

# x900 Series Switch and SwitchBlade® x908

## Expansion Module

## Installation Guide



XEM-1XP  
XEM-12S  
XEM-12T  
XEM-STK

# **x900 Series Switch and SwitchBlade® x908 Expansion Module Installation Guide**

XEM-IXP

XEM-I2S

XEM-I2T

XEM-STK

Download the complete document set from  
[www.alliedtelesis.com/support/software](http://www.alliedtelesis.com/support/software)

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Document Number 613-000032 REV F

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## About this Guide

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Optional expansion modules (XEMs) enable economical combinations of port type, speed and density in a single switch. Front bays in the switch allow quick and easy installation.

This Installation Guide describes how to install the following XEMs:

- XEM-IXP, a single XFP port for high-speed fibre connections
- XEM-12S, 12 SFP ports for copper and fibre links
- XEM-12T, 12 x 10/100/1000Mbps RJ-45 ports for maximum port density
- XEM-STK, dual stacking ports for scalability and high availability

You can download the complete document set for x900 Series switches and SwitchBlade® x908 from [www.alliedtelesis.com/support/software](http://www.alliedtelesis.com/support/software). For more information about the document set and other resources, see “[Obtaining Documentation and Resources](#)” on page 15.

## Compatible Switches and Operating Systems

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XEMs can be installed in the following switches:

- x900-12XT/S
- x900-24XT
- x900-24XT-N
- x900-24XS
- SwitchBlade x908

The AlliedWare Plus™ Operating System supports all XEMs. The AlliedWare® Operating System supports all XEMs except the XEM-STK.

## Package Contents

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The following items are included with each XEM. Contact your authorised Allied Telesis distributor or reseller if any items are damaged or missing.

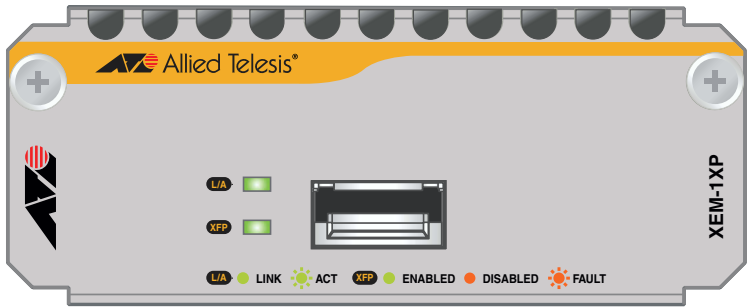
- this Installation Guide
- one warranty card

# XEM-1XP 10Gigabit XFP Port

The XEM-1XP single-port 10Gigabit Ethernet expansion module features:

- one XFP port
- LEDs showing port status
- 32MBytes of DDR SDRAM for packet buffering
- support for hot-swappable XFP transceiver modules

Front view XEM-1XP



The following LEDs report operations and faults on the XEM-1XP.

LED	State	Description
L/A (Link Activity)	Green	An XFP transceiver is installed and a 10Gb link has been established.
	Green flashing	An XFP transceiver is installed and link activity is occurring.
	Off	A link has not been established.
XFP	Green	An XFP transceiver is installed and enabled.
	Amber	An XFP transceiver is installed but not operating or is disabled.
	Amber flashing	The installed XFP transceiver has a fault.
	Off	An XFP transceiver is not installed.

The following XFP transceiver modules are approved for use with the XEM-I XP.

<b>Product No.</b>	<b>Media Type</b>	<b>Description</b>
AT-XPSR	10GBASE-SR	850nm short-haul transmission, 300m with MM fibre.
AT-XPLR	10GBASE-LR	1310nm medium-haul transmission, 10km with SM fibre.
AT-XPER40	10GBASE-ER	1550nm long-haul transmission, 40km with SM fibre.

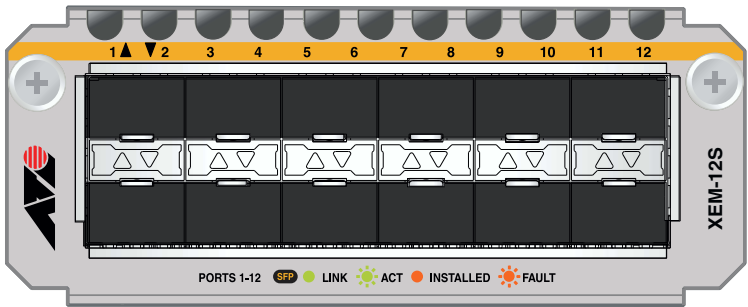
For the latest list of approved XFP transceiver modules, contact your authorised Allied Telesis distributor or reseller.

