



தமிழ்நாடு உடற்கல்வியியல் மற்றும் விளையாட்டுப் பல்கலைக்கழகம்
TAMIL NADU PHYSICAL EDUCATION AND SPORTS UNIVERSITY

(Estd. by the Govt. of Tamil Nadu Under Act No.9 of 2005. A State Govt. University)

Accredited with "B+" Grade by NAAC

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Dr.I.Lilly Pushpam
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Dated.27.05.2026

Corrigendum Extension of Tender Submission date, Time and Specification of
CCTV Camera and firewall security solutions

- Sub** : TNPESU – Corrigendum – Extension of Tender submission date, time - specification of CCTV Camera and firewall security solutions to this University - Two Bids covering system – requested – Reg.
- Ref** : Tender No.1531/R5/TNPESU/ CCTV Camera/2026, Notification date. 05.03.2026.

This is to inform to all bidders that, the last date and time for bids submission for the Installation of CCTV Camera and firewall security solutions to this University. The details of the date of extension and specifications of the equipment are given below.

Sl. No.	Bid Submission last date and time	Extended last date and time for submission of Tenders
1	06.04.2026 (Monday) at 2.00 p.m (Already given last date)	10.06.2026 (Wednesday) at 2.30 p.m
2	Pre-bid meeting will be held on 03.06.2026 at 11.30 a.m	

Name of the CCTV Camera with Specifications			
Sl No.	BRAND	Description	Qty
1	CPPLUS	CP-UNC-VC81L5C-VMD-LQ 8MP Dual Light Vandal Dome Camera - 50Mtr.	175
2	CPPLUS	CP-UNC-TC81L5C-VMD-LQ 8MP Dual Light Bullet Camera - 50Mtr.	2
3	CPPLUS	CP-UNC-VC81L5C-VMD-LQ 8MP Dual Light Vandal Dome Camera - 50Mtr.	85
4	CPPLUS	CP-UNP-F4521L30-DPQ 2MP 45x Full HD Network IR PTZ Camera– 300 Mtr	9
5	CP PLUS	CP-UNR-4K532R8-EI 32Ch. 4K AI Network Video Recorder	1
6	CPPLUS	CP-UNR-4K564R8-EI 64Ch. 4K AI Network Video Recorder	4
7	WD/SG	10 TB Enterprise HDD for Storage	36

8	HP	HP Z2 MT 7LV94PA, Core i7-8700 6C 65W / 16GB (1x16GB) DDR4 2666 UDIMM NECC / Win 10 Pro / HP DisplayPort Port / 1TB 7200RPM SATA / Nvd Qdr 4GB P1000 (4)mDP Graphics / DVDWR /WARR 3/3/3 SING with 29" Montitor	1
9	AIRPRO	Layer 3 - 24 PORT POE SWITCH 100/1000 With 4 SFP /10 GIG Uplink	2
10	AIRPRO	Layer 2 - 24 PORT POE SWITCH 100/1000 With 2 SFP /4 GIG Uplink	18
11	CPPLUS	8 PORT POE SWITCH 100/1000 Mbps With 2 SFP Uplink	12
12	CPPLUS	8 PORT POE SWITCH 100/1000 With 2 SFP /2 GIG Uplink Industrial Grade	22
13	AIRPRO	2 Port 100/1000 POE Swith + 1 SFP +1 Giga ETH	6
14	TP LINK	100/1000 SFP Module SM SF	60
15	Samsung	55 inch LED TV for display System	5
16	ISI	OUTDOOR Termination Box Pole Mount for CCTV With Tray and MDB 3 Pole Breaker	22
17	VALRACK	42 U RACK SERVER RACK-600 MM DEPTH WITH CABLE MANAGER -FAN ,TRAY AND 1 PM With Switch control	1
18	VALRACK	9 U RACK SERVER RACK-600 MM DEPTH WITH CABLE MANAGER -FAN ,TRAY AND 1 PM With Switch control	19
19	FINOLEX	3 C - 1.5 Sq.m POWER CABLE Un Armoured	2,200
20	HTL	12 F OFC Cable SM Multitube Un armoured ADSS OFC	7,000
21	ISI	40mm HDPE Pipe	6,500
22	Molex/Dlink	CAT 6 Flexi STP Ethernet Cable 24AWG Copper	9,000
23	MODI	1" PVC Pipe with Accessories	3,900
24		Outdoor Box with MCCB/RCB	21
25		5 Kva UPS with 24 Hrs Backup)	1
26		1 Kva UPS with 30 min Backup)	41
27	STANDARD	GANG Box AND STAND Outdoor	275
28	STANDARD	10 Ft Hexagnol Pole Mount with Civil and Earthing	15
29	STANDARD	Extention rod for cameras	25
30	SYROTECH	12/24 PORT OFC FMS Fully Populated	50
31	STANDARD	Cable Chamber 1.5 Mtr * 1.5 Mtr Round RCC Pre casting - 10 Nos & RCC Route Marker - 150Nos With Erection in Ground/Concrete Floor	4
32		100/1000 Mbps Media Converor	12
33		LC to LC / LC - SC Patch Cable	200
34	SERVICE	Trenchless HDD Type Laying for Cable (OFC/POWER/CAT 6)	1,000
35	SERVICE	Ground Cutting and Re-Filling with Sand/Concrete	3,000
36		Laying of CAT 6 STP / OFC/ Power Cable	15,000

