



ES-2310C:

8-Port L2 Managed Fast Ethernet Switch with 2 SFP Gigabit Dual Media

Key Features

- **Standard compliance**
 - IEEE 802.3 10Base-T
 - IEEE 802.3u 100Base-TX
 - IEEE 802.3ab 1000Base-TX
 - IEEE 802.3z 1000Base-X Ethernet
 - IEEE 802.3x flow control capability
 - ANSI/IEEE 802.3 auto-negotiation
 - IEEE 802.1q VLAN
- **RoHS Compliance**
- **Subscriber Interface**
 - 8 are 10/100Mbps and 2 Gigabit Ethernet ports.
 - Port 9,10 are Gigabit TP/SFP Fiber auto sense
 - Auto-Negotiation and Auto-MDIX
 - Back pressure flow control for half duplex.
 - IEEE 802.3x compliant for full duplex
 - Connector: 8 RJ-45 and 2 dual media, RJ-45/SFP
- **Performance**
 - Switching capacity:**
 - Non-blocking switch fabric supports up to 8 FE+2GbE ports
 - 8 K MAC addresses
 - 256K packet buffer and 128K control memory
 - VSM (Virtual Stacking Management):**
 - Up to 16 switches can be managed via Single IP limited to any specific Ruby-Tech models.
 - Virtual stacking, no extra stacking hardware is required
 - Distributed stacking, no physical central wiring closet is needed
 - VLAN**
 - Supports SVL/IVL configuration to meet your VLAN requirement
 - Port-base VLAN
 - IEEE802.1q tag-base VLAN, 4094 max, up to 256 active VLANs including static plus dynamic entry
 - IEEE802.1q tag-base VLAN

Benefits

- **QoS with four priority queues**

The QoS(Quality Of Service) feature provides four internal queues to support four different classifications of traffic. High priority packet streams experience less delay inside the switch, which supports lower latency for certain delay-sensitive traffic. The ES-2310C can classify the packet as one of the four priorities according to vip port, 802.1p priority tag, DiffServ and/or IP TOS. The QoS operate at full wire speed. The actual scheduling at each egress port can be based upon a strict priority, weighted round robin or a mix of both.
- **Port Mirroring**

This mechanism helps track network errors or abnormal packet transmission without interrupting the flow of data. Allow ingress traffic to be monitored by a single port that is defined as mirror capture port. The mirror capture port can be any 10/100 port, 10/100/1000 port. Mirroring multiple ports is possible but can create congestion at the mirror capture port.
- **Q-in-Q VLAN for performance & security**

The VLAN feature in the switch offers the benefits of both security and performance. VLAN is used to isolate traffic between different users and thus provides better security. Limiting the broadcast traffic to within the same VLAN broadcast domain also enhances performance. Q-in-Q, the use of double VLAN tags is an efficient method for enabling Subscriber Aggregation. This is very useful in the MAN.
- **Isolated Group, provides protection for certain ports**

The isolated group feature allows certain ports to be designated as protected. All other ports are non-isolated. Traffic between isolated group members is blocked. Traffic can only be sent from isolated group to non-isolated group.
- **Mac-based 802.ad LACP with automatic link fail-over**

Dynamic fail-over means packets will not get assigned to any trunk member port that has failed. If one of the ports were to fail, traffic will automatically get distributed to the remaining active ports.
- **802.1x Access Control improves network security**

802.1x features enable user authentication for each network access attempt. Port security features allow you to limit the number of MAC addresses per port in order to control the number of stations for each port. Static MAC addresses can be defined for each port to ensure only registered machines are allowed to access. By enabling both of these features, you can establish an access mechanism based on user and machine identities, as well as control the number of access stations.
- **802.1d Compatible & 802.1w Rapid Spanning Tree**

For mission critical environments with multiple switches supporting STP, you can configure the switches with a redundant backup bridge path, so transmission and reception of packets can be guaranteed in event of any fail-over switch on the network.
- **2 dual media ports for flexible fiber connection**

Port 9, 10 dual media ports are provided for flexible fiber connection. You can select to install optional transceiver modules in these slots for short, medium

---Flooding unknown VLAN frame setting, can flood packet with some VLAN tag associated to a invalid/inactive VLAN

---In tag-base VLAN, supports egress/ ingress packet filter

---Q-in-Q is an efficient method for enabling Subscriber Aggregation QoS

---Port Based (VIP Port), 802.1p, TOS and Diffserv(IPv4/IPv6) based QoS packet classification

---Supports four level priority queues to prioritize in-bound and out-bound traffic

---Supports two scheduling, WRR and Strict

---Supports priority in a Q-in-Q tag

Bandwidth Control

---Supports bandwidth rating per port ingress and egress rate limit 1000Mbps with 1Mbps increment

Broadcast Storm

---Multicast/Broadcast/Unknown-Unicast Storm suppression.

Transmission Mode

---10/100Mbps support full or half duplex 1000Mbps support full duplex only

Transmission Speed

---10/100/1000Mbps for TP 1000Mbps for Fiber

Port Mirroring

---Support 1: N RX port mirroring

---Supports port sniffer function with 3 modes:
 (TX Monitor Mode, RX Monitor Mode and TX-RX pair Monitor Mode)

Isolated Group

---Provide one group allows certain ports to be designated as protected

Restricted Group

---Can decide the direction of transmitting packets for the specific port

• Protocol

LACP

---2 Fast Ethernet +1 Gigabit Ethernet groups

---Per-group max 4 member

---Provides DA, SA and DA+SA Mac-based trunking with automatic link fail-over

GVRP/GARP

---1.802.1q with GVRP/ GARP

Multicasting

---Supports IGMP snooping including active and passive mode

STP/RSTP

---802.1d/1w

• Network Security

---802.1x access control

---Isolated group

---Restricted group

---Management Access Policy Control

or long distance fiber backbone attachment. Use of the SFP will disable their corresponding built-in 10/100/1000Base-T connections.