# XEM-12S 100/1000BASE-X SFP Ports

The XEM-12S 12-port 100/1000BASE-X expansion module features:

- two rows of 6 SFP ports
- LEDs showing port status
- 32MBytes of DDR SDRAM for packet buffering
- support for hot-swappable SFP transceiver modules
- NEBS compliant

Front view XEM-12S



The following LEDs report operations and faults on the XEM-12S.

LED	State	Description
SFP	Green	An SFP transceiver is installed and a link has been established.
	Green flashing	An SFP transceiver is installed and link activity is occurring.
	Amber	An SFP transceiver is installed but a link has not been established.
	Amber flashing	An SFP is installed but there is a fault.
	Off	An SFP is not installed.



The following SFP transceiver modules are approved for use with the XEM-12S.

Product No.	Media Type	Description
AT-SPTX	10/100/1000BASE-T	Copper, 100m at 1000Mbps, RJ-45 connector.
AT-SPFXBD-LC-13 <sup>1</sup>	100BASE-BX	Bi-Di (1550nm Tx, 1310nm Rx) SM fibre up to 15km.
AT-SPFXBD-LC-15 <sup>1</sup>	100BASE-BX	Bi-Di (1310nm Tx, 1550nm Rx) SM fibre up to 15km.
AT-SPFX/2	100BASE-FX	1310nm MM fibre up to 2km.
AT-SPFX/15	100BASE-FX	1310nm SM fibre up to 15km.
AT-SPFX/40	100BASE-FX	1310nm SM fibre up to 40km.
AT-SPSX	1000BASE-SX	850nm, 2 to 550 m with 50/125µm MM fibre, 2m to 275m with 62.5/125µm MM fibre, LC connector.
AT-SPLX10	1000BASE-LX	1310 nm, 2 m to 10km with 9µm SM fibre, 2 m to 550 m with 50µm MM fibre, 2m to 550m with 62.5µm MM fibre, LC connector.
AT-SPLX40	1000BASE-LX	1310nm SM fibre up to 40km, LC connector.
AT-SPLX40/1550	1000BASE-LX	550nm SM fibre up to 40km, LC connector.
AT-SPZX80	1000BASE-ZX	1550nm, 80km with 9µm SM fibre, LC connector.
AT-SPZX80/xxxx <sup>1</sup> where xxxx is: 1610, 1590, 1570, 1550, 1530, 1510, 1490, 1470, or 1310	1000BASE-ZX CWDM	1610nm to 1470nm (20nm intervals) and 1310nm, 80km with 9µm SM fibre, LC connector.

1. Both ends of an individual fibre must use SFPs of a compatible wavelength.

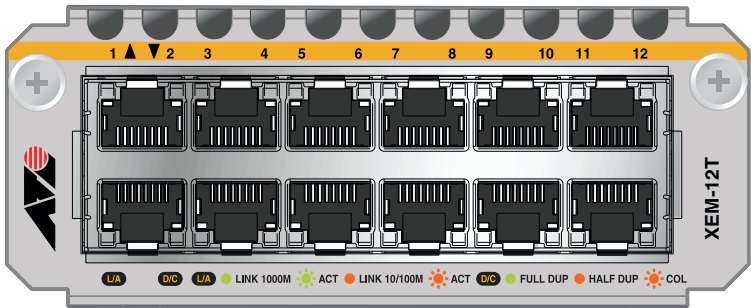
For the latest list of approved SFP transceiver modules, contact your authorised Allied Telesis distributor or reseller.

# XEM-12T 10/100/1000BASE-T RJ-45 Ports

The XEM-12T 12-port RJ-45 expansion module features:

- two rows of 6 RJ-45 ports
- gigabit ports that support speeds of 10/100/1000Mbps
- LEDs showing port status
- 32MBytes of DDR SDRAM for packet buffering
- cable fault detection and distance-to-fault diagnostics on switches running the AlliedWare operating system (see the *Test Facility* chapter in the Software Reference for the switch)

Front view XEM-12T



The following LEDs report operations and faults on the XEM-12T.

