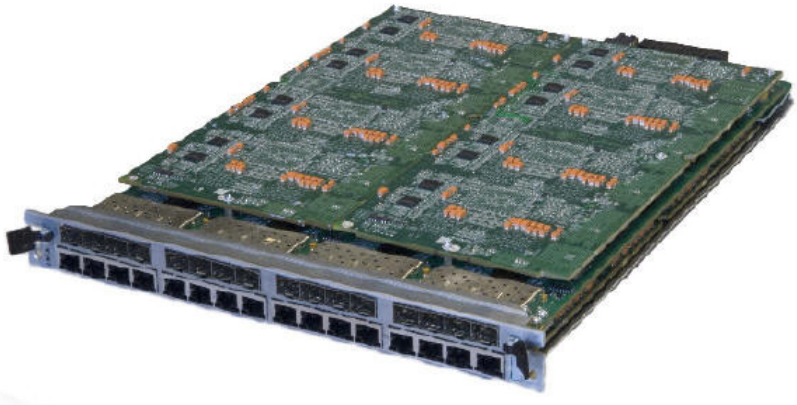
21 IXIA 10/100/1000 Load Modules

This chapter provides details about Ixia 10/100/1000 family of load modules—the specifications and features.

The 10/100/1000 family of load modules implements Ethernet interfaces that run at 10 Mbps, 100 Mbps, or Gigabit (1000 Mbps) speeds. Different numbers of ports and interfaces are available for the different board types. The specifications for these load modules are listed in *Table 21-2* on page 21-7. A representative selection of these load modules are pictured on the pages that follow.

A member of the 10/100/1000 family used on the Optixia XM12 and XM2 chassis, the LSM1000XMV16-01, is shown in *Figure 21-1* on page 21-1.

Figure 21-1. LSM1000XMV16-01 Load Module



Another member of the 10/100/1000 family used on the Optixia XM12 and XM2 chassis, the LSM1000XMS12-01, is shown in *Figure 21-2* on page 21-2.

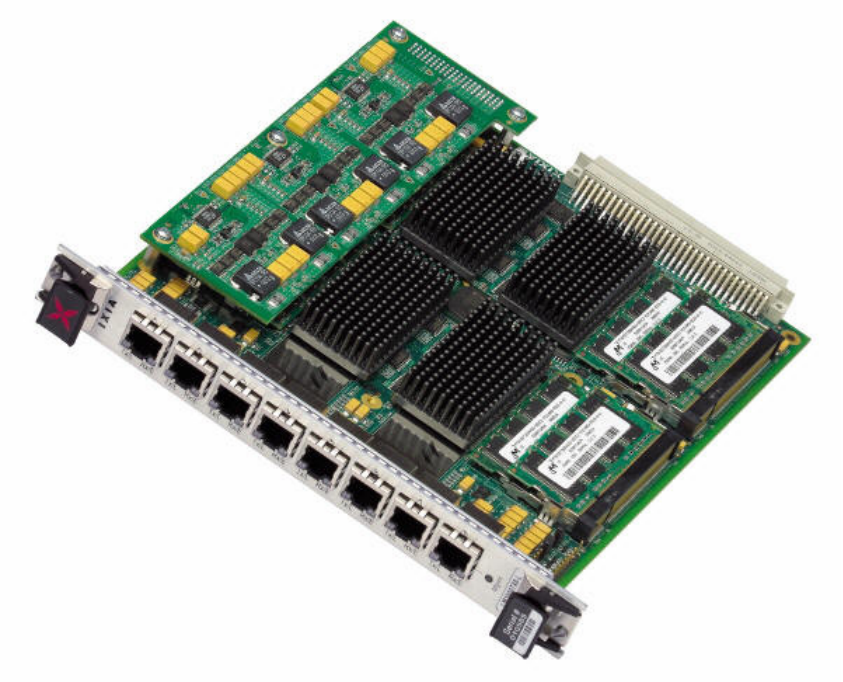
Figure 21-2. LSM1000XMS12-01 Load Module

Another of the modules in the 10/100/1000 family, the LM1000STXS4, is shown in *Figure 21-3*.