• Broadcast/Multicast/unknown-unicast Storm Control

To limit too many broadcast/multicast/unknown-unicast flooding in the network, broadcast/multicast storm control is used to restrict excess traffic. Threshold values are available to control the rate limit for each port. Packets are discarded if the count exceeds the configured upper threshold.

Technical Specifications

• LED Description

	LED	Color	Function
Global	POWER	Green	-Lit when +5V power is coming up
Global	CPU	Green	-Blinks when CPU is active
Port 1-8	LINK/ACT	Green	-Lit when connection with remote device is good -Blinks when any traffic is present
Port 9,10	10/100/1000Mbps	Green /Amber	-Lit Green when TP link on 1000Mbps speed -Lit Amber when TP link on 100Mbps speed -Off when 10Mbps or no link occurs
Port 9,10	SFP	Green	- Lit when SFP connection with remote device is good -Blinks when any traffic is present

• Network Interface

Category	Connector	Transmission	Max. Cable Length	Wavelength
10-T/100-TX	RJ-45	Full/Half Duplex	100M	/
1000-T	RJ-45	Full Duplex	100M	/
1000-SX (M-M)	LC	Full Duplex	220M 50/125μ	850nm
1000-SX (S-M)	LC	Full Duplex	10KM 9/125μ	1310nm

• Full Forwarding Packet Rate: PPS (64 Bytes packets per second)

Forwarding Rate	Speed
14,880PPS	10Mbps
148,800PPS	100Mbps
1,488,000PPS	1000Mbps

• Cable and Maximum Length

Feature	Detailed Description
TP	Cat. 5 UTP cable, up to 100m
1000Base-SX SC M-M	Up to 220/275/500/550m, which depends on Multi-Mode Fiber type
1000Base-LX SC S-M	Single-Mode Fiber, up to 10/30/50Km
1000Base-FX WDM SC S-M	Single Fiber, BiDi 10Km

• Hardware Spec

Feature	Detailed Description
Voltage	100~240 VAC
Frequency	50~60 Hz
Consumption	11.6W
Ambient Temperature	0 to 40°C
Humidity	5% to 90%
Dimensions	44(H) x 220(W) x 130.5(D) mm
Safety	Comply with FCC Part 15 Class A & CE Mark Approval

---Static mac, to limit which mac addresses can pass through or not
 ---Mac addresses learning limit, to set up the maximum amount of mac that each port can learn

• **Snmpv1,v2c Network Management**

- RFC 1213 MIB (MIB-II)
 - Interface MIB
 - Address Translation MIB
 - IP MIB
 - ICMP MIB
 - TCP MIB
 - UDP MIB
 - SNMP MIB
- RFC 1757 RMON MIB
 - Statistics Group 1
 - History Group 2
 - Alarm Group 3
 - Event Group 9
- RFC 1493 Bridge MIB
- RFC 1643 Ethernet MIB
- Enterprise MIB

Overview

ES-2310C is a Managed Fast Ethernet switch that supports SNMP, Web UI and CLI management interface and with 8 10/100Base-TX (RJ-45 connectors) and 2 Gigabit dual media (RJ-45/SFP) ports. It is a standard switch that meets all IEEE 802.3/u/x/z Gigabit, Fast Ethernet specifications. In addition, the switch implements the QoS (Quality of Service), VLAN, Mac Filtering Policy, Port Mirror, VLAN and full L2 protocols. It has a rich feature set suitable for streaming VoIP, video, and data traffics for multimedia applications.

In this switch, Port 9, 10 support two types of media --- TP and SFP Fiber (LC, BiDi-SC....); both ports support 10/100/1000Mbps TP or 1000Mbps SFP Fiber with auto-detected function.

1000Mbps SFP Fiber transceiver is used for high-speed connection expansion.

Ordering Information

ES-2310C:

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• **Optional SFP Fiber Module (See note below)**

SFP.LC	1000Base-SX GE SFP Multi-Mode Fiber Module 850nm
SFP.LC.M2	1000Base-SX GE SFP Fiber Module, LC Multi-Mode 1310nm 2km
SFP.LC.S10	1000Base-LX GE SFP Single-Mode 10Km Fiber Module 1310nm
SFP.LC.S30	1000Base-LX GE SFP Single-Mode 30Km Fiber Module 1310nm
SFP.L5.S50	1000Base-LX GE SFP Single-Mode 50Km Fiber Module 1550nm
SFP.BL5.S10	1000Base-LX GE SFP BiDi_LC 10Km Module Single Fiber 1550nm, Type 1
SFP.BL3.S10	1000Base-LX GE SFP BiDi_LC 10Km Module Single Fiber 1310nm, Type 2
SFP.BL5.S20	1000Base-LX GE SFP BiDi_LC 20Km Module Single Fiber 1550nm, Type 1
SFP.BL3.S20	1000Base-LX GE SFP BiDi_LC 20Km Module Single Fiber 1310nm, Type 2

Note:

We recommend the SFP transceiver from the following vendors:

1. Ruby Tech Corporation
2. Agilent Technologies
3. AVAGO Technologies
4. Finisar Corporation

Ruby Tech Corp.

3F, No.1, Lane 50, Nan Kang Road, Sec.3, Taipei, Taiwan
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