

ACTIVE COMPONENT (Make Cisco,HP,Dell, Fortnite, Juniper,Sophos) FOR TINE T	
S.No.	24-port 10/100/1000 Base-T L2 Managed Switch with Fiber Uplinks
1	Interfaces
	24 # 10/100/1000 Base-T and 2 SFP ports.
	2Gigabit Ethernet combo
2	CPU / Memory
	128 MB and 16MB flash
3	Performance Summary
	Switching fabric: 56Gbps Line-rate (non blocking fabric)
	Throughput: 41Mpps
	Address database size: 16,000 MAC addresses
	VLAN ID Range: 1 - 4096
	Support for IEEE 802.3ad Link Aggregation Control Protocol (LACP) Up to 8 ports per group with 16 candidate ports for each (dynamic) 802.3ad link aggregation
	supports 1K multicast groups (source-specific multicasting is also supported)
4	L2 Services
	Spanning Tree Protocol (STP)
	VLAN and Voice VLAN
	Multicast TV VLAN
	Q-in-Q VLAN
	Generic VLAN Registration Protocol (GVRP)/Generic Attribute Registration Protocol (GARP)
	Unidirectional Link Detection (UDLD)
	Dynamic Host Configuration Protocol (DHCP) Relay at Layer 2
	Internet Group Management Protocol (IGMP) versions 1, 2, and 3 snooping
	IGMP Querier

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		Head-of-line (HOL) blocking
5	L3 Services	Wiredspeed routing of IPv4 packets Up to 512 static routes and up to 128 IP interfaces
		Classless Inter-Domain Routing (CIDR)
		Configuration of layer 3 interface on physical port, LAG, VLAN interface or Loopback interface
		Relay of DHCP traffic across IP domains
		Relay of broadcast information across Layer 3 domains for application discovery or relaying of BootP/DHCP packets
		Switch functions as an IPv4 DHCP Server serving IP addresses for multiple DHCP pools/scopes Support for DHCP options
6	Security	Secure Shell (SSH) Protocol & Secure Sockets Layer
		Secure Sockets Layer (SSL)
		802.1X: RADIUS authentication and accounting, MD5 hash; guest VLAN; unauthenticated VLAN, single/multiple host mode and single/multiple sessions Supports time-based 802.1X Dynamic VLAN assignment
		Should have security mechanism to protect the network from invalid configurations. A port enabled for BPDU Guard is shut down if a BPDU message is received on that port.
		STP Root Guard
		DHCP snooping
		IP Source Guard (IPSG)
		Dynamic ARP Inspection (DAI)
		IP/Mac/Port Binding (IPMB)
		Secure Core Technology (SCT)

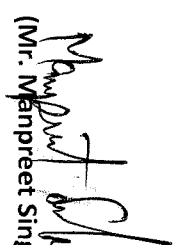
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		Secure Sensitive Data (SSD)
		Layer 2 isolation Private VLAN Edge (PVE) with community VLAN
		The ability to lock Source MAC addresses to ports, and limits the number of learned MAC addresses.
		Supports RADIUS and TACACS authentication.
		Broadcast, multicast, and unknown unicast
		RADIUS accounting
		DOS prevention
		Support for up to 512 ACL rules
7	Quality of Service (QoS)	4 hardware queues
		Strict priority and weighted round-robin (WRR) Queue assignment based on DSCP and class of service (802.1p/CoS)
		Port based; 802.1p VLAN priority based; IPv4/v6 IP precedence/type of service (ToS)/DSCP based; Differentiated Services (DiffServ); classification and re-marking ACLs, trusted QoS.
		Ingress policer; egress shaping and rate control; per VLAN, per port, and flow based.
		A TCP congestion avoidance algorithm is required to minimize and prevent global TCP loss synchronization.
8	IPv6	IPv6 host mode
		IPv6 over Ethernet Dual IPv6/IPv4 stack
		IPv6 neighbor and router discovery (ND) IPv6 stateless address auto-configuration
		Path maximum transmission unit (MTU) discovery
		Duplicate address detection (DAD) ICMP version 6
9	LEDS	System, Link/Act, Speed, LED power saving option

