8 Port Layer 2 Web Managed Gigabit Ethernet PoE Switch

Sl No	Specification	
1	Physical Ports	8x 10/100/1000 Mbps Rj45 PoE+ Ethernet Ports with 4 Gigabit Combo (RJ-45/SFP) Ports
2	Switching Capacity	24 Gbps
3	Forwarding Capacity	17.86 Mpps
4	Flash	128 Mbit
5	DRAM	128 Mbit
6	CPU	RTL 8382M
7	Packet buffer memory	4.1Mbit
8	Operating Humidity	10% ~ 90% non-condensing
9	Temperature	0°C -40°C
10	Power supply	AC Power: 100 to 240 V, 50-60 Hz and 6Kv input Surge Protector
11	PoE Power Budget	140 Watt, Support IEEE802.3af and IEEE802.3at standard
12	LED Indicators	Power, Link/Act
13	Forwarding Mode	Store and Forward
14	MAC Address Table	8K
15	Max. Jumbo Frame size	10K
16	L2 Features	Switch should support Auto-Negotiation for port speed and duplex mode
		Switch should support STP / RSTP / MSTP
		Switch should support Loopback Detection
		Switch should support BPDU Filter and BPDU Guard
		Switch should support LLDP, MVR
		Switch should support IGMP v2/v3 Snooping: IGMP Querier, Immediate Leave
		Switch should support 256 IEEE 802.1q tag based VLANwith 4K VLAN ID
		Switch should support MAC Based VLAN, Voice VLAN,Guest VLAN, Management VLAN
		Switch should support LACP: 8 Groups, 8 Ports/Group and static trunk

9/4/26

17	QoS Features	Switch should support Each port supports 8 queues
		Switch should support Queueing Mechanism: SP and WRR
		Switch should support Flow Control
		Switch should support Classifications based on - COS, COS DSCP, IP Precedence
		Switch Each port supports 8 queues
18	Security	Switch should support MAC address Binding
		Switch should support broadcast/Multicast/Unicast storm control
		Switch should support IP and MAC ACL (Ipv4)
		Switch should support RADIUS, 802.1x based Authentication
		Switch should support Port Security, Protected Port
		Switch should support DOS
		Switch should support Management ACL
		Switch should support DHCP Snooping, DHCP Snoopingoption 82, IP Source Guard, IP-MAC-Port-VLAN Binding
19	Management	Switch should support Port Mirroring
		Switch should support traffic statistics
		Switch should support Provide IPv4 Web-based management
		Switch should support IPv4 DHCP Client
		Switch should support Configuration Backup and Recovery
		Switch should support Dual firmware images and Configuration files
		Switch should support Error Disabled, Bandwidth Utilization
		Switch should support SNMP v1/v2c/v3 and Remote Server
		Switch should support Telnet, SSH,HTTP, HHTPS
		Switch should support RMON, SNTP
		Switch should support EEE, Port Statistics
		Switch should support Ping, Traceroute
		Hardware Factory Reset button

L3 switch 16-Port Gigabit SFP 8-Port RJ45/SFP Combo and 4-Port 10G SFP+ port

Sl No		Specification
1	**Physical Ports**	Switch having with 16-Port Gigabit SFP + 8-Port Giga RJ45/SFP Combo + 4-Port 10G SFP+ port
2	**Management port**	1 x RJ45 port console port
3	**Switching Capacity**	128 Gbps
4	**Throughput**	96 Mpps
5	**Flash**	16 MB
6	**RAM**	256 MB
7	**MAC Address**	16k
8	**Routing entries**	512
9	**Relative Humidity**	10%-90% non-condensing
10	**Temperature**	0°C -50°C
11	**Power Supply**	It supports Single AC power inputs 100V–240V, 50Hz ±10%
12	**VLAN**	The switch supports up to 4K active VLANs for flexible network segmentation.
		The switch supports QinQ and Selective QinQ for extending VLANs across networks.
		The switch supports GVRP and Private VLAN features help in efficient VLAN management.
		The switch supportsVoice VLAN ensures smooth transmission of voice traffic.
		The switch supports spanning tree protocols like STP, RSTP, PVST+, and MSTP for loop prevention.
		The switch supports BPDU Guard, Root Guard, and Loopback Guard for enhanced network stability and protection.
13	**Multicast**	The switch supports multicast routing protocols such as PIM-SM and PIM-DM for efficient traffic management.