Figure 21-3. LM1000STXS4 Load Module

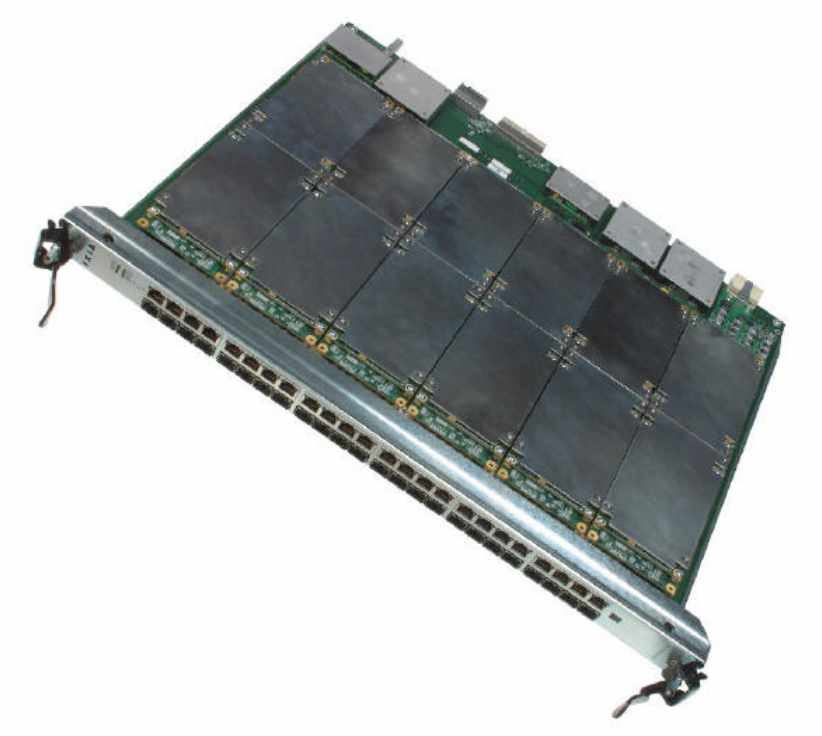
The application load module ALM1000T8 is an 8-port 10/100/1000 Mbps Base T Ethernet copper module which supports the Real World Traffic Suite (includes IxVPN, IxChariot, and IxLoad). This module also supports ARP, PING, and independent Linux SDK applications. The ALM1000T8 load module is shown in Figure 21-4.

Figure 21-4. ALM1000T8 Application Load Module



A member of the 10/100/1000 family used on the Optixia XL10 chassis, the OLM1000STX24, is shown in *Figure 21-5* on page 21-3.

Figure 21-5. OLM1000STX24 Load Module



Part Numbers

The part numbers are shown in *Table 21-1*. Items without a *Price List Names* entry are no longer available.

Table 21-1. Part Numbers for 10/100/1000 Modules

Load Module	Price List Names	Description
LSM1000XMV16-01	LSM1000XMV16-01	16-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps Ethernet load module, 800MHz PowerPC Processor. 1 GB of processor memory per port. Does not include SFP transceivers. **Note**: In order to meet the emissions requirements of FCC part 15 Class A the RJ45 cables attached to this module's Ethernet ports must have ferrite beads (Fair-Rite 0431164281 or equivalent) present at both ends of the cable.
LSM1000XMVR16-01	LSM1000XMVR16-01	16-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps Ethernet load module, reduced performance, 400MHz PowerPC Processor. 256MB of processor memory per port. **Note**: In order to meet the emissions requirements of FCC part 15 Class A the RJ45 cables attached to this module's Ethernet ports must have ferrite beads (Fair-Rite 0431164281 or equivalent) present at both ends of the cable.
LSM1000XMV12-01	LSM1000XMV12-01	12-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps Ethernet load module, 800MHz PowerPC Processor. 1 GB of processor memory per port. Does not include SFP transceivers.
LSM1000XMVR12-01	LSM1000XMVR12-01	12-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps Ethernet load module, reduced performance, 400MHz PowerPC Processor. 256MB of processor memory per port.
LSM1000XMV8-01	LSM1000XMV8-01	8-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps Ethernet load module, 800MHz PowerPC Processor. 1 GB of processor memory per port. Does not include SFP transceivers.
LSM1000XMVR8-01	LSM1000XMVR8-01	8-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps Ethernet load module, reduced performance, 400MHz PowerPC Processor. 256MB of processor memory per port.
LSM1000XMV4-01	LSM1000XMV4-01	4-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps Ethernet load module, 800MHz PowerPC Processor. 1 GB of processor memory per port. Does not include SFP transceivers.
LSM1000XMVR4-01	LSM1000XMVR4-01	4-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps Ethernet load module, reduced performance, 400MHz PowerPC Processor. 256MB of processor memory per port.