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10	Certifications	UL (UL 60950), CSA (CSA 22.2), CE mark, FCC Part 15 (CFR 47) Class A
Sr No.	Unmanaged Switch specifications	
1	Should have Switch 24 Ports 10/100/1000 Ethernet + 2 SFP with Unmanaged	
2	Should have Automatic medium dependent interface (MDI) and MDI crossover (MDI-X).	
3	Should have an Auto negotiated port for connecting 10, 100, 1000-Mbps devices, Indicators for loop detection, Gigabit, *miniGBIC*, Must have minimum 16 SSIDs.	
4	Should support radio resource management for power, channel, coverage hole detection and performance optimization.	
5	24 RJ-45 connectors for 10BASE-T/100BASE-TX/1000BASE-T ports with 2 combo mini-GBIC slots All units: automatic medium dependent interface (MDI) and MDI crossover (MDI-X); auto-negotiated port for connecting 10, 100, 1000-Mbps devices	
6	Should have Ethernet: • 10 Mbps (half duplex), 20 Mbps (full duplex) • Fast Ethernet: • 100 Mbps (half duplex), 200 Mbps (full duplex) • Gigabit Ethernet:	

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7	Should have Front Panel Switches1 • (#1) Enable/disable EEE, (#2) Enable/disable Flow Control, (#3) Enable/disable Port Isolation/Broadcast Storm Control	
8	Should have LEDs • Power LED, 24 Link/Activity/Speed LEDs (one per port)	
9	Should have Power Inputs • 100 to 240V AC Input	
10	Should have Ordering Information 24-Port Gigabit Unmanaged Desktop or Rack mount switch.	
Access Point - Low Density		
Sr. No.	Specification	
1	Access Points proposed must include radios for 2.4 GHz and 5 GHz with 802.11ac.	
2	An access point must include a standard OEM provided Mounting brackets for mounting on Ceiling or Roof top.	
3	Access Point shall support Console port that uses Standard Port (RJ-45) type connection	
4	Should have one RJ-45 auto-sensing 10/100/1000 Mbps LAN port.	
5	Must have atleast 3 dBi Antenna gain on each radios	
6	Must support 3X3 MIMO for both 802.11ac and 802.11n client	
7	Must Support data rate of 867 Mbps on 5ghz with 80 mhz channel.	

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	Must support minimum of 22dbm of transmit power in both 2.4Ghz and 5Ghz radios. And should follow the local regulatory Norms.	
8	Must support AP enforced load-balance between 2.4Ghz and 5Ghz band.	
9	Must incorporate radio resource management for power, channel and performance optimization	
10	Must have -97 dB or better Receiver Sensitivity.	
11	Must support Proactive Key Caching and/or other methods for Fast Secure Roaming.	
12	Access Points must support encrypted user data and management traffic between controller and Access point for better security.	
13	Must support the ability to serve clients and monitor the RF environment concurrently.	
14	Same model AP that serves clients must be able to be dedicated to monitoring the RF environment.	
15	Must be plenum-rated (UL2043).	
16	Must support 16 WLANs per AP for SSID deployment flexibility.	
17	Access Point Must continue serving clients when link to controller is down.	
18	Must support telnet and/or SSH login to APs directly for troubleshooting flexibility.	
19	Must support Power over Ethernet, local power(DC Power), and power injectors.	
20		

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21	802.11e and WMM	
22	Must support QoS capabilities.	
23	Access Point should support 802.11 DFS	