		The switch is compatible with IGMP versions 1, 2, and 3, and includes features like IGMP Snooping and IGMP Fast Leave for optimized multicast control.
		The switch supports MVR and IGMP filtering to enhance multicast traffic management and network performance.
14	**Routing**	The switch supports Ipv4 Static Routing, RIP, OSPF
		The switch supports IPv6 functions such as ICMPv6, DHCPv6, ACLv6, and IPv6 Telnet for efficient management.
		The switch supports IPv6 Neighbour Discovery and Path MTU Discovery ensure smooth data transmission.
		The switch supportsMLD v1/v2 and MLD Snooping for IPv6 multicast control.
		The switch supports IPv6 routing with Static Routing, RIPng, and OSPFv3.
		The switch supports Tunnelling options include Manual, ISATAP, and 6to4 tunnels for IPv4-to-IPv6 communication.
15	**QoS**	The switch supports CAR and HQoS for advanced traffic control.
		The switch supports QoS based on MAC, IP, TCP, UDP, VLAN, COS, DSCP, and TOS.
		The switch supports 802.1P and DSCP priority re-labeling with SP, WRR, and SP+WRR scheduling.
		The switch supports Tail-Drop, WRED, flow monitoring, and traffic shaping for smooth and efficient network performance.
16	**Security**	The switch supports port isolation, port security, and IP+MAC+port binding with MAC sticky for safe access control.
		The switch supportsDAI and IP Source Guard for IPv4 to protect against spoofing.
		The switch supports IEEE 802.1x, AAA, RADIUS, and TACACS+ provide secure user authentication.

		The switch supports L2/L3/L4 ACLs help filter traffic and defend against DDoS, TCP SYN Flood, and UDP Flood attacks.
		The switch supports storm control and strong encryption like MD5, SHA-256, RSA-1024, and AES-256 for high security.
17	**DHCP**	The switch supports DHCP server, relay, and client functions, along with DHCP Snooping and Option 82 for secure and efficient IP management.
18	**Reliability**	The switch supports Static and LACP link aggregation with interface backup for reliable connectivity.
		The switch supports EAPS and ERPS for fast ring protection and quick network recovery.
		The switch supports ISSU allows uninterrupted system upgrades without service downtime.
		The switch supports stacking of up to 4 units. It Support VRRP and UDLD for high availability and link protection.
19	**Management**	The switch have Console, Telnet, SSH v1/v2, HTTP, and HTTPS for easy management.
		The switch supports SNMP v1/v2/v3 and RMON for efficient network monitoring.
		The switch supports TFTP, FTP, and SFTP are supported for secure file transfers.
		The switch supports NTP, ZTP, SPAN, and RSPAN for time sync, auto setup, and traffic analysis.
20	**Certification**	The switch must be TEC-certified under the Mandatory Testing and Certification of Telecom Equipment (MTCTE) program.

Single mode 1000Base-LX SFP Transceiver LC Type

Sl no	Specification	
1	**Architecture**	1000 Base LX Single-mode Fiber Transceiver
2	**Connector**	It should have duplex LC Connector
3	**Flow control.**	Support 802.3x
4	**Mode**	9/125 um Single mode Fiber Type up to 20 KM.

5	**Support wavelenght**	1310nm
6	**Case Operating Temperature:**	support up to 0º~70º
7	**Storage Relative Humidity:**	support upto 5% to 95%
8	**Warranty**	3 Year