Table 21-1. Part Numbers for 10/100/1000 Modules

Load Module	Price List Names	Description
LSM1000XMS12-01	LSM1000XMS12-01	12-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps Ethernet load module. 256MB of processor memory per port. Does not include SFP transceivers. **Note**: In order to meet the emissions requirements of FCC part 15 Class A the RJ45 cables attached to this module's Ethernet ports must have ferrite beads (Fair-Rite 0431164281 or equivalent) present at both ends of the cable.
LSM1000XMSR12-01	LSM1000XMSR12-01	12-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps Ethernet load module, reduced performance. 256MB of processor memory per port. **Note**: In order to meet the emissions requirements of FCC part 15 Class A the RJ45 cables attached to this module's Ethernet ports must have ferrite beads (Fair-Rite 0431164281 or equivalent) present at both ends of the cable.
LSM1000XMSP12-01	LSM1000XMSP12-01	12-port Dual-PHY RJ45 10/100/1000 Mbps Gigabit Ethernet and SFP fiber. A 750FL or 750GL PowerPC Processor with a minimum of 256MB per port of CPU memory and 256KB of layer 2 cache running at 600MHz.
LSM1000XMVDC4-01	LSM1000XMVDC4-01	4-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps. 1GB port CPU memory, full-featured L2-L7 with FCoE enabled; Fiber ports require SFP transceivers, options include SFP-LX, SFP-SX, and SFP-CU.
LSM1000XMVDC4-NG	LSM1000XMVDC4-NG	4-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps. 1GB port CPU memory, full-featured L2-L7 with FCoE enabled; Fiber ports require SFP transceivers, options include SFP-LX, SFP-SX, and SFP-CU.
LSM1000XMVDC8-01	LSM1000XMVDC8-01	8-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps. 1GB port CPU memory, full-featured L2-L7 with FCoE enabled; Fiber ports require SFP transceivers, options include SFP-LX, SFP-SX, and SFP-CU.
LSM1000XMVDC12-01	LSM1000XMVDC12-01	12-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps. 1GB port CPU memory, full-featured L2-L7 with FCoE enabled; Fiber ports require SFP transceivers, options include SFP-LX, SFP-SX, and SFP-CU.
LSM1000XMVDC16-01	LSM1000XMVDC16-01	16-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps. 1GB port CPU memory, full-featured L2-L7 with FCoE enabled; Fiber ports require SFP transceivers, options include SFP-LX, SFP-SX, and SFP-CU.
LSM10/100/1000XMVDC16NG	LSM10/100/1000XMVDC16NG The Part Number of this load module is 944-1072-01.	16-port XMVDC16NG load module is Ixia's Fusion-enabled version of the existing LSM XMVDC16 load module. These two load modules are physically similar. The hardware components and application specifications remain unchanged. The key difference is the IxN2X capability to run the load module in IxN2X mode.
LM1000STXS2	LM1000STXS2	2-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps Ethernet load module. Does not include SFP transceivers.

Table 21-1. Part Numbers for 10/100/1000 Modules

Load Module	Price List Names	Description
LM1000STXS4	LM1000STXS4 LM1000STXS4-256	4-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps Ethernet load module. -256 version has 256MB of processor memory per port. Does not include SFP transceivers. **Note**: In order to meet the emissions requirements of FCC part 15 Class A the RJ45 cables attached to this module's Ethernet ports must have ferrite beads (Fair-Rite 0431164281 or equivalent) present at both ends of the cable.
LM1000STX2	LM1000STX2	2-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps Ethernet Load Module. Supports Layer 2-3 stream generation only. No support for routing, Layer 4-7 applications and the Linux SDK. Does not include any SFP transceivers.
LM1000STX4	LM1000STX4	4-port Dual-PHY (RJ45 and SFP) 10/100/1000 Mbps Ethernet Load Module. Supports Layer2-3 stream generation only. No support for routing, Layer 4-7 applications and the Linux SDK. Does not include any SFP transceivers.
LM1000TX4	LM1000TX4	4-port 10/100/1000 Mbps Base-T Ethernet copper, reduced features. No support for routing protocols, Linux SDK, or L4-L7 applications.
LM1000TXS4	LM1000TXS4 LM1000TXS4-256	4-port 10/100/1000 Mbps Base-T Ethernet copper. -256 version has 256MB of processor memory per port.
LM1000T-5		2-port multilayer 10/100/1000 Mbps Base-T Ethernet.
ALM1000T8	ALM1000T8	8-port 10/100/1000 Mbps Base T Ethernet copper. Supports Real World Traffic Suite (includes IxVPN, IxChariot and IxLoad), and independent Linux-based SDK applications.
CPM1000T8	CPM1000T8	8-port 10/100/1000 Mbps Base T Ethernet copper. Supports Real World Traffic Suite (includes IxVPN, IxChariot and IxLoad), and independent Linux-based SDK applications, with 2GB of memory.
ELM1000ST2	ELM1000ST2	2-port Dual PHY (RJ45 and SFP) 10/100/1000 Mbps Ethernet Load Module featuring hardware-based high-speed IPSec encryption for use with IxVPN.
OLM1000STX24	OLM1000STX24	24-port 10/100/1000Mbps Dual-Phy (Copper/Fiber) for Optixia XL10, reduced features. No support for routing protocols, Linux SDK, or L4-L7 applications.
OLM1000STXS24	OLM1000STXS24	24-port 10/100/1000 Mbps Dual-Phy (Copper/Fiber) for Optixia XL10.
	SFP-LX	1310 nm LX SFP transceiver used with LM1000STX2, LM1000STX4, LM1000STXS2, LM1000STXS4, LM1000STXS4-256, OLM1000STX24, and OLM1000STXS24.

