

Release Notes for the Accelar XLR1102XD and XLR1202XD Gigabit Ethernet Modules

4401 Great America Parkway
Santa Clara, CA 95054

8 Federal Street
Billerica, MA 01821

Part No. 202051-A
June 1998



Bay Networks



* 2 0 2 0 5 1 - A *

Copyright © 1998 Bay Networks, Inc.

All rights reserved. Printed in the USA. June 1998.

The information in this document is subject to change without notice. The statements, configurations, technical data, and recommendations in this document are believed to be accurate and reliable, but are presented without express or implied warranty. Users must take full responsibility for their applications of any products specified in this document. The information in this document is proprietary to Bay Networks, Inc.

Trademarks

Bay Networks is a registered trademark of Bay Networks, Inc.

Accelar and the Bay Networks logo are trademarks of Bay Networks, Inc.

All other trademarks and registered trademarks are the property of their respective owners.

Statement of Conditions

In the interest of improving internal design, operational function, and/or reliability, Bay Networks, Inc. reserves the right to make changes to the products described in this document without notice.

Bay Networks, Inc. does not assume any liability that may occur due to the use or application of the product(s) or circuit layout(s) described herein.

Introduction

The Bay Networks® Accelar™ XLR1102XD and XLR1202XD Long Distance Gigabit Ethernet I/O Modules, for the Accelar 1100/1150 and 1200/1250 chassis, respectively, are designed to provide Gigabit Ethernet connectivity over extended distances. High-performance optical transceivers in these modules enable Gigabit Ethernet link distances of up to 50 kilometers (km) over single-mode fiber. Without the XLR1202XD or XLR1102XD module, Gigabit Ethernet link distances are only guaranteed up to the IEEE specification of 5 km, limiting deployment to a single campus network. The XLR1102XD and XLR1202XD modules extend Gigabit Ethernet links to metropolitan area networks (MANs) and the largest campus local area networks (LANs).

The XLR1102XD and XLR1202XD modules are fully compatible with the Accelar 1000 series architecture, features, user interface, and management software, release 1.1.1 and later.

Related Publications

For more information about the Accelar products, refer to the following documents on the Accelar documentation CD:

- *Installing the Accelar 1000 Series Chassis* (Bay Networks part number 893-01051-B)
- *Using the Accelar 1100/1150 Routing Switch* (Bay Networks part number 893-01050-A)
- *Using the Accelar 1200/1250 Routing Switch* (Bay Networks part number 893-01049-A)
- *Reference for the Accelar Management Software* (Bay Networks part number 893-01052-B)

Refer also to the following release notes:

- *Release Notes for the Accelar 1000 Series Products Software Release 1.1.1* (Bay Networks part number 896-00181-C)
- *Release Notes for the Accelar 1000 Series Gigabit Ethernet Modules* (Bay Networks part number 201539-D)

Distance Considerations

The achievable link distance in fiber optic systems is limited by both attenuation and modal dispersion, and it varies depending on the quality of the fiber and the number of splices and connectors. The XLR1102XD and XLR 1202XD modules use 1550 nanometer (nm) optical transceivers that provide 17 decibels (dB) of optical budget. The optical budget is calculated by taking the difference between the transmitter's minimum launch power and the receiver's minimum receiver sensitivity. Because the optical transceiver in the XLR1102XD and XLR1202XD modules uses a distributed feedback (DFB) laser, modal dispersion is not a limitation; only attenuation must be considered when estimating link distances.

Single-mode fiber typically exhibits from 0.18 dB/km to 0.25 dB/km of loss at 1550 nm. Splices and connectors add between 0.5 dB and 1.0 dB of loss each. You can use these numbers to estimate achievable link distances, but the best way to determine if a specific installation will perform properly is to measure the actual loss at 1550 nm. Fiber cable installers can easily perform this measurement using inexpensive measurement devices.

You should always exercise care when handling fiber optic cables and connectors, particularly when trying to use an XLR1102XD or XLR1202XD module at the maximum distance. Dirty connectors, small scratches on the fiber ends, or small cracks in the fiber introduced by sharp or repeated bending can increase the loss and render a fiber optic cable useless for connecting to an XLR1102XD or XLR1202XD module. Testing a fiber optic cable on a non-XD module or over a short distance does not ensure its integrity for very long distances.

In general, follow these guidelines for long distance fiber optic cable:

- Use high-quality cables and connectors.
- Clean cables and connectors with approved agents.
- Keep the supplied connector covers in place when not in use.
- Exercise care when handling and during installation.