SINGLEMODE UNITUBE ARMOURED FIBER CABLE

SR. NO.	SPECIFICATION / QUALITATIVE REQUIREMENT
1	06/08/12/24-Core, Singlemode9/125 micron primary coated buffers, 10G Ethernet OS2, Armoured Loose Tube, ECCS (Electrolytic Chrome Coated Steel) Tape, Jelly Filled Loose Tube.
2	Two Steel Wires/Rods embedded in outer periphery of the jacket as strength members. UV Stabilised jacket and protected from Rodent attacks
3	Complying to ANSI/TIA-568-C.3, ISO/IEC 11801, Telecordia GR-20 Core, ITU-T REC G.652D, IEC 60793-1/60794-1, EN 50173, RoHS Compliant
4	Suitable for use in indoor/outdoor ducts, direct burial and backbone cabling
5	Loose tube material : Polybutylene Terephthalate (PBT) with Natural/White Colour having Inner Diameter/Outer Diameter 1.7/2.5 ± 0.1 mm
6	Peripheral strength member as two steel wires/rods having dimensions as 0.6 ± 0.05 mm
7	Moisture Barrier as Water Swellable Tape, Armouring ≥ 0.150 mm (ECCS Tape), Number of Ripcords as 01 no polyester based yarns.
8	Outer sheath material as HDPE/LSZH with diameter as 7.5/8.5 ± 0.5 mm having thickness of 1.5mm nominal
9	Weight of the cable for 04/06/08/12 core (HDPE/LSZH): 65.0/75.0 ± 10 kg/km, for 24 core (HDPE/LSZH): 75.0/95.0 ± 5 kg/km
10	Fiber colour and Loose tube colour as per ANSI/TIA standards.
11	Tensile Strength : 1000 N, Crush Resistance : 4000 N/100mm
12	Minimum bend radius : 20 x Diameter (during installation), Minimum bend radius : 10 x Diameter (during full load)
13	Fiber Type : G. 652D (OS2)
14	Attenuation : ≤ 0.38 dB/km (@1310 nm), ≤ 0.25 dB/km (@1550 nm)
15	Chromatic Dispersion : ≤ 3.5 ps/nm.km (@1285 - 1330 nm), ≤ 18 ps/nm.km (@1550 nm)

SR. NO.	SPECIFICATION / QUALITATIVE REQUIREMENT
16	Zero Dispersion Wavelength : 1300 - 1324 nm
17	Zero Dispersion Slope : ≤ 0.092 ps/nm².km
18	Polarisation Mode Dispersion : ≤ 0.2 ps/√km
19	Cut-off Wavelength : ≤ 1260 nm
20	Mode Field Diameter : 9.2 ± 0.4 µm (@1310 nm) , 10.4 ± 0.4 µm (@1550 nm)
21	Core Cladding Concentricity Error : ≤ 0.8 µm
22	Cladding Diameter : 125 ± 1 µm , Coating Diameter : 245 ± 10 µm
23	Cladding Non-circularity : ≤ 1 %
24	Installation Temperature : -20 °C to +70° C, Operating Temperature : -20 °C to +60° C

FIBER PATCHCORD SINGLEMODE

SR. NO.	SPECIFICATION/QUALITATIVE REQUIREMENT
1	Fiber optic patch cord with two core (Duplex) fiber cable terminated with SC/LC/ST/FC connector at one end and SC/LC/ST/FC connector at other end.
2	The terminated connectors in assemblies are designed and are compatible with industry standards (ANSI/TIA-568-C.3, ISO/IEC 11801).
3	Have good geometrical characteristics of apex offset & radius of curvature &fiber height
4	100% factory terminated and tested for optical characteristics &fiber end face finish.
5	Fiber type G. 652D standard. OS2 (9/125 µm),
6	Buffer Diameter : 0.9 ± 0.05 mm, Jacket Thickness : 0.35 ± 0.05 mm, Strength Member as Aramid yarn
7	Cable Diameter :2.0 ± 0.2 (Simplex), 2.0 x 3.8 ± 0.2 (Duplex)
8	Jacket colour : Yellow, Jacket Material : LSZH
9	Connector Ferrule : Ceramic, Apex Offset should be <50um, Fiber height should be ±100nm
10	Connector Repeatability ≤ 0.2dB with 1,000 times mating cycles.
11	Connector cable retention : 50 N (11.24 lbs), Crush resistance : 100N/100mm, Bend Radius: 20 x Diameter of cable
12	Attenuation : ≤ 0.36 dB/km (@1310 nm), ≤ 0.25 dB/km (@1550 nm)

SR. NO.	SPECIFICATION/QUALITATIVE REQUIREMENT
13	Chromatic Dispersion : ≤ 3.5 ps/nm.km (@1285 - 1330 nm), ≤ 18 ps/nm.km (@1550 nm)
14	Zero Dispersion Wavelength : 1300 - 1324 nm
15	Cut-off Wavelength : ≤ 1260 nm
16	Mode Field Diameter : 9.2 ± 0.4 µm (@1310 nm) , 10.4 ± 0.5µm (@1550 nm)
17	Insertion Loss (@1310 &1550nm) : SM (UPC/PC) Type : SC/LC/ST/FC : ≤ 0.3 dB Return Loss (@1310 &1550nm) : SM (UPC/PC) Type : SC/LC/ST/FC : ≥50 dB
18	Insertion Loss (@1310 &1550nm) : SM (APC) Type : SC/LC/ST/FC : ≤ 0.3 dB Return Loss (@1310 &1550nm) : SM (APC) Type : SC/LC/ST/FC : ≥60 dB
19	Traceability sticker available for product tracking and Interferometry report need to submit
20	Standards: IEC 60332-1, ANSI/TIA-568-C.3, ISO/IEC 11801 RoHS Compliant
21	Installation Temperature : -20 °C to +70° C, Temperature : -20 °C to +70° C Operating
22	Available in various length in meters

