



## Gigabit Layer3 Intelligent Switch FML-1200



### ▶ Feature

The FML-1200 comes standard with a management module (F120-MGT). By installing option modules to the product's 12 expansion slots, the user can establish either an intelligent switch, a Gigabit switch or a Layer 3 switch. Its freely selectable module combination enables flexible port configuration that best meets the product usage as well as the user's networking environment.

#### <FML-1200 Main Unit Specifications>

##### Management Module "F120-MGT"

##### ■ Utilizes the latest ASIC with Layer 3 support to achieve high-speed routing

The product employs the latest switch chipsets to achieve fast wire-speed routing. Packet relaying operation is performed on ASIC (application specific IC) to achieve a significant increase in the volume of packets processed per unit time compared with tests that use a router for the relaying task. As no packet loss occurs even when packets are sent at the fastest possible data rate of LAN (wire speed), the product eliminates "the likelihood of relaying devices becoming bottlenecks" - a phenomenon that sometimes takes place when conventional routers are used for packet relaying purposes. Up to 128 IP subnets can be established with the product.

##### ■ Intelligent management features

The product supports SNMP, RMON as well as a protocol for controlling multicast packets. When combined with other intelligent switch products, the switch allows the construction of networks supporting superior management functions. Network configuration can be performed via Telnet, WWW browser as well as the product's console serial port. The web browser interface eases network management via its GUI-based configuration screens.

##### \*SNMP(simple network management protocol)

A set of protocols used to manage TCP/IP-based networks. It is used as a standard protocol for sending management information stored at network devices (agents) such as routers and switches to management systems (managers).

Supported Protocols: MIB2/Ethernet MAU MIB/Bridge MIB/Private MIB/RIP2 MIB/IP Forwarding

MIB/OSPF MIB (scheduled)/IGMP MIB/DVMRP MIB/IP Multicast Router MIB

**\*RMON(remote network monitoring)**

A network management protocol used to collect and analyze information on network traffic. The network management protocol SNMP has been expanded to cover functions for managing data traffic on remote networks.

Supported RMON Functions: Statistics/History/Alarm/Event (up to 3 groups may be configured)

**\*Multicast Control**

A system for sending data simultaneously to multiple users who are connected to a LAN or the Internet. Unlike broadcast, it sends data only to a specific group of users to reduce network traffic.

Supported Control Protocols: IGMP Snooping (also scheduled to support DVMRP Multicast Protocol)

## ■ Routing Protocols

The product supports IP Static and RIP v1/v2 as TCP routing protocols. The product is also scheduled to support OSPF protocol that has overcome various problems of RIP. As the product supports subnet masks and implements both the "area" notion of networking and the hierarchical structure, it reduces the volume of routing information and thus enables highly efficient packet routing.

## ■ VLAN and QoS Improve Network Availability

Fully compliant with IEEE802.1Q VLAN technology, the product supports up to 2,000 VLAN groups to allow the formation of large-scale logical network groups that consist of multiple nodes (PC's). Furthermore, the switch's IEEE802.1p QoS functionality for prioritizing network traffic enables 2-level priority management of data being transmitted on the network.

## ■ Supports IEEE802.1ad Link Aggregation (LACP)

Its Trunk feature combines multiple physical ports (links) to form one logical link, achieving up to 8Gbps of broadband transmission (using four Gigabit ports, full duplex) between two switches. Fully compliant with IEEE802.1ad Link Aggregation, the product supports Trunk connection to switches from other vendors that comply with the Link Aggregation feature.

\* 2, 3 or 4 ports on the dedicated module on the FML-1200 may be used as Trunk ports. The product also supports up to twelve Trunk (LACP) groups.

## ■ Complies with IEEE802.1d Spanning Tree

Since the product supports IEEE802.1d Spanning Tree, it prevents the formation of endless data loop even in networks that contain physical loops. This feature not only eliminates the need to physically re-organize the existing network to avoid endless loops, but also provides redundant paths whenever the main data path fails.

## ■ Slot Configuration

The slot configuration of the FML-1200 is as follows:

-Management Module Slot x 2 (the product is shipped with one management module preinstalled to one of these slots)

The product comes equipped with one management module. Addition of another management module offers redundancy: when one of the two modules fails, the remaining module serves as a backup module to sustain system operation.