Firewall

1	Firewall	
2	The Firewall should be Hardware based, Reliable, purpose-built security appliance with hardened operating system that eliminates the security risks associated with general-purpose operating systems	
3	The Proposed Firewall Vendor should be in the Leaders' Quadrant of Latest Gartner Magic Quadrant for Unified Threat Management or Enterprise Firewalls	
4	Firewall appliance should have at least 2 x 1Gig SFP slots, and at least 6 x 10/100/1000 GE interfaces	
5	Firewall Throughput should be 19 Gbps or more	
6	Firewall should have 3DES IPsec throughput of more than 1 Gbps	
7	Firewall should support 1000 site-to-site VPN Tunnels.	
8	Firewall should support atleast 1,30,000 new sessions per second	
9	Firewall should support atleast 1.9 Million concurrent sessions	

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10	The Firewall solution should support NAT64, DNS64 & DHCPv6	
11	The proposed system shall be able to operate on either Transparent (bridge) mode to minimize interruption to existing network infrastructure or NAT/Route mode. Both modes can also be available concurrently using Virtual Contexts.	
12	The physical interface shall be capable of link aggregation, otherwise known as the IEEE 802.3ad standard, allows the grouping of interfaces into a larger bandwidth 'trunk'. It also allows for high availability (HA) by automatically redirecting traffic from a failed link in a trunk to the remaining links in that trunk.	
13	The proposed system should have integrated Traffic Shaping functionality.	
14	The Firewall module shall belong to product family which minimally attain Internet Computer Security Association (ICSA) Certification.	
15	The Firewall should have integrated SSL VPN solution to cater to 300 SSL VPN concurrent users.	
16	The proposed system should support	
17	a) IPSEC VPN	
18	b) PPTP VPN	
19	c) L2TP VPN	
20	IPSEC (DES, 3DES, AES) encryption/decryption	

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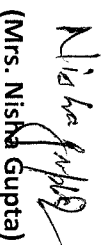
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21	SSL encryption/decryption	
22	The system shall support the following IPSEC VPN capabilities:	
23	a) Multi-zone VPN supports.	
24	b) IPSec, ESP security.	
25	c) Supports NAT traversal	
26	d) Supports Hub and Spoke architecture	
27	e) Supports Redundant gateway architecture	
28	The system shall support 2 forms of site-to-site VPN configurations:	
29	a) Policy based IPsec tunnel	
30	The system shall support IPSEC site-to-site VPN and remote user VPN in transparent mode.	
31	The system shall provide IPv6 IPsec feature to support for secure IPv6 traffic in an IPsec VPN.	
32	Intrusion Prevention System	
33	IPS throughput should be more than 5.5 Gbps	
34	The Next Generation Firewall throughput should be at least 1.8 Gbps	
35	The IPS detection methodologies shall consist of:	
36	a) Signature based detection using real time updated database	
37	b) Anomaly based detection that is based on thresholds	
38	The IPS system shall have at least 7,000 signatures	


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39	IPS Signatures can be updated in three different ways: manually, via pull technology or push technology. Administrator can schedule to check for new updates or if the device has a public IP address, updates can be pushed to the device each time an update is available	
40	In event if IPS should cease to function, it will fail open by default and is configurable. This means that crucial network traffic will not be blocked and the Firewall will continue to operate while the problem is resolved	
41	IPS solution should have capability to protect against Denial of Service (DOS) and DDOS attacks. Should have flexibility to configure threshold values for each of the Anomaly. DOS and DDOS protection should be applied and attacks stopped before firewall policy look-ups.	
42	IPS signatures should have a configurable actions like terminate a TCP session by issuing TCP Reset packets to each end of the connection, or silently drop traffic in addition to sending a alert and logging the incident	
43	Signatures should a severity level defined to it so that it helps the administrator to understand and decide which signatures to enable for what traffic (e.g. for severity level: high medium low)	
44	Antivirus	