37		Fortigate 50 User Firewall	1
38		IPBX Gateway	1
39		24 Port FXS	2
40		16 Port FXS	2
41		IP Phone	23
42		Analog Phone	90
43	STANDARD	ELECTRICAL ACCESSORIES ,CABLE TIES NAMING TIES,CONDUITS,CASING CAPS CABLE TRAYS, Cable Ladder ..ETC	1
44	Service	Installation, Intigration, Testing, Training and Commissioning of All Supplied Item as per Customer Requirement	1

***Minimum Eligibility Criteria for CCTV OEM :*(Original Equipment Manufacture)**

Item Description		8MP Vandal Dome Camera	175.nos	
Sl. No.	Parameter	Specifications		
	Model No		Compliance	Remarks
1	Image Sensor	1/2.7		
2	Effective Pixels	3840 × 2160		
3	Minimum Illumination	0.001 lux@F1.4 (Color, 30 IRE), 0.0001 lux@F1.4 (B/W, 30 IRE), 0 lux (IR on)		
4	Shutter Speed	Auto/Manual 1/3 s–1/100,00		
5	White Balance	Auto, Natural, Street lamp, Outdoor, Manual, Regional custom		
6	Gain Control(AGC)	Auto/ Manual		
7	IR	IR Range of 50 Mtr.		
8	Warm Light	Warm Light Range of 30 Mtr, 4 Warm Light		
9	Lens	3.6 mm Lens		
10	S/N Ratio	>55dB		
11	Back Light Compensation	BLC/ HLC/ WDR(120dB)		
12	Video Compression	H.265, H.264, H.264H, H.264B, MJPEG		
13	Frame Rate	Main stream: 8MP (3840 × 2160)@1–20 fps/ 4MP (2688 × 1520)@1–25/30 fps Sub stream 1: D1@(1–25/30 fps) Sub stream 2:D1@(1–25/30 fps) Sub stream 3:D1@1fps		
14	Resolution	8MP (3840 × 2160), 6MP (3072 × 2048), 5MP (3072 × 1728), 4.5MP (2880 × 1620), 4MP (2688 × 1520), 3MP (2048 × 1536), (2304 × 1296), 2MP (1920 × 1080), 1.3MP (1280 × 960), 720p (1280 × 720), D1 (704 × 576/704 × 480), VGA (640 × 480), CIF (352 × 288/352 × 240)		