SOLID CABLE CATEGORY 6 UTP FR-PVC

SR. NO.	SPECIFICATION/QUALITATIVE REQUIREMENT
1	The 4 pair Unshielded Twisted Pair cable shall be UL® Listed and ETL verified
2	This cable well exceeds the requirements of ANSI/TIA-568-C.2 and ISO/IEC 11801 Class E
3	Nominal Outer Diameter of Cable should be 5.8 ± 0.2 mm and Conductor Diameter 23 AWG
4	Construction: 4 twisted pairs separated by internal PE Cross Separator. Full separator. Half shall not be accepted. Rip Cord is must.
5	Conductor: Solid bare Copper, Outer jacket sheath:FRPVCwith UL approved CM/CMR rated cable. Jacket color: Grey
6	Insulation Material:High Density Polyethylene (HDPE) with Insulation Diameter : 0.89 ± 0.01 mm
7	Dielectric Strength of cable should be2.5 KVDC for 2 seconds
8	Bending Radius :< 4X Cable Diameter at -20°C ± 1°C Pulling Force: 25.35 lbs
9	Electrical Parameters: Insertion loss (Attenuation), NEXT, PSNEXT, ELFEXT (ACRF), PSELFEXT (PSACRF), Return Loss, ACR and PS ACR.
10	Insertion Loss of 32.8 db/100m at 250 MHz
11	Cable should support operating temperature from -20° to +70°C

SR. NO.	SPECIFICATION/QUALITATIVE REQUIREMENT
12	Cable support Conductor Resistance ≤ 9.38 Ω/100m Max.
13	Mutual Capacitance of cable should be < 5.6nF/100m Max.
14	Resistance Unbalance of cable should be 5% Max.
15	Capacitance Unbalance of cable should Max. 330pF/100m
16	Cable support Delay Skew: < 45 ns/100m, Operating Voltage: 72V
17	Nominal Voltage of Propagation (NVP): 69% and Current Rating: 1.5A Max.
18	Impedance: 100 ± 15 Ω @100 MHz. and Propagation Delay @250 MHz : 536 ns/100m
19	ETL Verified 4-Connector Channel performance certificate
20	RoHS Compliant
21	Printed sequential Length Counter of each meter on Outer Jacket
22	Category 6 UTP cables shall Supports Gigabit Ethernet (1000 base-T) verified upto 600 Mhz

FIBER RACKMOUNT LIU LOADED DRAWER TYPE 06/12 PORT

SR. NO.	SPECIFICATION/QUALITATIVE REQUIREMENT
1	The Fiber Rackmount LIU loaded having Adapter panel fixed on drawer base frame, with Adapters and with Pigtails and assembled with splice tray as per the Loaded fiber port requirement and their applicable accessories.
2	Suitable to mount at different positions (depth wise) on standard 1U 19 inch racks. Drawer type to pull out for easy maintenance when assembled in racks.
3	Cold Rolled Steel material with black powder coating
4	Three types of cable entry holes for different size cables through cable glands, covered with rubber cable grommets/covers.
5	Splicing of 24 fibers in each plastic fiber splicing trays with integrated cable spool design.
6	Non removable top cover and no rear cover. Drawer type to pull out for better access of interior.
7	As per the Loaded fiber port requirement , Loaded 6/12/24 (SCSimplex) adapters with SC SIMPLEX Pigtails on rackmount ports.
8	As per the Loaded fiber port requirement Accessories kit consists of Cable management rings/Cable saddles, Cable glands (PG13.5, 2 nos), Splice rods, Blanking clips, Velcro ties, Cable ties, Cable inlet/outlet hole covers(2 types, 2 nos each)
9	Cable management rings/Cable saddles can be mounted inside the rackmount, no provision to mount outside in front of the adapter panel.
10	Suitable for storing up to 3meter of 900 µm tight buffered fiber pigtail per adapter.