Table 21-1. Part Numbers for 10/100/1000 Modules

Load Module	Price List Names	Description
	SFP-SX	850 nm SX SFP transceiver used with LM1000STX2, LM1000STX4, LM1000STXS2, LM1000STXS4, LM1000STXS4-256, OLM1000STX24, OLM1000STXS24, LSM1000XMV(R)4-01, LSM1000XMV(R)8-01, LSM1000XMV(R)12-01, and LSM1000XMV(R)16-01.
LSM1000XMVDC4-NG		4-port LSM1000XMVDC4NG-01,GIGABIT ETHERNET LOAD MODULE

Specifications

The load module specifications are contained in *Table 21-2* on page 21-7 and Table 21-3 on page 21-8. The limitations of -3, Layer 2/3, and Layer 7 cards are discussed in the *Ixia Load Modules* on page 1-5.

Table 21-2. 10/100/1000 Load Module Specifications—Part 1

	ALM1000T8, CPM1000T8[1]	**ELM1000ST2**	**LM1000T-5**
# ports	8	2	2
-3 Card Available	N	N	N
Layer2/Layer3 Card?	N	N	N
Data Rate	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps[2]
Connector	RJ-45 (copper)	RJ-45 (copper) and SFP (fiber)	RJ-45 (copper)
Interfaces	1000Base-T 100Base-TX 10Base-T	1000Base-X 1000Base-T 100Base-TX 10Base-T	1000Base-T 100Base-TX 10Base-T
Capture buffer size	N/A	N/A	4MB
Captured packet size	N/A	N/A	12-13k
Streams per port	N/A	N/A	255
Advanced scheduler streams per port	N/A	N/A	N/A
Flows per port	N/A	N/A	15872
Preamble size: min-max	N/A	N/A	2-254 bytes (10/100) 6-254 bytes (1000)
Frame size: min-max	N/A	N/A	12-9k bytes (10/100) 40-13k bytes (1000)
Inter-frame gap: min-max	N/A	N/A	10: 6400ns-1717s in 400ns steps 100: 640ns-171s in 40ns steps 1000:64ns-68sec in 16ns steps

Table 21-2. 10/100/1000 Load Module Specifications—Part 1

	ALM1000T8, CPM1000T8[1]	ELM1000ST2	LM1000T-5
Inter-burst gap: min-max	N/A	N/A	10: 6400ns-1717s in 400ns steps 100: 640ns-171s in 40ns steps 1000:64ns-68sec in 16ns steps
Inter-stream gap: min-max	N/A	N/A	10: 6400ns-1717s in 400ns steps 100: 640ns-171s in 40ns steps 1000:64ns-68sec in 16ns steps
Latency	N/A	N/A	20ns resolution

1. Due to power requirements, only one CPM1000T8 module can be used in a 250 or 400T chassis. Other modules can be used with the CPM1000T8 in the same chassis, but only one CPM1000T8 at a time (except MSM family of modules, which has the same limitation).
2. Odd frame sizes can cause diminishment in the actual data rate on this modules.

