FGS-2728KX L2+ Managed GbE CE Fiber Switch

Overview

FGS-2728KX L2+ Managed Switch is a next-generation Carrier Ethernet Switch offering full suite of L2 features, L3 Static Route and Carrier Ethernet features such as OAM, CFM and 1588v2 PTP, etc, which delivers better cost performance and lower total cost of ownership in Enterprise networks via fiber connections.

FGS-2728KX delivers 20 GbE SFP ports, 4 Combo GbE RJ45/SFP ports, 4 GbE/10G SFP+ ports, RJ45 Console port and OOB Management port with built-in AC and DC dual power supply. FGS-2728KX provides front access to all data and management ports that facilitates desktop or rack-mount installations for Carrier/Telecom providers.

FGS-2728KX is ideal for environments that require advanced features for granular control which is a must for easy network configuration and management where you need for a successful installation for high-bandwidth VoIP, Gigabit-to-the-Desktop deployments, converged voice and data networks in Carrier Ethernet Applications.

Key Features

- Carrier Ethernet features provide easier manageability, security, QoS
- IEEE 1588v2 PTP (BC/TC)
- IEEE 802.3ah OAM
- IEEE 802.1ag CFM (ITU-T Y.1731 Performance monitoring)
- ITU-T G.8031 Ethernet Linear Protection Switching (EPS)
- ITU-T G.8032 Ethernet Ring Protection Switching (ERPS)
- DHCP Server
- IPv4/IPv6 L3 static route
- IEEE 802.3az EEE for green Ethernet application

Benefits

- Feature-rich Carrier Ethernet Switch for Metro Ethernet

  The switch delivers advanced functionality in Carrier Ethernet switch including IEEE 1588v2, OAM, CFM, etc. It also enhanced security features such as IP source guard, Access Control List guard your network from unwanted or unauthorized access.

  It helps users to build on the market-leading price/performance with Carrier Ethernet switch, and provide secure, reliable for metro Ethernet deployments.

- Exceptional Precision with IEEE 1588v2 (TC, BC)

  The switch performs IEEE1588v2, including transparent and boundary clock capabilities, implementations in hardware, so there is no performance penalty on packet processing.

  The hardware architecture ensures low latency and high time accuracy – which is critical for delay-sensitive financial and mobile applications.

- Superior reliability through OAM and CFM for Service Assurance

  Service assurance is provided through a rich feature set of operations, administration, and maintenance (OAM) functionalities. It can simplify and facilitate the management of Carrier network, resulting in diminishing operational costs.

  The Ethernet access device also offers standards-based fault and performance management in adherence with 1731 PM and 802.1ag connectivity fault management (CFM) standards. It comes with Y.1564 that include both generation and reflection of traffic.

  These features contribute to significant reduction in operational expenditures and allows for troubleshooting without expensive truck rolls.

- Lowing Total Cost of Ownership (TCO) with Energy-efficient Design

  The switch is designed to help companies to save power needs and reduce TCO by Energy Efficient Ethernet (IEEE 802.3az). It can be used for customers to build a green Ethernet networking environment.

Specifications

Port Configuration

Total Ports	SFP (100M/1G)	Uplinks (100M/1G/10G)	Console	MGMT
28	20	4 SFP+ 4 RJ45/SFP Combo	RJ45	RJ45

Hardware Performance

Forwarding Capacity	Switching Capacity	Mac Table	Jumbo Frames
95.232 Mpps	128 Gbps	32 K	10056 Bytes

Environmental Range

Operating Temperature		Storage Temperature		Altitude	
Fahrenheit	Centigrade	Fahrenheit	Centigrade	Feet	Meters
-4 to 140	-20 to 60	-40 to 185	-40 to 85	< 10000	< 3000

Dimension, Weights, Humidity

Dimension (WxHxD)		Weight		Operating Humidity
Millimeter	Inches	Kilograms	Pounds	
442 x 44 x 211	17.4 x 1.73 x 8.31	3.1	6.8	10% to 90% non-condensing

Voltage and Frequency

Input Voltage and Frequency	
AC Voltage	100-240 VAC
AC Frequency	50-60 Hz
DC Voltage	24-72 VDC

