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IXIA Xdensity *XDM10G32S/8S Load* *Modules*

XDM10G32S Load Modules

This section provides details about Xdensity family of load modules—specifications and features. The IxExplorer name of this load module is XDM10G32S.

Xdensity is a 32 port load module with 10GE density per port. Each slot in this load module consists of 32 ports that can scale up to 384 ports in a single XM12 chassis. The high scalability feature of Xdensity load module provides test solutions for high density 10GE converged data center switches and routers.

The key features of Xdensity load module are mentioned as follows:

Key Features

- An optimum solution for testing ultra-high-density 10GE switches
- Economical, energy-efficient solution for the build-out of large 10GE test-beds
- Industry's leading 10GE SFP+ port density:
 - 32-ports of 10GE in a single-slot load module
 - 384-ports of 10GE SFP+ interfaces in a single 10U rackmount chassis
- Up to 4 users can access the load module at one time, with 8-ports per user
- Compatible with Ixia's XM2, XM12, and XG12 chassis
- Support for host protocol emulation to test layer 3 devices: ARP, NDP, IPv4, IPv6, IGMP, MLD, and DHCPv4/v6 (client and server)
- A targeted set of routing and bridging protocols are supported per port that can be configured with any mix of supported protocols required: BFD, BGPv4/v6, CFM, EIGRP, ISISv4/v6, ISIS-DCE, LDP, Link OAM, OSPFv2, OSPFv3, PIM-SM/SSM-v4/v6, RIP, RIPng, STP/RSTP/MSTP, RSVP-TE
- Data center-ready – with data center bridging LLDP/DCBX, FCoE, FIP, FCF, and priority-based flow control (PFC, IEEE802.1Qbb) protocol support
- Built with multicore processor technology

The XDM10G32S load module is shown in the following figure:

Figure 37-1. Xdensity Load Module(XDM10G32S)



XDM10G8S Load Modules

This section provides details about Xdensity family of load modules—specifications and features. The IxExplorer name of this load module is XDM10G8S.

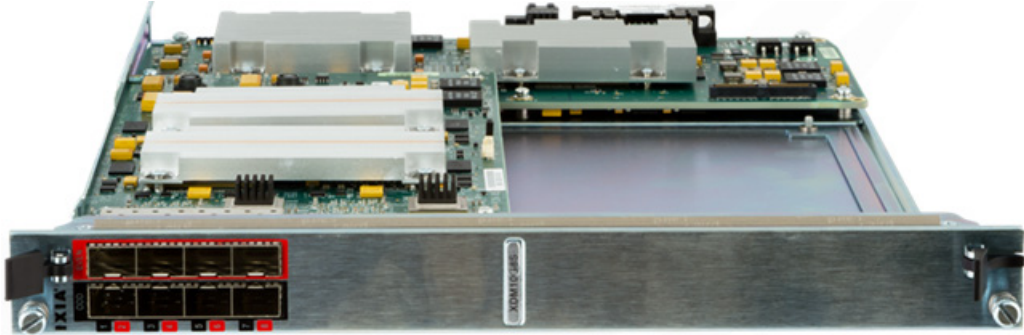
Xdensity is a 8 port load module with 10GE density per port. Each slot in this load module consists of 8 ports that can scale up to 96 ports in a single XM12 or XG12 chassis. The high scalability feature of Xdensity load module provides test solutions for high density 10GE converged data center switches and routers.

The key features of Xdensity load module are mentioned as follows:

- An optimum solution for testing high density network switches that requires higher per port levels of L3 protocol emulation scale and performance. The XDM10G8S offers up to 4 times higher protocol performance per port compared to the XDM10G32S.
- Energy-efficient solution for 10GE test environments
- 8-ports of 10GE in a single-slot load module
- 96-ports of 10GE SFP+ interfaces in a single 10U rackmount chassis:
 - Compatible with Ixia's XM2, XM12, and XG12 chassis
 - Support for host protocol emulation to test layer 3 devices: ARP, NDP, IPv4, IPv6, IGMP, MLD, and DHCPv4/v6 (client and server)
 - A targeted set of routing and bridging protocols are supported per port that can be configured with any mix of supported protocols required: BFD, BGPv4/v6, CFM, EIGRP, ISISv4/v6, ISIS-DCE, LDP, Link OAM, OSPFv2, OSPFv3, PIM-SM/SSM-v4/v6, RIP, RIPng, STP/RSTP/MSTP, RSVP-TE
 - Data center-ready – with data center bridging LLDP/DCBX, FCoE, FIP, FCF, and priority-based flow control (PFC, IEEE802.1Qbb) protocol support
 - Built with multicore processor technology
- Compatible with Ixia's XM2 and XM12 chassis
- Compatible with Ixia's XG12 chassis

The XDM10G8S load module is shown in the following figure:

Figure 37-2. Xdensity Load Module(XDM10G8S)



Part Numbers

The part numbers are shown in [Table 37-1](#).