-Port Expansion Module Slot x 12

-Power Supply Slot x 2 (the product is shipped with one power supply unit preinstalled to one of these slots)

The lightweight aluminum chassis is equipped with four large exhaust fans. The product is rack-mountable to any standard 19-inch rack, and its overall height is 7U (309mm) when mounted.

## ▶ Specification

<b>Product Model Number</b>	<b>FML-1200</b>
<b>Access Method</b>	10Mbps/100Mbps/1000Mbps(CSMA/CD)
<b>Standards Conformance</b>	IEEE802.3 : 10BASE-T IEEE802.3u : 100BASE-TX/FX(8 ports max. per module) IEEE802.3ab : 1000BASE-T (2 ports max. per module) IEEE802.3z : 1000BASE-SX/LX (2 ports max. per module)
<b>Slot Configuration (*1)</b>	Management Module Slot x 2 FML-1200 Module Slot x 12 Redundant Power Supply Slot x 2
<b>Data Transfer Mode</b>	Store-and-Forward
<b>Number of Ports</b>	96 ports max. (Auto-Negotiation, AutoMDI/MDI-X)
<b>Internal Bus Speed</b>	12Gbps
<b>Latency</b>	9.0um
<b>Packet</b>	1000BASE-T: 1488,000pps per port

<b>Forwarding/Filtering Speed</b>	100BASE-TX: 148,800pps per port 10BASE-T: 14,880pps per port
<b>Layer2/3 Throughput (Full Duplex)</b>	
<b>Packet Buffer</b>	8MB
<b>Maximum Number of MAC Addresses</b>	32768
<b>Maximum Number of IP Addresses</b>	65536
<b>Maximum Number of IP Subnets</b>	Supports up to 128 entries
<b>Flow Control</b>	Full Duplex: IEEE802.3x/Half Duplex: Back Pressure
<b>VLAN</b>	Supports IEEE802.1q Tagging VLAN support Up to 2000 VLAN groups may be established (* depends on module combination)
<b>Trunk</b>	2, 3 or 4 ports may be used as Trunk ports (supports up to 12 groups) Supports IEEE802.3ad Link Aggregation
<b>Spanning Tree</b>	Supported (IEEE802.1d)
<b>QoS</b>	Supported (IEEE802.1p 2-level)
<b>Port Mirroring</b>	Supported
<b>SNMP</b>	MIB2/EthernetMAU/MIB/Bridge/MIB/PrivateMIB/RIP2/MIB/IP/ Forwarding MIB/OSPF MIB(scheduled)/IGMP MIB/DVMRP MIB/IP Multicast Router MIB
<b>Routing Protocol</b>	IP Static, RIPv1/v2 * Scheduled to support OSPF2
<b>Multicast Control</b>	IGMPv1/v2 * Scheduled to support DVMRP
<b>RMON</b>	Statistics/History/Alarm/Event(1,2,3,9 Group)
<b>Configuration Interfaces</b>	Serial console (RS-232 D-sub 9pin), Telnet, Web browser
<b>LED Indicators</b>	Link, Mode, ACT, FDX, FC, Power, Primary, Diag, Release, AC, DC
<b>Power Consumption</b>	200W max. (100-240 VAC, 50-60Hz, internal power supply) * Supports redundant power supply

<b>Operating Temperature</b>	0 to 45 degrees Celsius
<b>Operating Humidity</b>	35 to 85% (non-condensing)
<b>Dimensions</b>	440(W) x 308.6(H)mm x 300(D)mm (*excludes modules)
<b>Weight</b>	20.62kg (* excludes modules)
<b>19 inch Rack-Mounting</b>	Supported (7U)
<b>EMI</b>	FCC Class A, CE, VCCI Class A
<b>Safety</b>	cUL
<b>Package Contents</b>	FML-1200/F120-MGT(Management Module)×1/RS-232C straight cable (D-SUB 9pin male/female, straight type) for system configuration/Redundant Power Supply Unit x 1/Fan Unit x 1 /power cable/rack-mount bracket x 2/cable organizer x 1/screw x 8/rubber footpad x 4/User's Manual(CD-ROM)

\*1 One of the management slots and one of the power supply slots are already in use,

▶ **Product View**