Certification

Electromagnetic Emissions (EMC)
CE, FCC Part 15 Class A

Software Features

Layer 2 Switching	
Spanning Tree Protocol (STP)	● Standard Spanning Tree 802.1d ● Rapid Spanning Tree (RSTP) 802.1w ● Multiple Spanning Tree (MSTP) 802.1s
Trunking	Link Aggregation Control Protocol (LACP) IEEE 802.3ad ● Up to 14 groups ● Up to 4 ports per group
VLAN	Supports up to 4K VLANs simultaneously (out of 4096 VLAN IDs) ● Port-based VLAN ● 802.1Q tag-based VLAN ● MAC-based VLAN ● Management VLAN ● Private VLAN Edge (PVE) ● Q-in-Q (double tag) VLAN ● Voice VLAN ● GARP VLAN Registration Protocol (GVRP)
DHCP Relay	● Relay of DHCP traffic to DHCP server in different VLAN. ● Works with DHCP Option 82
IGMP v1/v2/v3 Snooping	IGMP limits bandwidth-intensive multicast traffic to only the requesters. Supports 1024 multicast groups
IGMP Querier	IGMP querier is used to support a Layer 2 multicast domain of snooping switches in the absence of a multicast router
IGMP Proxy	IGMP snooping with proxy reporting or report suppression actively filters IGMP packets in order to reduce load on the multicast router
MLD v1/v2 Snooping	Delivers IPv6 multicast packets only to the required receivers
Layer 3 Switching	
IPv4 Static Routing	IPv4 Unicast: Static routing
IPv6 Static Routing	IPv6 Unicast: Static routing
Security	
Secure Shell (SSH)	SSH secures Telnet traffic in or out of the switch, SSH v1 and v2 are supported
Secure Sockets Layer (SSL)	SSL encrypts the http traffic, allowing advanced secure access to the browser-based management GUI in the switch
IEEE 802.1X	● IEEE802.1X: RADIUS authentication, authorization and accounting, MD5 hash, guest VLAN, single/multiple host mode and single/multiple sessions ● Supports IGMP-RADIUS based 802.1X ● Dynamic VLAN assignment
Layer 2 Isolation Private VLAN Edge	PVE (also known as protected ports) provides L2 isolation between clients in the same VLAN. Supports multiple uplinks

Security	
Port Security	Locks MAC addresses to ports, and limits the number of learned MAC address
IP Source Guard	Prevents illegal IP address from accessing to specific port in the switch
RADIUS/ TACACS+	Supports RADIUS and TACACS+ authentication. Switch as a client
Storm Control	Prevents traffic on a LAN from being disrupted by a broadcast, multicast, or unicast storm on a port
DHCP Snooping	A feature acts as a firewall between untrusted hosts and trusted DHCP servers
ACLs	Supports up to 512 entries. Drop or rate limitation based on: ● Source and destination MAC, VLAN ID or IP address, protocol, port, ● Differentiated services code point (DSCP) / IP precedence ● TCP/ UDP source and destination ports ● 802.1p priority ● Ethernet type ● Internet Control Message Protocol (ICMP) packets ● TCP flag
Quality of Service	
Hardware Queue	Supports 8 hardware queues
Scheduling	● Strict priority and weighted round-robin (WRR) ● Queue assignment based on DSCP and class of service
Classification	● Port based ● 802.1p VLAN priority based ● IPv4/IPv6 precedence / DSCP based ● Differentiated Services (DiffServ) ● Classification and re-marking ACLs
Rate Limiting	● Ingress policer ● Egress shaping and rate control ● Per port
Management	
DHCP Server	Support DHCP server to assign IP to DHCP clients
Zero Touch Upgrade	Upgrade single switch automatically when you get notification
Remote Monitoring (RMON)	Embedded RMON agent supports RMON groups 1,2,3,9 (history, statistics, alarms, and events) for enhanced traffic management, monitoring and analysis
Port Mirroring	Traffic on a port can be mirrored to another port for analysis with a network analyzer or RMON probe. Up to N-1 (N is Switch's Ports) ports can be mirrored to single destination port. A single session is supported.
UPnP	The Universal Plug and Play Forum, an industry group of companies working to enable device-to-device interoperability by promoting Universal Plug and Play
s-Flow	The industry standard for monitoring high speed switched networks. It gives complete visibility into the use of networks enabling performance optimization, accounting/billing for usage, and defense against security threats

Management	
IEEE 802.1ab (LLDP)	● Used by network devices for advertising their identities, capabilities, and neighbors on an IEEE 802ab local area network ● Support LLDP-MED extensions
Web GUI Interface	Built-in switch configuration utility for browser-based device configuration
CLI	For users to configure/manage switches in command line modes
Dual Image	Independent primary and secondary images for backup while upgrading
SNMP	SNMP version1, 2c and 3 with support for traps, and SNMP version 3 user-based security model (USM)
Firmware Upgrade	● Web browser upgrade (HTTP/ HTTPs) and TFTP ● Upgrade through console port as well
NTP	Network Time Protocol (NTP) is a networking protocol for clock synchronization between computer systems over packet-switched
Other Management	● HTTP/HTTPs; SSH ● DHCP Client/ DHCPv6 Client ● Cable Diagnostics ● Ping ● Syslog ● Telnet Client ● IPv6 Management
Ethernet OAM	
IEEE 802.3ah Link OAM	Supports IEEE 802.3ah Ethernet OAM (Operations, Administration & Management)
IEEE 802.1ag & ITU-T Y.1731 Flow OAM	Supports IEEE 802.1ag Ethernet CFM (Connectivity Fault Management) Supports ITU-T Y.1731 Performance Monitoring
Loop Protection	
ITU-T G.8031	Supports ITU-T G.8031 Ethernet Linear Protection
ITU-T G.8032	Supports ITU-T G.8032 Ethernet Ring Protection Switching