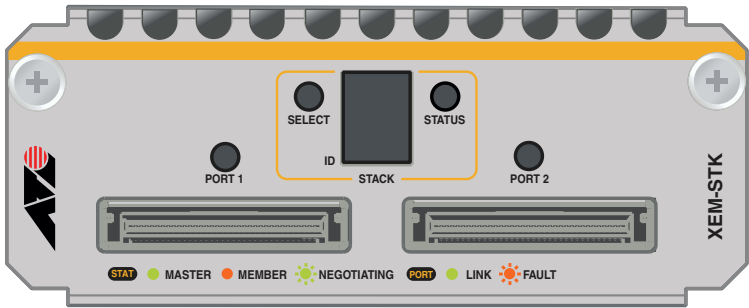
LED	State	Description
L/A (Link Activity)	Green	A 1000Mbps link has been established.
	Green flashing	1000Mbps activity is occurring.
	Amber	A 10/100Mbps link has been established.
	Amber flashing	10/100Mbps activity is occurring.
	Off	A link has not been established.
D/C (Duplex/ Collision)	Green	The port is operating in full duplex mode.
	Amber	The port is operating in half duplex mode.
	Amber flashing	Collisions are occurring.

# XEM-STK Stacking Ports

The XEM-STK dual-port stacking expansion module features:

- two 15Gbps full duplex stacking connections
- LEDs showing port and stack member status
- seven-segment stack ID display
- recessed Select button to reset stack ID to 1

Front view XEM-STK



The following LEDs report operations and faults on the XEM-STK.

LED	State	Description
Port 1	Green	A link has been established.
Port 2	Amber slow flashing	The link has a transmission fault.
Status	Green	The switch is the stack master.
	Amber	The switch is a stack member.
	Green flashing	The switch is in the process of learning the stack topology and selecting the stack master.
	Off	The switch is not a stack member.
ID	1 to 8	Numeric ID of the stack member.
	Off	The switch is not a stack member.

A choice of 0.5m or 2.0m stacking cables can be ordered separately. For the latest list of approved cables, contact your authorised Allied Telesis distributor or reseller.

The Select button resets the stack ID of this switch to 1, and causes the other members of the stack to be renumbered. Use this to put the stack into a pre-defined configuration for ease of installation.

**Note** You should install only one XEM-STK expansion module in a switch. If you install more than one, only the first expansion module is enabled.

## Installation Procedure

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The installation procedure and XEMs supported by each switch depend on the operating system running on the switch.

### AlliedWare Plus Operating System

Switches running the AlliedWare Plus operating system support all XEMs. All XEMs except the XEM-STK are hot-swappable and can be installed following either of these procedures:

- “Installing or replacing XEMs without hot swap support” on page 13
- “Installing or replacing XEMs with hot swap support” on page 14

The XEM-STK is hot-removable only. To remove the XEM-STK, disconnect the stacking cables, loosen the thumbscrews on the faceplate and remove the XEM. To install or replace the XEM-STK, follow the procedure “Installing or replacing XEMs without hot swap support” on page 13.

### AlliedWare Operating System

Switches running the AlliedWare operating system support all XEMs except the XEM-STK. XEMs are not hot-swappable under the AlliedWare operating system and must be installed following the procedure “Installing or replacing XEMs without hot swap support” on page 13.

### Before you begin

- Unpack the XEM.

In an anti-static environment, remove the XEM from its packing material. Be sure to observe ESD precautions.



**Caution** Failure to observe proper anti-static procedures may damage the unit. If you are unsure about correct procedures, contact your authorised Allied Telesis distributor or reseller.

- Verify the package contents if you have not already done so.

See “Package Contents” on page 4. If any items are damaged or missing, contact your authorised Allied Telesis distributor or reseller.

- Read the safety information for the switch.

Safety information is available in the Installation and Safety Guide that is shipped with each switch. You can also download this document from [www.alliedtelesis.com/support/software](http://www.alliedtelesis.com/support/software).

- Gather necessary tools.

You may need a Phillips #2 screwdriver to adjust the thumbscrews on the XEM.

## Installing or replacing XEMs without hot swap support

Follow this procedure to:

- install a XEM, except the XEM-STK, in a switch running the AlliedWare operating system
- install a XEM-STK in a switch running the AlliedWare Plus operating system
- install a XEM without hot swapping in a switch running the AlliedWare Plus operating system

To install or replace a XEM:

1. If you are replacing a XEM, first save the switch configuration.

On switches running the AlliedWare operating system, use the commands:

```
create config=<filename>.cfg
set config=<filename>.cfg
```

On switches running the AlliedWare Plus operating system, use the commands:

```
awplus>enable
awplus#copy running-config startup-config
```

2. If connected, disconnect the switch from its redundant power supply.
3. Disconnect the switch from its AC or DC power supply.
4. If you are replacing an existing XEM, disconnect any data cables.
5. Loosen the thumbscrews on the faceplate or existing XEM, and remove it.

