------------------|----------------------------|----------------------------|
| S30-2MLC-2 | LC | 2 | Multimode | 2km (1.2mi) | 1310nm | 10 | -9 ~ -1 | -19 | 0 to + 50C (32 to 122F) |

OM3 Multimode fiber @ 2000/500MHz-km Optimized for 850nm VCSELs

Gigabit Ethernet 1000 Base LX

| Part # | Fiber Connector | # of Fibers | Fiber Type | Max Distance | Wave Length | Optical Budget (dBm) | Optical Power (dBm) | Receiver Sensitivity (dBm) | Operating Temperature |
|-------------|-----------------|-------------|-------------|------------------|-------------|----------------------|---------------------|----------------------------|------------------------------|
| S30-2SLC-10 | LC | 2 | Single Mode | 10km (6.2mi) | 1310nm | 18 | -9.5 ~ -3 | -20 | 0 to + 50C (32 to 122F) |
| S35-2SLC-10 | LC | 2 | Single Mode | 10km (6.2mi) | 1310nm | 18 | -9.5 ~ -3 | -20 | -40 to +75C (-40 to 167F) |
| S30-2SLC-30 | LC | 2 | Single Mode | 30km (18.6mi) | 1310nm | 18 | -2 ~ +3 | -23 | 0 to + 50C (32 to 122F) |
| S35-2SLC-30 | LC | 2 | Single Mode | 30km (18.6mi) | 1310nm | 18 | -2 ~ +3 | -23 | -40 to +75C (-40 to 167F) |

Gigabit Ethernet 1000 Base ZX

| Part # | Fiber Connector | # of Fibers | Fiber Type | Max Distance | Wave Length | Optical Budget (dBm) | Optical Power (dBm) | Receiver Sensitivity (dBm) | Operating Temperature |
|-------------|-----------------|-------------|-------------|--------------|-------------|----------------------|---------------------|----------------------------|---------------------------|
| S30-2SLC-70 | LC | 2 | Single Mode | 70km (43mi) | 1550nm | 19* | -15 ~ -8 | -34 | 0 to + 50C (32 to 122F) |
| S35-2SLC-70 | LC | 2 | Single Mode | 70km (43mi) | 1550nm | 19* | -15 ~ -8 | -34 | -40 to +75C (-40 to 167F) |

* Note: High Power Optic. There must be a minimum of 5dB of optical loss to the fiber for proper operation.

Gigabit Ethernet 1000 Base BX

| Part # | Fiber Connector | # of Fibers | Fiber Type | Max Distance | Wave Length TX RX | Optical Budget (dBm) | Optical Power (dBm) | Receiver Sensitivity (dBm) | Operating Temperature |
|---------------|-----------------|-------------|-------------|--------------|-------------------|----------------------|---------------------|----------------------------|-------------------------|
| S30-1SLC/A-10 | LC | 1 | Single Mode | 10km (6.2mi) | 1310/1490nm | 11 | -9 ~ -3 | -20 | 0 to + 50C (32 to 122F) |
| S30-1SLC/B-10 | LC | 1 | Single Mode | 10km (6.2mi) | 1490/1310nm | 11 | -9 ~ -3 | -20 | 0 to + 50C (32 to 122F) |
| S30-1SLC/A-20 | LC | 1 | Single Mode | 20km (12mi) | 1310/1490nm | 15 | -8 ~ -2 | -23 | 0 to + 50C (32 to 122F) |
| S30-1SLC/B-20 | LC | 1 | Single Mode | 20km (12mi) | 1490/1310nm | 15 | -8 ~ -2 | -23 | 0 to + 50C (32 to 122F) |

Gigabit Ethernet 1000 Base BX

| Part # | Fiber Connector | # of Fibers | Fiber Type | Max Distance | Wave Length TX RX | Optical Budget (dBm) | Optical Power (dBm) | Receiver Sensitivity (dBm) | Operating Temperature |
|---------------|-----------------|-------------|-------------|--------------|-------------------|----------------------|---------------------|----------------------------|-------------------------|
| S30-1SLC/A-60 | LC | 1 | Single Mode | 60km (37mi) | 1310/1490nm | 24 | 0 ~ +5 | -24 | 0 to + 50C (32 to 122F) |
| S30-1SLC/B-60 | LC | 1 | Single Mode | 60km (37mi) | 1490/1310nm | 24 | 0 ~ +5 | -24 | 0 to + 50C (32 to 122F) |

* Note: High Power Optic. There must be a minimum of 5dB of optical loss to the fiber for proper operation.

10GBase-SR SFP+

| Part # | Fiber Connector | # of Fibers | Fiber Type OM3 | Max Distance OM3 | Wave Length | Optical Budget (dBm) | Optical Power (dBm) | Receiver Sensitivity (dBm) | Operating Temperature |
|----------|-----------------|-------------|----------------|------------------|-------------|----------------------|---------------------|----------------------------|----------------------------|
| S40-2MLC | LC | 2 | Multimode | 300m* | 850nm | 10 | -7.3 ~ -1 | -11 | 0 to + 50C (32 to 122F) |

*OM3 Multimode fiber @ 2000/500MHz-km Optimized got 850nm VCSELs maximum distance of 300m.

10GBase-LR SFP+

| Part # | Fiber Connector | # of Fibers | Fiber Type | Max Distance | Wave Length | Optical Budget (dBm) | Optical Power (dBm) | Receiver Sensitivity (dBm) | Operating Temperature |
|-------------|-----------------|-------------|-------------|-----------------|-------------|----------------------|---------------------|----------------------------|----------------------------|
| S40-2SLC-10 | LC | 2 | Single Mode | 10km (6.2mi) | 1310nm | 15 | -8.0 ~ -1 | -12 | 0 to + 50C (32 to 122F) |

* Note: High Power Optic. There must be a minimum of 5dB of optical loss to the fiber for proper operation.

Appendix A

Fiber Optical Cable Connection Parameters

The wiring details are as below:

- Fiber Optical patch Cables:

| Standard | Fiber Type | Cable Specification |
|-------------------------|-------------------|----------------------------|
| 1000Base-SX (850nm) | Multi-mode | 50/125µm or 62.5/125µm |
| 1000Base-LX (1310nm) | Single mode | 9/125µm |
| 1000Base-LX (1550nm) | Single mode | 9/125µm |
| 100Base-FX (1310nm) | Multi-mode | 50/125µm or 62.5/125µm |
| | Single mode | 9/125µm |
| 10 Gig Base SR (850nm) | Multi-mode | 50/125um (OM3) |
| 10 Gig Base LR (1310nm) | Single-mode | 9/125um |