Caution: A minimum drop of 3 dB is required to prevent saturating the receiver. An inexpensive “air gap” type of attenuator would suffice for loopback testing purposes. Although no permanent damage to the receiver would occur if an attenuator is not included for a short time, accurate data recovery cannot be guaranteed if the minimum loss is not met. Place the attenuator on the receive end of the link rather than the transmit end to protect against reflection. AMP Incorporated makes a suitable attenuator (part number 209931-5).

[Table 1](#) describes the standards, connectors, cabling, and distance for the Gigabit Ethernet ports, along with laser transceiver characteristics.

Table 1. XLR1102XD and XLR1202XD Module Characteristics

Parameter	Specification
Standards	Conforms to the following standards: 802.3 CSMA/CD (ISO/IEC 8802-3) 802.3x, Ethernet full duplex
Connectors	SC duplex single-mode fiber optic connector
Cabling	Single-mode fiber optic cable
Distance	Up to 50 km (31 miles) using single-mode fiber cable, depending upon the quality of the fiber
Laser Transmitter Characteristics:	
Wavelength	1550 \pm 10 nm
Maximum spectral width	0.2 nm
Maximum launch power into fiber	0 dBm or 1.0 mW
Minimum launch power into fiber	-5 dBm or 0.3 mW
Distance	50 km
Receiver Characteristics:	
Wavelength	1200 to 1550 nm
Minimum receiver sensitivity	-22 dBm
Maximum input power	-3 dBm



Note: To prevent electromagnetic interference (EMI) from escaping the chassis enclosure, you must use a plastic-only connector to attach to the XLR1102XD or XLR1202XD ports. Cables with plastic-only SC connectors can be obtained from Red Hawk (Milpitas, CA, 408-945-1800, part numbers 19600–19615). Other similar cables from other manufacturers can also be used. Failure to use plastic-only connectors may cause interference with other electrical devices.

XLR1102XD 2-Port I/O Module

The Accelar XLR1102XD module provides two long distance Gigabit Ethernet ports using duplex SC single-mode fiber connectors for use in the Accelar 1100 and Accelar 1150 chassis. The ports operate in full-duplex mode only.

[Figure 1](#) shows the front panel of the XLR1102XD module.

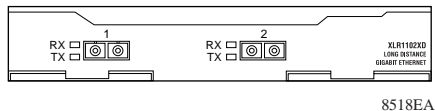


Figure 1. XLR1102XD I/O Module Front Panel

The XLR1102XD module has two multicolor LEDs for each port to provide indications of port activity and fault conditions. [Table 2](#) describes each of the possible LED indications.

Table 2. XLR1102XD Module LED Indications

LED	Color/Status	Meaning
Receive	Amber	The port has no optical signal at all or no link synchronization.
	Off	The port is receiving an optical signal, but it is not enabled (redundant transceiver).
	Steady green	The port has a link and is enabled (active transceiver).
	Flashing green	The port is receiving traffic.
Transmit	Amber	The port has received a remote fault indication from the other end of the cable.
	Off	The port received no remote fault indication, and there is no transmit traffic.
	Flashing green	The port is transmitting traffic.

XLR1202XD 2-Port I/O Module

The Accelar XLR1202XD module provides two long distance Gigabit Ethernet ports using duplex SC single-mode fiber connectors for use in the Accelar 1200 and Accelar 1250 chassis. The ports operate in full-duplex mode only.

[Figure 2](#) shows the front panel of the XLR1202XD module.

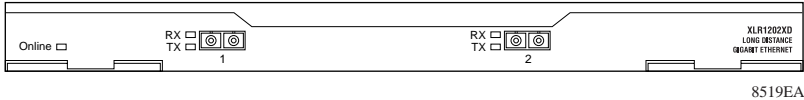


Figure 2. XLR1202XD I/O Module Front Panel

The XLR1202XD module has two multicolor LEDs for each port in the module that provide indications of port activity and fault conditions. [Table 3](#) describes each of the possible LED indications.

Table 3. XLR1202XD Module Port LED Indications

LED	Color/Status	Meaning
Receive	Amber	The port has no optical signal at all or no link synchronization.
	Off	The port is receiving an optical signal, but it is not enabled (redundant transceiver).
	Steady green	The port has a link and is enabled (active transceiver).
	Flashing green	The port is receiving traffic.
Transmit	Amber	The port has received a remote fault indication from the other end of the cable.
	Off	The port received no remote fault indication, and there is no transmit traffic.
	Flashing green	The port is transmitting traffic.

In addition, the Online LED provides an indication of whether the I/O module is operational and functioning correctly. When the I/O module is first inserted into the switch, the Online LED will be off until the module is recognized by the system and passes a power-on self-test. If the I/O module fails the self-test, the light remains off. If the module passes the self-test and goes online, the LED illuminates. The recognition and self-test procedure takes about 3 seconds, after the module is inserted into a powered chassis.