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45	The proposed system should be able to block, allow or monitor only using AV signatures and file blocking based on per firewall policy based or based on firewall authenticated user groups with configurable selection of the following services:	
46	a) HTTP, HTTPS	
47	b) SMTP	
48	c) POP3	
49	d) IMAP	
50	e) FTP	
51	The proposed system should be able to block or allow oversize file based on configurable thresholds for each protocol types and per firewall policy.	
52	Web Content Filtering	
53	The proposed system should have integrated Web Content Filtering solution without external solution, devices or hardware modules.	
54	The proposed solution should be able to enable or disable Web Filtering per firewall policy or based on firewall authenticated user groups for both HTTP and HTTPS traffic.	
55	The proposed system shall provide web content filtering features:	
56	a) which blocks web plug-ins such as ActiveX, Java Applet, and Cookies.	
57	b) Shall include Web URL block	

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58	c) Shall include web keyword block	
59	d) Shall include Web Exempt List	
60	The proposed system shall be able to queries a real time database of over 110 million + rated websites categorized into 78+ unique content categories.	
61	Application Control	
62	The proposed system shall have the ability to detect, log and take action against network traffic based on over 2800+ application signatures	
63	The application signatures shall be manual or automatically updated	
64	The administrator shall be able to define application control list based on selectable application group and/or list and its corresponding actions	
65	Data Leakage Prevention	
66	The proposed system shall allow administrator to prevent sensitive data from leaving the network. Administrator shall be able to define sensitive data patterns, and data matching these patterns that will be blocked and/or logged when passing through the unit.	
67	High Availability	
68	The proposed system shall have built-in high availability (HA) features without extra cost/license or hardware component	

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69	The device shall support stateful session maintenance in the event of a fail-over to a standby unit.	
70	High Availability Configurations should support Active/Active or Active/ Passive	
71	Logging & Reporting Solution.	
72	A dedicated appliance to be proposed with the solution for logging, analysis, and reporting into a single system, delivering increased knowledge of security events throughout the network for centralized security event analysis, forensic research and reporting	

PASSIVE COMPONENT (Make Molex, Schneider, D-Link, Zyxel, Amp, Avaya)

Technical Specification

PowerCat 6 4 Pair Cable		
1	Type	Unshielded twisted pair cabling system, TIA / EIA 568-C.2 Category 6 Cabling system
2	Network support	Supports ultrahigh speed data networks such as Gigabit Ethernet (1000 Base-T and 1000 Base-TX) and beyond.
3	TIA / EIA 568-B.1	ETL Verified, UL Listed and UL channel verified- All three Certificates are mandatory
4	IEEE 802.3ab	Zero-bit Error, ETL verified
5	Warranty	25-year systems warranty; Warranty to cover Bandwidth of the specified and installed cabling system, and the installation costs. Site certificate must be issued by OEM

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6	Performance characteristics to be provided along with bid	Attenuation, Pair-to-pair and PS NEXT, ELFEXT and PSELFEXT, Return Loss, ACR and PS ACR for 4-connector channel
7	Manufacturer	All passive cabling must be from same OEM (UTP and Fiber)
8	Conductors	23 AWG solid bare copper
9	Insulation	Polyethylene
10	Approvals	UL Listed and UL Channel verified
		ETL verified to TIA / EIA Cat 6
11	Frequency tested up to	600 MHz minimum
12	Packing	Box of 305 meters
13	Impedance	100 Ohms + / - 15 ohms
14	Performance characteristics to be provided along with bid	Attenuation, Pair-to-pair and PS NEXT, ELFEXT and PSELFEXT, Return Loss, ACR and PS ACR
15	Delay Skew:	45ns Max
16	Impedance:	100 ± 15 Ohms
17	Current Rating:	1.5 A Max
18	Conductor DC Resistance:	66.5Ω/km
19	Voltage:	150VAC
20	Propagation delay:	535ns/100m @250MHz
21	Mutual Capacitance:	5.6nF/100m Nominal
22	Insulation Resistance:	500 MΩ Minimum
23	Dielectric Strength:	1000 V RMS
24	Contact Resistance:	10 mΩ Max
PowerCat 6 DataGate Jack		
1	Features and Benefits	<input type="checkbox"/> Patented Spring-Loaded Shutter:

