Fast Ethernet Switch

ES-2126C/D/CD

ES-2126C/D/CD:
24-Port L2 Managed Fast Ethernet Switch + 2 TP/SFP or TP/GBIC Gigabit Dual Media

Key Features
- Q-in-Q VLAN for performance & security
- Mac-based 802.ad LACP with automatic link fail-over
- 2 dual media ports for flexible fiber connection
- Port Mirroring helps supervisor monitoring network
- Unknown Unicast/Broadcast/Multicast storm control

Overview
ES-2126C/D/CD is a Managed Fast Ethernet switch(ES-2126CD with VDC power input, range: 36V~72V, typical using 48VDC) that supports SNMP, Web UI and CLI management interface and with 24 10/100Base-TX (RJ-45 connectors) and 2 Gigabit dual media (RJ-45/SFP or RJ-45/GBIC) 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 25, 26 support two types of media --- TP and SFP/GBIC Fiber (LC, BiDi-SC...); both ports support 10/100/1000Mbps TP or 1000Mbps SFP/GBIC Fiber with auto-detected function. 1000Mbps SFP/GBIC Fiber transceiver is used for high-speed connection expansion.

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-2126C/D/CD can classify the packet as one of the four priorities according to 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 are 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.

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• **2 Dual Media ports for flexible fiber connection**

Ports 25, 26 dual media ports are provided for flexible fiber connection. You can select to install optional transceiver
modules in these slots for short, medium or long distance fiber backbone attachment. Use of the SFP/GBIC
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

• **Standard compliance**

---IEEE 802.3 10Base-T Ethernet (Twisted-pair Copper)

---IEEE 802.3u 100Base-TX Ethernet (Twisted-pair Copper)

---IEEE 802.3ab 1000Base-TX Ethernet (Twisted-pair Copper)

---IEEE 802.3z 1000Base-X Ethernet

---IEEE 802.3x Flow Control Capability

---ANSI/IEEE 802.3 Auto-negotiation

---IEEE 802.1q VLAN

---IEEE 802.1p Class of Service

---IEEE 802.1x Access Control

---IEEE 802.1d Spanning Tree

---IEEE 802.1w Rapid Spanning Tree

---IEEE 802.3ad Link Aggregation Control Protocol (LACP)

• **RoHS Compliance**

• **Subscriber Interface**

---24 are 10/100Mbps + 2 Gigabit Ethernet ports.

---Port 25,26 are Gigabit TP/SFP Fiber auto sense

---Auto-Negotiation and Auto-MDI/MDIX

---Backpressure flow control for half duplex.

---802.3x flow control for full duplex.

---Connector: 24 RJ-45 and 2 dual media, RJ-45/SFP

• **Performance**

Switching capacity

---Non-blocking switch fabric supports up to 24FE+2GbE ports

---8 K MAC addresses

---256k packet buffer and 128k control memory

---The maximum throughput is 8.8Gbps

---With 64 bytes packets throughput is 6.547Mpps

---Provides the wire speed forwarding rate

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 4k active VLANs including static plus dynamic entry

---IEEE802.1q tag-base VLAN

---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

Broadcast Storm

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

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)

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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

Rate Limit

---Ingress rate limit:

Port 1~24: 66K up to 100Mbps

Port 25, 26: 66K up to 1000Mbps

---Egress rate limit:

Port 1~24: 66K up to 100Mbps

Port 25, 26: 66K up to 1000Mbps

- **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

---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

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

- **LED Description**

	LED	Color	Function
Global	POWER	Green	-Lit when +5V power is coming up
Global	CPU ACT	Green	-Blinks when CPU is active
Port 1-24	LINK/ACT	Green	-Lit when connection with remote device is good -Blinks when any traffic is present
Port 1-24	100/10 Mbps	Green /Amber	-Lit Green when TP link on 100Mbps speed -Lit Amber when TP link on 10Mbps speed -Off when 10Mbps or no link occurs
Port 25,26	SFP/GBIC	Green	- Lit when SFP/GBIC connection with remote device is good -Blinks when any traffic is present

- **Hardware Spec**

Feature	Detailed Description
Power Characteristics	Voltage:100-240 VAC (ES-2126C/ES-2126D)
	Voltage: 36-72 VDC, Typical 48VDC(ES-2126CD)
	Frequency: 50~60 Hz
	Power Supply: 25W
Ambient Temperature	0 to 40℃
Humidity	5% to 90%
Dimensions	44(H) x 442(W) x 209(D) mm
Weight	ES-2126C/D: 2.85kg
	ES-2126CD: 3.0 kg
EMI	Comply with FCC Part 15 Class A & CE Mark Approval

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Packing Information

Carton Dimensions (mm)	pcs/Carton	N.W (KG)	G.W (KG)
530x512x345	5	19	20

Ordering Information

ES-2126C	24-Port L2 Managed Fast Ethernet Switch + 2 TP/SFP Gigabit Dual Media Ports
ES-2126CD	24-Port L2 Managed Fast Ethernet Switch + 2 TP/SFP Gigabit Dual Media (36-72V DC)
ES-2126D	24-Port L2 Managed Fast Ethernet Switch + 2 TP/GBIC Gigabit Dual Media Ports

Optional SFP Fiber Module

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

Optional GBIC Fiber Module

GBIC.SC	1000Base-SX GE GBIC Fiber Module, SC Multi-Mode
GBIC.SC.S10	1000Base-LX GE GBIC Fiber Module, SC Single-Mode 10km
GBIC.SC.S30	1000Base-LX GE GBIC Fiber Module, SC Single-Mode 30km
GBIC.SC.S50	1000Base-LX GE GBIC Fiber Module, SC Single-Mode 50km
GBIC.BS3.S10	1000Base-LX GE GBIC Fiber Module, Bidi SC Single-Mode 10km, 1310nm
GBIC.BS5.S10	1000Base-LX GE GBIC Fiber Module, Bidi SC Single-Mode 10km, 1550nm
GBIC.BS3.S20	1000Base-LX GE GBIC Fiber Module, Bidi SC Single-Mode 20km, 1310nm
GBIC.BS5.S20	1000Base-LX GE GBIC Fiber Module, Bidi SC Single-Mode 20km, 1550nm

Note:

We recommend the SFP/GBIC transceiver from the following vendors:

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

Ruby Tech Corp.

3F, No.1, Lane 50, Nan Kang Road, Sec.3, Taipei, Taiwan
TEL:886-2-2785-3961 FAX:886-2-2786-3012

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