Table 21-3. 10/100/1000 Load Module Specifications—Part 2

	LM1000STX2 LM1000STX4 OLM1000STX24	LM1000STXS2 LM1000STXS4 LM1000STXS4-256 LSM1000XMS12-01 LSM1000XMSR12-01 LSM1000XMSP12-01 LSM1000XMV4/8/12/16-01 LSM1000XMVR4/8/12/16-01 LSM1000XMVDC4/8/12/16-01 OLM1000STXS24	LM1000TX4	LM1000TXS4 LM1000TXS4-256
# ports	2 (STX2) 4 (STX4) 24 (STX24)	2 (STXS2) 4 (STXS4) 4 (XMV(R)4) 4 (XMVDC4) 8 (XMV(R)8) 8 (XMVDC8) 12 (XMV(R)12) 12 (XMS12/XMSR12) 12 (XMSP12) 12 (XMVDC12) 16 (XMV16/XMVR16) 16 (XMVDC16) 16 (XMVDC16NG) 24 (STXS24)	4	4
-3 Card Available	N	N	N	N
Layer2/Layer3 Card?	Y	Y	Y	Y
Data Rate	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps

Table 21-3. 10/100/1000 Load Module Specifications—Part 2

	LM1000STX2 LM1000STX4 OLM1000STX24	**LM1000STXS2 LM1000STXS4 LM1000STXS4-256 LSM1000XMS12-01 LSM1000XMSR12-01 LSM1000XMSP12-01 LSM1000XMV4/8/12/16-01 LSM1000XMVR4/8/12/16-01 LSM1000XMVDC4/8/12/16-01 OLM1000STXS24**	**LM1000TX4**	**LM1000TXS4 LM1000TXS4-256**
Connector	Dual: RJ-45 (copper) and SFP (fiber)	Dual: RJ-45 (copper) and SFP (fiber) (1000 Mbps only)	RJ-45 (copper)	RJ-45 (copper)
Interfaces	1000Base-X 1000Base-T 100Base-TX 10Base-T	1000Base-X 1000Base-T 100Base-TX 10Base-T LSM1000XMV(R)4/8/12/16-01 and LSM1000XMVDC4/8/12/16-01 also have 100Base-FX	1000Base-T 100Base-TX 10Base-T	1000Base-T 100Base-TX 10Base-T
Ambient Operating Temperature Range		LSM1000XMV16-01 and LSM1000XMVR16-01 41°F to 86°F (5°C to 30°C) **Note**: Using these load modules in the XM2 or XM12 chassis lowers the chassis maximum operating temperature.		
Capture buffer size	8MB	LSM1000XMV4/8/12/16-01 and LSM1000XMVDC4/8/12/16-01 32MB (Packet Group Engine Enabled) 64MB (Packet Group Engine Disabled) Others:8MB	8MB	8MB
Captured packet size	12-13k bytes	12-13k bytes	12-13k bytes	12-13k bytes

Table 21-3. 10/100/1000 Load Module Specifications—Part 2

	LM1000STX2 LM1000STX4 OLM1000STX24	**LM1000STXS2 LM1000STXS4 LM1000STXS4-256 LSM1000XMS12-01 LSM1000XMSR12-01 LSM1000XMSP12-01 LSM1000XMV4/8/12/16-01 LSM1000XMVR4/8/12/16-01 LSM1000XMVDC4/8/12/16-01 OLM1000STXS24**	**LM1000TX4**	**LM1000TXS4 LM1000TXS4-256**
Number of stream in Packet Stream Mode	256	LSM1000XMV4/8/12/16-01 and LSM1000XMVDC4/8/12/16-01 4096 Others: 256	256	256
Number of streams in Advanced Scheduler Mode (Non Data Center Mode)	Fast: 16 Slow: 240	LSM1000XMV4/8/12/16-01 and LSM1000XMVDC4/8/12/16-01 • Fast: 16 • Medium: 240 • Slow: 3584 All others: • Fast: 16 • Slow: 240	Fast: 16 Slow: 240	Fast: 16 Slow: 240
Number of streams in Advanced Scheduler Mode (Data Center Mode)	N	(For LSM1000XMVDC4/8/12/16-01 card) Fast: 16 Medium: 240	N	N
Flows per port	N/A	N/A	N/A	N/A
Preamble size: min-max (bytes)	2-61 (10/100) 8-61 (1000 fiber) 6-61 (1000 copper)	2-61 (10/100) 8-61 (1000 fiber) 6-61 (1000 copper)	2-61 (10/100) 8-61 (1000 fiber) 6-61 (1000 copper)	2-61 (10/100) 8-61 (1000 fiber) 6-61 (1000 copper)
Frame size: min-max	12-13k bytes	12-13k bytes For XMVDC: Minimum Frame Size at Line Rate: 48 Minimum Frame Size - may not be at Line Rate: 12 Maximum Frame Size: 2500B	12-13k bytes	12-13k bytes