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		prevents incomplete mating
		protects from dust and contaminants
		<input type="checkbox"/> Patented IDC V-shaped contacts that flex not fatigue when terminated
		<input type="checkbox"/> Features pointed IDC towers to speed termination and enhance cable retention
		<input type="checkbox"/> Dual color-coding allows for 568 A/B wiring configuration
		<input type="checkbox"/> Can be terminated using industry standard punch-down tools
		<input type="checkbox"/> RJ-11 compatible
		<input type="checkbox"/> Molded category identification on jack face as well as optional port identification icons
		<input type="checkbox"/> USOC Wiring Sequences Available
2	Dust Proof	RJ45 Jack should be supplied with Cap or Shutter to avoid Dust
3	RJ45 I/O Compatibility	a. Individual Compatible RJ45 Jack b. Pointed IDC Tower on RJ45 Jack for easy termination c. Half Plugged Patch Cord should be spitted out if not properly plugged in
4	Mechanical Characteristics	
	Plastic Housing:	Thermoplastic UL 94V-0 rated or equivalent
	Operating Life:	Minimum 750 insertion cycles
	Contact Material:	Copper Alloy
	Contact Plating:	50µ" Gold/100µ" Nickel
	Contact Force:	100g minimum
	Plug Retention Force:	11 lbf minimum
5	IDC Connector	

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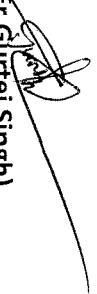
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	Plastic Housing:	Thermoplastic UL94V-0 rated or equivalent
	Operating Life:	Minimum 20 reterminations
	Contact Material:	Copper Alloy
	IDC Contact Plating:	Tin/Lead Plate
	Wire Accommodation:	22-24 AWG solid
6	Electrical Characteristics	
	Interface Resistance:	20 milliohms
	Initial Contact Resistance:	2.5 milliohms
	Insulation Resistance:	>100 Megaohms
7	Parts List:	<input type="checkbox"/> DataGate Plus Jack with Stuffer Cap
Wall plates		
1	Features and Benefits	The stylish unloaded Synergy Wallplates were designed specifically to accept the UTP Datagate Connector. The unloaded Synergy Wallplates are available in 1, 2 and 4 port variants, in five colours, to co-ordinate with any decor and any installation size.
2	Accommodates	Accommodates UTP, STP Datagate jacks Accommodates single bezel Fibre modules Accommodates media configurable modules
3	Material	VE10 ABS
24 Port loaded Patch Panel 1U Height		
	Features and benefits	
1		Available in 1U 24 Port and 2U 48 Port density <input type="checkbox"/> Each port features the patented spring-loaded shutter.
		– prevents incomplete mating


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		– protects from dust and contaminants
		<input type="checkbox"/> Patented IDC V-shaped contacts that flex not fatigue when terminated
		<input type="checkbox"/> Features pointed IDC towers to speed termination and enhance cable retention
		<input type="checkbox"/> Dual colour-coding allows for 568 A/B wiring configuration
		<input type="checkbox"/> Front and rear port labelling (port sequence 1–480) as well as panel identification label
		<input type="checkbox"/> 4 x 6 ganged jack configuration
		<input type="checkbox"/> Individually removable patch panel ports
		<input type="checkbox"/> Removable cable management shelf(s) ensure bend radius compliance
		<input type="checkbox"/> Available with either ANSI and metric hardware kit
		<input type="checkbox"/> Can be terminated using industry standard punch-down tools
		<input type="checkbox"/> RJ45 port which is RJ-11 compatible
		<input type="checkbox"/> Molded category identification on each port face as well as optional port identification icons
2	Rear Cable Manager	Flat type metal with Perforated Rear Cable Manager to hold CAT6 UTP Cable with velcro cable ties
3	Dust Proof	RJ45 Jack should be supplied with Cap or Shutter to avoid Dust
4	RJ45 I/O Compatibility	a. Individual Compatible RJ45 Jack b. Pointed IDC Tower on RJ45 Jack for easy termination c. Half Plugged Patch Cord should be spitted out if not properly plugged in
5	Mechanical Characteristics	
	Material:	CRS (cold rolled steel)
	Thickness:	.060" (1.52mm)
	Coating:	Grey / Option for Black
6	Jack Connector	