SR. NO.	SPECIFICATION/QUALITATIVE REQUIREMENT
11	Panel Dimensions : 482 x 220 x 44.3 mm (Length x Width x Height)
12	Splice Tray Dimensions : 220 x 90 x 15 mm (Length x Width x Height)
13	Port identification numbers printed on the Adapter panel
14	Standards: Comply as per ANSI/TIA-568-C.3, ISO/IEC 11801, RoHS Compliant.
15	OperatingTemperature:-20 °C to +70° C Installation Temperature : -20 °C to +70° C

PATCH PANEL 24 PORT CAT 6 UTP

SR.#	SPECIFICATION/QUALITATIVE REQUIREMENT
1	The Cat-6 transmission performance is in compliance and Exceeds ANSI/TIA/EIA-568-C.2 Standard. Supports 1000-Base-T.
2	90 Degree (Top Entry) Punch Down Design for Convenient Network Terminations.
3	Ease of Installation with built in Rear Cable Management.
4	Removable Module Design
5	6x4 Module Specially Designed Jack Configuration
6	Contacts pins and IDC mountings assembled in PCBs by SolderlessPress-fit process. PCB: FR4, 1.6mm Thickness 2 Layers
7	Jack Wire: 30 μ gold plating over 40 μ ~ 80 μ nickel plating (Square Wire, 360° plated)
8	IDC Conductor : 0.5 mm Phosphor Bronze (Base Material), 100 μ Tin Plating
10	Contact Compatibility : 22~26 AWG Stranded and Solid Wires
11	1U Patch Panel to Mount In any Standard Rack. Panel Frame : SPCC Powder Coating InMatt Finish Black Color.
12	Housing : High Impact Flame Retardant Plastic,UL 94V-0 Rated
13	Easy Port Labeling Identification Provision
14	**Electrical Characteristics:**
a	Current Rating : 1.5amps
b	Insulation Resistance : >= 500mΩ
c	Contact Resistance : <=10mΩ
d	DC Resistance : <=0.1Ω

SR.#	SPECIFICATION/QUALITATIVE REQUIREMENT
e	DC/AC Volt Endurance : DC 1000V/AC 750V 1 Min
15	**Mechanical Characteristics:**
a	Plug Insertion Life : >= 750 Cycles with FCC Compliant RJ-45 Plug
b	Plug & Jack Contact : >= 100 Grams with FCC Compliant RJ-45 Plug Force
c	Plug Retention Force : >= 11 LBF
d	Durability : 200 Termination Cycles
e	Operating Temperature : -10 Degree ~ 60 Degree
f	Operating Humidity : 10% ~ 90% RH
g	Storage Temperature : -40 Degree ~ 68 Degree
16	**Standard Verification:**
a	ANSI/TIA-568-C.2
b	ISO/IEC 11801:2002/AMMD.2:2010
d	ISO/IEC 60603-7 Compliant
e	RoHS Directive 2002/95/EC/Compliant
f	UL LISTED

CAT6 UTP PATCHCORD

SR. NO.	SPECIFICATION/QUALITATIVE REQUIREMENT
1	Category 6 patch cords with four pair twisted stranded copper wire cable terminated with RJ45 modular plugs at both the ends.
2	Patch Cords 100% factory tested for better quality and suitable for the high speed data transmission.
3	Complies with the ANSI/TIA/EIA-568-C.2, ISO/IEC 11801, RoHS compliant Standard. Supports Data Networks Speeds Up to 10/100-Base-T and 1000-Base-T.
4	Patch cord with LSZH jacket toreduced toxic/corrosivegasses emitted during combustion
5	Transparent modular plugs with transparent slip on boot and cable assemblies
6	T568B wiring scheme crimped at both connector ends.
7	Available in different colorsand different length on request

SR. NO.	SPECIFICATION/QUALITATIVE REQUIREMENT
1	Category 6 patch cords with four pair twisted stranded copper wire cable terminated with RJ45 modular plugs at both the ends.
8	Patch cord conductor: 24 AWG, Stranded copper wires, Insulation : HDPE
9	Connector Plug: 30µ" Gold plated contact, Phosphor Bronze base material
10	Jacket Diameter : 5.8 ± 0.1mm
11	Plug Insertion/Extraction Life: 750 Cycles min. using FCC approved plug
12	Plug & Jack Contact Force : 100 Grams min. using FCC approved plug
13	Plug Retention Force : 11 lbf min.
14	Current Rating: 1.5 amps, Voltage Rating: 72 Vdc max.
14	Insulation Resistance : 500MΩ min, Contact Resistance : 20mΩ max, DC Resistance: 0.1Ω max.
15	ETL Verified 4-Connector Channel performance certificate
16	OperatingTemperature:-20 °C to +70° C Installation Temperature : -20 °C to +70° C