Table 21-3. 10/100/1000 Load Module Specifications—Part 2

	LM1000STX2 **LM1000STX4** **OLM1000STX24**	**LM1000STXS2** **LM1000STXS4** **LM1000STXS4-256** **LSM1000XMS12-01** **LSM1000XMSR12-01** **LSM1000XMSP12-01** **LSM1000XMV4/8/12/16-01** **LSM1000XMVR4/8/12/16-01** **LSM1000XMVDC4/8/12/16-01** **OLM1000STXS24**	**LM1000TX4**	**LM1000TXS4** **LM1000TXS4-256**
Inter-frame gap: min-max	**Basic Scheduler:** 10: 6400ns-429s in 800ns steps 100: 640ns-42.9s in 80ns steps 1000: 64ns-4.29s in 16ns steps **Advanced Scheduler:** 10: 6400ns-1717.99s in 800ns steps 100: 640ns-171.799s in 80ns steps 1000: 64ns-68.719 in 16ns steps	**Basic Scheduler:** 10: 6400ns-429s in 800ns steps 100: 640ns-42.9s in 80ns steps 1000: 64ns-4.29s in 16ns steps **Advanced Scheduler:** 10: 6400ns-1717.99s in 800ns steps 100: 640ns-171.799s in 80ns steps 1000: 64ns-68.719 in 16ns steps	**Basic Scheduler:** 10: 6400ns-429s in 800ns steps 100: 640ns-42.9s in 80ns steps 1000: 64ns-4.29s in 16ns steps **Advanced Scheduler:** 10: 6400ns-1717.99s in 800ns steps 100: 640ns-171.799s in 80ns steps 1000: 64ns-68.719 in 16ns steps	**Basic Scheduler:** 10: 6400ns-429s in 800ns steps 100: 640ns-42.9s in 80ns steps 1000: 64ns-4.29s in 16ns steps **Advanced Scheduler:** 10: 6400ns-1717.99s in 800ns steps 100: 640ns-171.799s in 80ns steps 1000: 64ns-68.719 in 16ns steps
Inter-burst gap: min-max	10: 6400ns-429s in 800ns steps 100: 640ns-42.9s in 80ns steps 1000: 64ns-16.7ms in 16ns steps **Advanced Scheduler**: 10: 0.419s 100: 0.0419s 1000: 0.0167s	10: 6400ns-429s in 800ns steps 100: 640ns-42.9s in 80ns steps 1000: 64ns-16.7ms in 16ns steps **Advanced Scheduler**: 10: 0.419s 100: 0.0419s 1000: 0.0167s	10: 6400ns-429s in 800ns steps 100: 640ns-42.9s in 80ns steps 1000: 64ns-16.7ms in 16ns steps **Advanced Scheduler**: 10: 0.419s 100: 0.0419s 1000: 0.0167s	10: 6400ns-429s in 800ns steps 100: 640ns-42.9s in 80ns steps 1000: 64ns-16.7ms in 16ns steps **Advanced Scheduler**: 10: 0.419s 100: 0.0419s 1000: 0.0167s
Inter-stream gap: min-max	10: 6400ns-429s in 800ns steps 100: 640ns-42.9s in 80ns steps 1000: 64ns-4.29s in 16ns steps	10: 6400ns-429s in 800ns steps 100: 640ns-42.9s in 80ns steps 1000: 64ns-4.29s in 16ns steps	10: 6400ns-429s in 800ns steps 100: 640ns-42.9s in 80ns steps 1000: 64ns-4.29s in 16ns steps	10: 6400ns-429s in 800ns steps 100: 640ns-42.9s in 80ns steps 1000: 64ns-4.29s in 16ns steps
Normal stream min frame rate	10: 0.00238fps 100: 0.0238fps 1000: 0.238fps	10: 0.00238fps 100: 0.0238fps 1000: 0.238fps	10: 0.00238fps 100: 0.0238fps 1000: 0.238fps	10: 0.00238fps 100: 0.0238fps 1000: 0.238fps