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	Plastic Housing:	Thermoplastic UL94V-0 rated or equivalent
	Operating Life:	Minimum 750 insertion cycles
	Contact Material:	Phosphor Bronze
	Contact Plating:	50µ" Gold/100µ" Nickel
	Contact Force:	100g minimum
	Plug Retention Force:	11 lbf minimum
7	IDC Connector	
	Plastic Housing:	Thermoplastic UL94V-0 rated or equivalent
	Operating Life:	Minimum 20 reterminations
	Contact Material:	Phosphor Bronze
	IDC Contact Plating:	Solder Plate (60% tin/40% lead)
	Wire Accommodation:	22-24 AWG solid
8	Electrical Characteristics	
	Interface Resistance:	20 milliohms
	Initial Contact Resistance:	2.5 milliohms
	Insulation Resistance:	>100 Megaohms
9	Standards	ETL Verified to ANSI/TIA-568-C.2, ISO/IEC 11801 Category 6
PowerCat 6 Patch cord		
1	Type	PowerCat 6 U/UTP End-to-End Solution and are designed to support data networks for 10/100BASE-T and 1000BASE-T applications.
2	Conductor size:	24 AWG stranded copper wire
3	Nom. O.D.:	5.9mm
4	Sheath:	LSOH
5	Bend radius:	4X O.D.
6	Boots	Transparent Plug with anti-snag slip on boots

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7	RJ45 Plug Standard	ISO/IEC 60606-7-4 and FCC 47 Part 68
8	Sheath Standards	Fire Propagation compliant with CSA FT1, IEC 60332-1, IEC 61034
9	Operating temperature range:	-20°C to 60°C
10	MIN operating life	: 750 insertion cycles
11	RJ45 plug and boot material:	Clear polycarbonate
12	Contact material:	0.35mm thick copper alloy
13	Contact plating:	Selective gold
14	RJ45 plug dimensions compliant with:	ISO/IEC 60603-7-4 and FCC 47 Part 68
15	Commercial Standards	ISO/IEC 11801:2002/Amd 2:2010 Cat 6-, TIA-568-C.2 Cat 6
16		ETL Verified
17	Fire Propagation Tests:	LSOH Sheath: CSA FT1, IEC 60332-1, IEC 61034
18	Standard length available	0.5mt to 10 mts
24 Port Rack Mount Fiber Panel		
1	Rack Mount	Lockable 19" rack mounted with 1U height, Sliding Drawer Type with 4 Cable entry/exit points (covered with rubber grommets)
2	Material	Powder coated mild steel
3	Accommodation and Supports	Accommodation of single mode cable multimode fibers Capable of supporting SC and LC interface - For 24 Port with SC Coupler Configurable. Fits up to four 6 pack plates/Angled 6 pack plates Management rings within system to accommodate excess fibre bend radius.

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4	Compatibility	Labelling for port identification, Fiber Management rings to accommodate excess fiber cordage behind the trough adapters and maintain fiber bend radius
Optical Fibre Adapter Plates		
1	Features and Benefits	Optical Fibre Adapter Plates are modular platform that is compatible with a various Enclosures and Fibre Splicing Systems. Adapter density ranges from 6 fibres to 24 fibre per plate, allowing for 1U 96 fibre density. Available in a variety of connectors and performance levels, the Plates require no tools for installation
		From 6 Fibre to 24 Fibre Density – Allows you to reuse your existing enclosure and increase your fibre count to meet demand
		Greater Asset Utilisation – Easily Expandable – allows multiple generational uses of the enclosure for the same rack area. Our blank plates and a small profile plate ensures you only pay for the adapters you need.
		Snap Rivets – allows for easy installation and removal
		100% Factory Tested – Guaranteed performance
2	Commercial Standards	ISO/IEC 11801, ANSI/TIA/EIA 568 B.3-2000, ANSI/TIA/EIA-492, TELECORDIA GR-409, ICEA-596
3	Mechanical Characteristics	Dimensions: 86 x 33mm
		Plate Material: Black Electroplate or Thermoplastic
Optical Fiber Armored Multi-Mode OM3		