Keep the faceplate for future use. If you remove a XEM, cover the bay with the faceplate to prevent dust and debris from entering it and to maintain proper airflow.

6. Carefully slide the new XEM into the empty bay until you feel it engage the rear plug.
7. Secure the XEM by tightening the thumbscrews.
8. Apply power to the switch by re-attaching the power cord.
9. If you disconnected a redundant power supply, reconnect it.
10. Restart the switch and verify the installation.

If you have a terminal connected to the asyn0 port, any error message is displayed during startup self-tests.

Confirm there is no error message about installation in the log file and that the switch has recognised the XEM.

On switches running the AlliedWare operating system, use the commands:

```
show log
show system
```

On switches running the AlliedWare Plus operating system, use the commands:

```
awplus>show system
awplus>enable
awplus#show log
```

### Installing or replacing XEMs with hot swap support

Follow this procedure to hot swap a XEM in a switch running the AlliedWare Plus operating system. Note that the XEM-STK cannot be hot swapped.

1. If you are replacing a XEM, first save the switch configuration, by using the commands:

```
awplus>enable
awplus#copy running-config startup-config
```

2. If you are replacing an existing XEM, disconnect any data cables.
3. Loosen the thumbscrews on the faceplate or existing XEM, and remove it.  
Keep the faceplate for future use. If you remove a XEM, cover the bay with the faceplate to prevent dust and debris from entering it and to maintain proper airflow.
4. Carefully slide the new XEM into the empty bay until you feel it engage the rear plug.
5. Secure the XEM by tightening the thumbscrews.
6. Verify the installation.

If you have a terminal connected to the asyn0 port, any error message is displayed during installation.

Confirm there is no error message about installation in the log file and that the switch has recognised the XEM, by using the commands:

```
awplus>show system
awplus>enable
awplus#show log
```

## Obtaining Documentation and Resources

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The complete document set for x900 Series switches and SwitchBlade x908 includes:

- this Installation Guide
- the *x900 Series Switch and SwitchBlade® x908 Installation and Safety Guide*, which describes how to install the switch and includes important safety and statutory information
- the *x900 Series Switch and SwitchBlade® x908 Hardware Reference*, which contains detailed information on the switch and its hardware features
- the *Removable Power Supply and Fan Installation Guide*, which describes how to install power supply units and fan-only modules in the switch
- the *x900 Series Switch AlliedWare® Operating System Software Reference*, which contains detailed information on configuring switches running the AlliedWare operating system
- the *AlliedWare Plus™ Operating System Software Reference*, which contains detailed information on configuring switches running the AlliedWare Plus operating system

You can download these documents and updates from [www.alliedtelesis.com/support/software](http://www.alliedtelesis.com/support/software).

You need Adobe® Acrobat® Reader® software to view, search, or print these documents. You can download it from [www.adobe.com](http://www.adobe.com).

### Other resources

How-To Notes describe a range of standard Allied Telesis solutions, and include technical tips and guides to configuring specific hardware and software features. You can download the latest How-To Notes from [www.alliedtelesis.com/resources/literature/howto.aspx](http://www.alliedtelesis.com/resources/literature/howto.aspx).

MIBs supported by Allied Telesis products can be downloaded from [www.alliedtelesis.com/support/software](http://www.alliedtelesis.com/support/software).

Microsoft® Visio® stencils for Allied Telesis products can be downloaded from [www.alliedtelesis.com/resources/images/visio.aspx](http://www.alliedtelesis.com/resources/images/visio.aspx).

AT-TFTP Server for Windows is a TFTP (*Trivial File Transfer Protocol*) server for transferring software versions, configuration scripts and other files between a PC and the switch. You download AT-TFTP Server from [www.alliedtelesis.com/support/software](http://www.alliedtelesis.com/support/software).



## **CD-ROM**

Some products ship with a Documentation and Tools CD-ROM, which includes:

- the complete document set
- Adobe® Acrobat® Reader®
- AT-TFTP Server
- Supported MIBs
- How-To Notes, white papers, Microsoft® Visio® stencils and other resources
- Tryouts of networking software

## **Contacting us**

With locations covering all of the established markets in North America, Latin America, Europe, Asia, and the Pacific, Allied Telesis provides localized sales and technical support worldwide. To find the representative nearest you, visit us on the Web at [www.alliedtelesis.com](http://www.alliedtelesis.com).