Table 21-3. 10/100/1000 Load Module Specifications—Part 2

	LM1000STX2 LM1000STX4 OLM1000STX24	**LM1000STXS2 LM1000STXS4 LM1000STXS4-256 LSM1000XMS12-01 LSM1000XMSR12-01 LSM1000XMSP12-01 LSM1000XMV4/8/12/16-01 LSM1000XMVR4/8/12/16-01 LSM1000XMVDC4/8/12/16-01 OLM1000STXS24**	**LM1000TX4**	**LM1000TXS4 LM1000TXS4-256**
Advanced stream min frame rate	10: 0.000582fps 100: 0.00582fps 1000: 0.0146fps	10: 0.000582fps 100: 0.00582fps 1000: 0.0146fps	10: 0.000582fps 100: 0.00582fps 1000: 0.0146fps	10: 0.000582fps 100: 0.00582fps 1000: 0.0146fps
Latency	20ns resolution	20ns resolution	20ns resolution	20ns resolution
Table UDF feature (based on minimum packet size 64K)	96K (full) 32K (reduced)	786K (LSM1000XMV) 96K others (full) 32K others (reduced)	96K	96K
Max Value List Entries	48K	48K	N/A	48K
Max Range List Entries[1]	6K	6K	N/A	6K

1. 192k memory is shared between value list entries (at 4 bytes per entry) and range list entries (at 32 bytes per entry).

ALM1000T8 and CPM1000T8

The ALM100T8 and CPM1000T8 has a feature that is non-conformant with the IEEE 802.3 specification. According to the specification, all 4 pairs of signals must be connected in gigabit copper mode for auto-negotiation to function. On the ALM100T8 and CPM1000T8, if auto-negotiation fails using all 4 pairs, auto-negotiation is attempted using only the two pairs used in 10/100 modes. This allows auto-negotiation to succeed even if gigabit mode is enabled for auto-negotiation and a 10/100 only cable is used.

Card LEDs

Each OLM1000STXS24 card incorporates a set of 8 LEDs, as described in Table 21-4.

Table 21-4. 10/100/1000 Card LEDs for OLM1000STXS24, OLM1000STX24

LED Label	Usage
48V	Green if 48V power is available to the board. Red if not available.
3.3V	Green if 3.3V power is available to the board. Red if not available.
2.5V	Green if 2.5V power is available to the board. Red if not available.
1.8V	Green if 1.8V power is available to the board. Red if not available.
Ready	The card is ready for operation.
Aux1	Not currently used.
Aux2	Not currently used.
Fault	Red if a fault is present on the board.

Each ELM1000ST2, LM1000STX2/4 and LM1000STXS2/4 card incorporates a single LED, as described in Table 21-5.

Table 21-5. 10/100/1000 Card LEDs for ELM1000ST2, LM1000STX2/4 and LM1000STXS2/4

LED Label	Usage
Trig	The value of the ‘OR’ function of all of the trigger out ports on the board. The LED’s color is orange.

The ALM1000T8 has a card-level ‘mgmt’ LED next to Port 8. This LED is not currently used.

Port LEDs

Each port on the ALM1000T8 module incorporates a set of 2 LEDs, as described in Table 21-6. The ALM1000T8 also has a card-level 'mgmt' LED next to Port 8; this LED is not currently used.

Table 21-6. ALM100T8 and CPM1000T8 Port LEDs

LED Label	Usage
Link/Tx (Upper LED)	Color is used to indicate the link speed: • 1000Mbps–Green • 100Mbps–Orange • 10Mbps–Yellow Flashing indicates transmit activity. Off if link is down.
Rx/Error (Lower LED)	Three conditions apply: • Full duplex or master (in 1000 Mbps case): Green with extended pulses off to indicate receive activity. • Half duplex or subordinate (in 1000 Mbps case): Off with extended green pulses to indicate receive activity. • Error: Overrides the other two modes, with extended orange pulses. • No link: Off.

Each LM1000T-5 port incorporates a set of 8 LEDs, as described in Table 21-7 on page 21-14.

Table 21-7. LM1000T-5

LED Label	Usage
Mstr	Green if the port is the master in a Gigabit connection.
Half	Green for half duplex operation.
1000	Green if the port is configured for Gigabit operation.
100	Green if the port is configured for 100 Mbps operation.
10	Green if the port is configured for 10 Mbps operation.
Tx/Col	Green during data transmission. Red during collisions.
Rx/Err	Green during error free reception. Red if errors are received.
Trig	Follows the state of the *Trigger Out* pin, which is programmed through User Defined Statistic 1.