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Cable Type	optical fibres in water blocked loose tube, taped, corrugated steel tape armoured (STA) polyethylene (HDPE) outer sheathed embedded with two steel wires on the periphery. The cables are with UV Stabilized PE Jacket and protected from Rodent attacks. complying to ISO/IEC 11801, EN50173, ANSI/TIA 568-C.3, Telcordia GR-20; suitable for use in indoor / outdoor ducts, direct burial and backbone cabling
Fiber Type	Multi Mode, 50/125 micron primary coated buffers, OM3 (IEC 60793-2-50, B1.3 and ITU T G652.d). Shall be manufactured using Vapor Axial Deposition technology.
Construction type	
Number of elements	1
Tube:	Polybutylene, Terephthalate(PBT)
Tube colour:	White
Tube diameter	3.0/2.0 mm nominal OD/ID
No of fibres:	4/6/8/12
Fibre colour sequence	Blue, Orange, Green, Brown, Slate (Grey), White, Red, Black, Yellow, Violet, Pink, Aqua
Water Blocking	Thixotropic Gel (Tube) Petroleum Jelly (Interstices)
Core Wrapping	Polyethylene Terephthalate
Armouring:	Corrugated Steel Tape Armour (ECCS Tape) Thickness > 0.125mm
Peripheral Strength Member	Two Steel wires (0.9 mm dia)
Ripcord:	Polyester based yarns below armoured tape for easy ripping
Outer Sheath	UV Stabilised Polyethylene (HDPE)

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	Sheath thickness	2.0 mm nominal
	Sheath colour	Black
	Standards	complying to ISO/IEC 11801 2nd Edition, type OS1/OS2; AS/ACIF S008; AS/NZS 3080 ; TIA/EIA 568.C.3; IEC-60793-1, 60793-2 EN50173, ANSI/TIA 568-C.3, Telcordia GR-20; suitable for use in indoor / outdoor ducts, direct burial and backbone cabling
	Mechanical characteristics	
	Dimensions and Mass Overall Cable (Nominal):	9.0 MM
	Mass (Nominal)	80 kg/km
	Cable length	2 km \pm 10%
	Max. Bending Radius (during installation)	20 X Overall diameter
	Max. Bending Radius (during full load):	10 X Overall diameter
	Max. Tensile Strength-Short Term	1500N
	Max. Crush Resistance-Short Term:	2000N/10 cm
	Operating Temperature range	-40°C \pm 70°C
	Optical characteristics	
	Mode Field Diameter @ 850nm	50 + 3.0 μ m
	Cladding Diameter	125 + 2.0 μ m
	Electrical/Optical Characteristics	
	Attenuation	Characteristics - Optical Performance Max. Attenuation (Cable with fibres) At 850 nm: 3.0 dB/km At 1330 nm: 1.0 dB/km
	Min Bandwidth	