15	Audio Compression	G.711a, G.711Mu, PCM, G.726, A		
16	Protocol	FTP, IPv6, IPv4, DNS, RTCP, NTP, RTP, HTTP, HTTPS, SNMP V3, TLS Version 1.2, TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, InstaOn, ONVIF (Profile S, Profile G, Profile T), unicast, multicast		
17	Ethernet	RJ-45 (10/100 Base-T)		
18	Day/Night	Auto(ICR)/Color/B/W		
19	IR Control	Auto, Manual		
20	Storage	FTP, NAS, Mirco SD card (Max. 512GB)		
21	Audio Output	1 Channel (RCA port)		
22	Alarm IN	1 Channel in: 5 mA 3–5 VDC		
23	Alarm Out	1 Channel out: 300 mA 12 VDC		
24	Weatherproof Standard	IP67, IK10		
25	Certificates	ISO 9001: 2015, ISO 20000-1 : 2018, CE, FCC and RoHS, BIS, STQC approved compliance report		
26	Power Source	12 VDC,		

Item Description		8MP Outdoor bullet Camera	2.nos	
Sl. No.	Parameter	Specifications	Compliance	Remarks
1	Image Sensor	1/2.7		
2	Effective Pixels	3840 × 2160		
3	Minimum Illumination	0.001 lux@F1.4 (Color, 30 IRE), 0.0001 lux@F1.4 (B/W, 30 IRE), 0 lux (IR on)		
4	Shutter Speed	Auto/Manual 1/3 s–1/100,00		
5	White Balance	Auto, Natural, Street lamp, Outdoor, Manual, Regional custom		
6	Gain Control(AGC)	Auto/ Manual		
7	IR	IR Range of 50 Mtr.		
8	Warm Light	Warm Light Range of 30 Mtr, 4 Warm Light		
9	Lens	3.6 mm Lens		
10	S/N Ratio	>55dB		
11	Back Light Compensation	BLC/ HLC/ WDR(120dB)		
12	Video Compression	H.265, H.264, H.264H, H.264B, MJPEG		
13	Frame Rate	Main stream: 8MP (3840 × 2160)@1–20 fps/ 4MP (2688 × 1520)@1–25/30 fps Sub stream 1: D1@(1–25/30 fps) Sub stream 2:D1@(1–25/30 fps) Sub stream 3:D1@1fps		

14	Resolution	8MP (3840 × 2160), 6MP (3072 × 2048), 5MP (3072 × 1728), 4.5MP (2880 × 1620), 4MP (2688 × 1520), 3MP (2048 × 1536), (2304 × 1296), 2MP (1920 × 1080), 1.3MP (1280 × 960), 720p (1280 × 720), D1 (704 × 576/704 × 480), VGA (640 × 480), CIF (352 × 288/352 × 240)		
15	Audio Compression	G.711a, G.711Mu, PCM, G.726, A		
16	Protocol	FTP, IPv6, IPv4, DNS, RTCP, NTP, RTP, HTTP, HTTPS, SNMP V3, TLS Version 1.2, TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, InstaOn, ONVIF (Profile S, Profile G, Profile T), unicast, multicast		
17	Ethernet	RJ-45 (10/100 Base-T)		
18	Day/Night	Auto(ICR)/Color/B/W		
19	IR Control	Auto, Manual		
20	Storage	FTP, NAS, Mirco SD card (Max. 512GB)		
21	Audio Output	1 Channel (RCA port)		
22	Alarm IN	1 Channel in: 5 mA 3–5 VDC		
23	Alarm Out	1 Channel out: 300 mA 12 VDC		
24	Weatherproof Standard	IP67, IK10		
25	Certificates	ISO 9001: 2015, ISO 20000-1 : 2018, CE, FCC and RoHS, BIS, STQC approved compliance report		
26	Power Source	12 VDC,		

Item Description		6 MP Fish Eye Camera	85.nos	
Sl. No.	Parameter	Specifications		
	Model No	CP-UNC-EE61L2C-VMD-Q	Compliance	Remarks
1	Image Sensor	1/2.5" 6MP PS CMOS Image Sensor (1.016 centimeters)		
2	Minimum Illumination	0.001 lux@F1.8 (Color, 30 IRE), 0.0001 lux@F1.8 (B/W, 30 IRE), 0 lux (IR on)		
3	Effective Pixels	2560 (H) × 2560 (V)		
4	Shutter Speed	Auto/Manual 1/3 s–1/100000 s		
5	White Balance	Auto, Natural, Street lamp, Outdoor, Manual, Regional custom		
6	Lens	1.68 mm		
7	Gain Control (AGC)	Auto/Manual		
8	Lens Type	Fixed-focal		
9	Iris Control	Fixed		
10	Max Aperture	F1.8		
11	IR Control	Auto/Manual		
12	Back Light Comp.	BLC/ HLC/ WDR(120dB)/ISA		