Each LM1000TXS4 port incorporates a set of 6 LEDs, as described in Table 21-8.

Table 21-8. Port LEDS for LM1000TXS4 and LM1000TX4

LED Label	Usage
Slave	On for subordinate mode in a Gigabit connection.
Half	Green for half duplex operation.
Link	Green for 1000 Mbps link, orange for 100 Mbps link, yellow for 10 Mbps link, and off for no link.
Tx/Col	Green during data transmission. Red during collisions.
Rx/Err	Green during error free reception. Red if errors are received.
Trigger	Follows the state of the *Trigger Out* pin, which is programmed through User Defined Statistic 1.

Each OLM1000STXS24 port incorporates a set of 2 LEDs, as described in Table 21-9.

Table 21-9. Port LEDs for OLM1000STXS24, OLM1000STX24, LSM1000XMV4/8/12/16-01, and LSM1000XMS12-01

LED Label	Copper	Fiber
Link/Tx (Upper LED)	Color is used to indicate the link speed: • 1000Mbps–Green • 100Mbps–Orange • 10Mbps–Yellow Flashing indicates transmit activity. Off if link is down.	Green indicates link has been established and flashes during transmit activity.
Rx/Error (Lower LED)	Three conditions apply: • Full duplex or master (in 1000 Mbps case): Green with extended pulses off to indicate receive activity. • Half duplex or subordinate (in 1000 Mbps case): Off with extended pulses to indicate receive activity. • Error: Overrides the other two modes and pulses red. • No link: Off.	Green indicates link has been established and flashes during receive activity. Continuous red indicates a receive error.

Each ELM1000ST2, LM1000STX2, LM1000STX4, LM1000STXS2, LM1000STXS4, and LM1000STXS4-256 port incorporates a set of 6 LEDs, as described in Table 21-10 on page 21-16. The LEDs are arranged next to the two connectors associated with each port: Speed, Slave, and RJ45 Link/Tx/Coll are next to the RJ45 connector and Rx/Err, Half, and SFP Link/Tx/Coll are next to the SFP connector.

Table 21-10. Port LEDs for ELM1000ST2, LM1000STX2, LM1000STX4, LM1000STXS2, LM1000STXS4, and LM1000STXS4-256

LED Label	Usage
Speed	• Off for 10Mbps. • Orange for 100Mbps. • Green for 1000Mbps.
Slave	• On in slave or subordinate mode. • Off otherwise.
RJ45 Link/Tx	• Off if SFP is the active connector. • Steady Orange for no link. • Flashing Orange for link with collision. • Steady Green for link with no transmit. • Flashing green during transmit.
Rx/Err	• Flashes green on data receive. • Steady Red for error.
Half	• Green for half-duplex mode. • Off for full-duplex mode.
SFP Link/Tx/Coll	• Off if RJ45 is the active connector. • Steady Orange for no link. • Flashing Orange for link with collision. • Steady Green for link with no transmit. • Flashing green during transmit.

Trigger Out Values

The signals available on the trigger out pins for the LM1000T5 card is described in *Table 21-11*.

Table 21-11. LM1000T-5 Trigger Out Signals

Pin	Signal
1	Port 1: 10 ns high pulse for each packet matching User Defined Statistic 1
2	Port 2: 10 ns high pulse for each packet matching User Defined Statistic 1
3	Port 1: Low during transmit of frame, otherwise high
4	Port 2: Low during transmit of frame, otherwise high
5	Ground
6	Reserved

There is no trigger connector on the ALM100T8 and CPM1000T8.

The ELM1000ST2's triggers are not currently used.

The signals available on the trigger out pins for the LM1000TXS4, LM1000TX4, LM1000STXS4, LM1000STX4, LM1000STXS4-256, LM1000STXS2, and LM1000STX2 cards is described in *Table 21-12*.

Table 21-12. LM1000TXS4, LM1000TX4, LM1000STXS4, LM1000STX4, LM1000STXS4-256, LM1000STXS2, and LM1000STX2 Trigger Out Signals

Pin	Signal
1	660ns negative pulse when User Defined Statistic 1 is true.
2	660ns negative pulse when User Defined Statistic 1 is true.
3	660ns negative pulse when User Defined Statistic 1 is true.
4	660ns negative pulse when User Defined Statistic 1 is true.
5	Ground
6	Ground

Statistics

Statistics for 10/100/1000 cards, under various modes of operation may be found in the Appendix B, *Available Statistics*.