Table 37-1. Part Numbers for Xdensity Load Module

Model Number	Part Number	Description
XDM10G32S	944-1080	Xdensity, XDM10G32S, Ultra-high density, 10-Gigabit Ethernet load module with 32-ports of SFP+ interfaces with L2-3 data plane and limited routing protocol emulation support; for XG12 (940-0005) Rackmount chassis, XM12-02 (941-0009) High Performance chassis and XM2-02 (941-0003) portable chassis; REQUIRES one or more SFP+ transceiver options: 10GBASE-SR/SW (948-0013), or 10GBASE-LR/LW (948-0014); NOTE: If XM12-01 (941-0002) chassis is used with this load module, the FRU-OPTIXIAXM12-01 (943-0005) power supply upgrade kit must be installed.
XDM10G8S	944-1098	Xdensity, XDM10G8S, 10-Gigabit Ethernet load module with 8-ports of SFP+ interfaces with L2-3 routing protocol emulation and data plane support; for XG12 (940-0005) Rackmount chassis, XM12-02 (941-0009) High Performance chassis and XM2-02 (941-0003) portable chassis; REQUIRES one or more SFP+ transceiver options: 10GBASE-SR/SW (948-0013), or 10GBASE-LR/LW (948-0014);); NOTE: If XM12-01 (941-0002) chassis is used with this load module, the FRU-OPTIXIAXM12-01 (943-0005) power supply upgrade kit must be installed.

Specifications

The load module specifications are contained in [Table 37-2](#).

Table 37-2. Xdensity Load Module Specifications

Feature	Xdensity 32 port	Xdensity 8 port
Load Modules	XDM10G32S	XDM10G8S
Number of ports per module	32	8
Number of chassis slots per module	1	1
Maximum ports per chassis	XM12 High Performance(4000W): 384ports 10GESFP+ XM2 Desktop: 64-ports 10GESFP+ XG12: 384 ports	XM12 High Performance(4000W): 384ports 10GESFP+ XM2 Desktop: 64-ports 10GESFP+ XG12: 384 ports
SFP+ transceiver support	<ul style="list-style-type: none"> • 10GBASE-SR/SW (multimode fiber) • 10GBASE-LR/LW (single mode fiber) • 10GBASE-CR (passive, copper twinaxial) 	
Multi-core processor technology	Yes	Yes
Frame Size	Minimum Frame Size at Line Rate: 64 Minimum Frame Size - may not be at Line Rate: 64 Maximum Frame Size: P0: 9216B others 2500B	Minimum Frame Size at Line Rate: 64 Minimum Frame Size - may not be at Line Rate: 64 Maximum Frame Size: P0: 9216B others 2500B
Interface protocols	IEEE8002.3ae10GE LAN	IEEE8002.3ae10GE LAN
Host protocol emulationsupport	ARP, NDP, IPv4, IPv6, IGMP, MLD and DHCPv4/v6 (Client+Server)	ARP, NDP, IPv4, IPv6, IGMP, MLD and DHCPv4/v6 (Client+Server)
Routing protocol emulation support	BFD, BGPv4/v6, CFM, EIGRP, ISISv4/v6, ISIS-DCE, LDP, Link OAM, OSPFv2, OSPFv3, PIM-SM/SSM-v4/v6, RIP, RIPng, STP/RSTP/MSTP, RSVP-TE	BFD, BGPv4/v6, CFM, EIGRP, ISISv4/v6, ISIS-DCE, LDP, Link OAM, OSPFv2, OSPFv3, PIM-SM/SSM-v4/v6, RIP, RIPng, STP/RSTP/MSTP, RSVP-TE
Performance benchmark tests	RFC 2544, RFC 2889, RFC 3819	RFC 2544, RFC 2889, RFC 3819
Number of transmit flows per port (sequential values)	Billions	Billions
Number of transmit flows per port (non-sequential values)	Millions	Millions