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		At 850 nm: 2000MHz At 1300 nm: 500MHz
SC-LC OFC Patch Cords OM3		
Type of connectors	SC or LC LSOH Jacket - Reduces toxic / corrosive	
Length	Minimum 1 meters	
Polishing	100% Factory polished and tested	
Insertion Loss	Less than 0.3dB per connector	
Attenuation	3.5dB/km @ 850 nm & 1.5dB/km @ 1300nm	
Standards	ROHS Compliant	
Jacket colour	Industry Standard Colour - OS1-Yellow, OM3-Aqua, OM2-Grey, OM1-Orange	
Make and Type	SC to LC Duplex Fiber Optic Patch Cord 50/125 Micron	
Cable Sheath	LSZH	
Cable Diameter	1.6 mm	
Ferrule	Ceramic	
Buffer	Tight buffered	
Temperature Range	-40 Degree C to +85 Degree C	
Buffer Diameter:	900µm	
Primary Coating :	245µm	
Strength Member:	Aramid Yarn	
Jacket Material:	LSOH IEC 61034-1 & 2, IEC-60332-1, IEC-60754- 1 & 2	
Pigtail		
Type of connectors	SC / LC LSOH Jacket - Reduces toxic / corrosive	
Length	1.5 Mtrs	

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	Polishing	100% Factory polished, tested and Guaranteed Performance
	Standards	ROHS Compliant
SC-LC Single Mode OFC Patch Cords 9/125 Micron		
1	Type of connectors	SC or LC LSOH Jacket - Reduces toxic / corrosive
2	Length	Minimum 1 meters
3	Polishing	100% Factory polished and tested
4	Insertion Loss	Less than 0.35dB per connector
5	Attenuation	0.4dB/km over 1310nm to 1625nm
6	Standards	ROHS Compliant
7	Jacket colour	Industry Standard Colour - OS1-Yellow, OM3-Aqua, OM2-Grey, OM1-Orange
8	Make and Type	SC to LC Duplex Fiber Optic Patch Cord 9/125 Micron
9	Cable Sheath	LSZH
10	Cable Diameter	1.6 mm
11	Ferrule	Ceramic
12	Buffer	Tight buffered
13	Temperature Range	-40 Degree C to +85 Degree C
14	Buffer Diameter:	900µm
15	Primary Coating :	245µm
16	Strength Member:	Aramid Yarn
17	Jacket Material:	LSOH IEC 61034-1 & 2, IEC-60332-1, IEC-60754- 1 & 2
Rack Mount Fiber Panel - 17.C012G		
1	Features and Benefits	The WR12/24/48 is a versatile fibre management enclosure that can be used as a wall mount enclosure for isolated applications or rack mount enclosure for integrated applications

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		1U panel can be mounted flush or recessed in 19" cabinet / wall rack accommodation with optional rack mount ears.
		WR48 unit is 2U high
		Wall mountable with either left or right vertical presentation of fibre through adapters
		Rear, side & base access for Incoming / Outgoing backbone cables
		Management rings within the system to accommodate excess fibre cordage behind the through adapters and maintain fibre bend radius.
		Removable lid also affords protection to the interfacing patch cords.
		Lid is fixed with screws
		Accommodates single or multimode fibre
		Rugged steel construction in graphite finish
Sr No.	Crimping tool	
1	Customize your own cables with this tool that crimps, strips and cuts	
2	Terminates 4-wire RJ11, 6-wire RJ12 and 8-wire RJ45 modular plugs	
3	Strips flat modular and round network cable, such as Cat5e and Cat6	
4	Single blade cuts cable cleanly	
5	Sturdy construction designed to last a long time	
6	Easy-grip handle feels comfortable in your hand	
Sr No.	Punching Toolkit	

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1	This Impact 2-Pair Punch Down Tool offers a quick solution when needing to punch down large groups of cables. For use on LAN and Telecom cables with seating 2 pairs at a time. Suitable for both 110 type cable side and cross-connect side terminals blocks. For use with 90° Keystone Jacks only.	
	a) Punch Down Tool	
	b) Punch Down 2 Pairs at once	
	c) Extremely Fast	
Sr No.	Cable Tester	
1	LED status display	
2	Auto check of open/short/cross over circuit	
3	Fast/slow checking modes conversion	
4	Single key operation	
5	Manual/auto power off (after 10-minute inactivity)	
6	Low battery indication	
7	Power supplied by 9V battery	
Note:		
1	This work is to be done on turnkey basis	
2	This is Tentative Quantity. Quantity may increase or decrease.	

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