Feature	Xdensity 32 port	Xdensity 8 port
User-Defined Fields (UDF)	Counter, Value List, and Nested Counter UDFs	Counter, Value List, and Nested Counter UDFs
Transmit engine	Wire-speed packet generation with timestamps, sequence numbers, data integrity signature, and packet group signatures	Wire-speed packet generation with timestamps, sequence numbers, data integrity signature, and packet group signatures
User defined field features	Fixed, increment or decrement by userdefined step, value list, and nested UDF	Fixed, increment or decrement by userdefined step, value list, and nested UDF
Data field pattern per stream	Random, increment (word/byte), decrement (word/byte)	Random, increment (word/byte), decrement (word/byte)
Frame length controls	Fixed, uniform random, auto, increment by user-defined step, dynamic frame rate change, and frame size change on the fly	Fixed, uniform random, auto, increment by user-defined step, dynamic frame rate change, and frame size change on the fly
Error generation	CRC good, bad	CRC good, bad
IPv4, UDP, TCP, ICMP, ICMPv6, IGMP checksum	Hardware checksum generation and verification	Hardware checksum generation and verification
Receive engine	Wire-speed packet filtering, data integrity, real-time latency, and sequence checking for each packet group	Wire-speed packet filtering, data integrity, real-time latency, and sequence checking for each packet group
Trackable receive flows	8K per port	8K per port
Filters	48-bit source/destination address, 2x128-bit user-definable pattern and offset, frame length range, CRC error, data integrity error, sequence checking error, IP/TCP/UDP checksum error	48-bit source/destination address, 2x128-bit user-definable pattern and offset, frame length range, CRC error, data integrity error, sequence checking error, IP/TCP/UDP checksum error
Statistics and rates (counter size: 64 bits)	Link state, line speed, frames sent, valid frames received, bytes sent/received, fragments, undersize, oversize, CRC errors, VLAN tagged frames, 6 userdefined stats (UDS), data integrity frames, data integrity errors, sequence checking frames, and sequence checking errors	Link state, line speed, frames sent, valid frames received, bytes sent/received, fragments, undersize, oversize, CRC errors, VLAN tagged frames, 6 userdefined stats (UDS), data integrity frames, data integrity errors, sequence checking frames, and sequence checking errors

**IXIA Xdensity XDM10G32S/8S Load Modules
Specifications**

Feature	Xdensity 32 port	Xdensity 8 port
Intrinsic latency adjustment	Ability to remove inherent latency from any MSA-compliant 10GE SFP+ transceivers without factory support	Ability to remove inherent latency from any MSA-compliant 10GE SFP+ transceivers without factory support
Transmit line clock adjustment	Ability to adjust the parts per million (ppm) line frequency over a range of +/-100 ppm	Ability to adjust the parts per million (ppm) line frequency over a range of +/-100 ppm
Operating temperature range	41°F to 104°F (5°C to 40°C), ambient air temperature	41°F to 104°F (5°C to 40°C), ambient air temperature
Load module dimensions	15.95" (L) x 12.00" (W) x 1.28" (H) 405mm (L) x 305mm (W) x 33mm (H)	15.95" (L) x 12.00" (W) x 1.28" (H) 405mm (L) x 305mm (W) x 33mm (H)
Load module weights	Module only: 7.1 lbs. (3.2 kg) Shipping weight: 9.4 lbs. (4.3 kg)	Module only: 7.1 lbs. (3.2 kg) Shipping weight: 9.4 lbs. (4.3 kg)
Tranceiver Type	SFP+	SFP+
Direct Attach Copper	No	Yes
LED	No	No
ppm Adjust range	+/-100ppm	+/-100ppm
ppm Adjust port/card	Card	Card
Trigger out	No	No
External Clock In(Frequence)	No	No
External Clock Out	No	No
Ambient Operating Temperature Range (C)	5-40	5-40
Timestamp - Resolution	20ns	20ns
Timestamp - High Resolution	No	No
Timestamp - End of Frame Instrumentation	No	No
Timestamp - Floating Intrumentation	No	No
IEEE802.3x Flow control	No	No
WAN	No	No
Streams per port	16	16
Number of streams in Advanced Scheduler Mode (Data Center Mode)	16	16

Feature	Xdensity 32 port	Xdensity 8 port
Transceiver Intrinsic Latency Calibration	No	No
Intrinsic Latency	Yes	Yes
Data Integrity	Yes	Yes
Auto Instrumentation	Yes	Yes
Preamble - Changeable Content	No	No
Preamble - Byte Count Mode	No	No
Preamble - SFD Detect Mode	Yes	Yes
Preamble - Cisco CDL Mode	No	No

Xdensity Four User Support

As many as Four users can operate on a single Xdensity load module. A user can own from one to four port resource groups per load module. 32 ports of Xdensity is divided into four resource groups and each resource group consists of 8 ports defined as follows:

- Resource group 1: Ports 1-8 (Port 1 is resource group Master)
- Resource group 2: Ports 9-16 (Port 9 is resource group Master)
- Resource group 3: Ports 17-24 (Port 17 is resource group Master)
- Resource group 4: Ports 25-32 (Port 25 is resource group Master)

A user can own non-consecutive resource group (i.e. resource group 1 and resource group 4). Port Cluster specifications are as follows:

- A Port Cluster may be owned by exactly one user
- Taking ownership of any un-owned port within the port cluster will automatically force ownership of the entire Port Cluster. Ownership of some (but not all) ports within a Port Cluster is not a legal condition.
- Releasing ownership of any owned port within a Port Cluster will automatically force release of ownership of all ports within that Port Cluster.
- Reboot of CPU must take place through the Resource Group Master. If user wish to reboot for example port two entire resource group that is port one to port eight gets re-booted.
- User can only Telnet to a Resource Group Master
- Frequency adjustment (PPM Adjust) functionality is available across the entire Xdensity load module. If there is one owner across an entire Xdensity load module then the user will be allowed to change PPM value for the card. If more than one user owns Port Clusters across an Xdensity load module, then PPM cannot be changed by anyone.