13	Stream Capability	Triple Stream		
14	S/N Ratio	>56 dB		
15	Resolution	6MP (2560 × 2560), 4MP (2048 × 2048), 2MP (1440 × 1440), 1.6MP (1280 × 1280), 1MP (1024 × 1024), (720 × 720), SVCD (480 × 480)		
16	Noise Reduction	2D NR, 3D NR		
17	Motion Detection	OFF/ON (4 areas, rectangular)		
18	IR	IR Range of 20 Mtr.		
19	Bit Rate Control	VBR/CBR/ABR		
20	Bit Rate	H.265: 3 kbps–16384 kbps, H.264: 3 kbps–16384 kbps		
21	Video Format	PAL/NTSC		
22	Video Compression	H.265, H.264, H.264H, H.264B, MJPEG (Only supported by sub stream)		
23	Image Rotation	0°/180°		
24	Smart Compression	Instastream/ General		
25	Frame Rate	Max Resolution in O Mode by Default Main stream: 6MP (2560 × 2560)@1–25/30 fps, Sub stream: 2MP (1440 × 1440)@1–25/30 fps, third stream: 2MP (1440 × 1440)@1–25/30 fps Resolution of 2 Split Windows in 2P Mode: Sub stream: Panoramic View and Split Window: (1920 × 1440)@1– 25/30 fps, (640 × 480)@1–25/30 fps, (320 × 240)@1– 25/30 fps, third stream: Panoramic View and Split Window: (1920 × 1440)@1– 25/30 fps, (640 × 480)@1–25/30 fps, (320 × 240)@1– 25/30 fps, Resolution of 2 Split Windows in 2R Mode: Sub stream: Panoramic View and Split Window: (2560 × 960)@1– 25/30 fps, (1280 × 480)@1–25/30 fps, (640 × 240)@1– 25/30 fps, third stream: Panoramic View and Split Window: (2560 × 960)@1– 25/30 fps, (1280 × 480)@1–25/30 fps, (640 × 240)@1– 25/30 fps, Resolution of 4 Split Windows in 4R Mode: sub stream: Panoramic View and Split Window: (1920 × 1440)@1– 25/30 fps, (640 × 480)@1–25/30 fps, (320 × 240)@1– 25/30 fps, third stream: Panoramic View and Split Window: (1920 ×		

		1440)@1– 25/30 fps, (640 × 480)@1–25/30 fps, (320 × 240)@1–25/30 fps		
26	Mirror Function	Support		
27	Privacy Mask	4 Mosaics + 4 color blocks		
28	Audio	Built-in dual Mic		
29	Built-in Speaker	Support		
30	EPTZ	Support		
31	Day/Night	Auto(ICR)/Color/B/W		
32	Alarm Event	No SD card, Low SD card space, SD card error, Network disconnection, IP conflict, Account Lockout, Motion Detection, Video Tampering, Scene Changing, Tripwire, Intrusion, Audio Detection, Intensity change, Voltage Detection, External Alarm, People Counting in area, Stay Detection, People counting, Abnormal number of people detection, Security exception		
33	Intelligent Scene Adaption (ISA)	AI ISA		
34	Cyber Security	Video encryption, Firmware encryption, Configuration encryption, Digest, WSSE, Account lock out, Security logs, IP/MAC filtering, syslog, HTTPS, 802.1x, Trusted boot, Trusted execution, Trusted upgrade, Session security, Security warning		
35	OSD	Camera title, Date & Time, Location, Font Properties, Picture Overlay, Custom Title		
36	Protocol	IPv4, IPv6, HTTP, HTTPS, TCP, UDP, ARP, RTP, RTSP, RTSPS, RTCP, RTMP, SMTP, SFTP, DHCP, DNS, QoS, UPnP, NTP, Multicast, Unicast, ICMP, IGMP, PPPoE, SNMP V3, ONVIF (Profile S & Profile G & Profile T), InstaOn, TLS Version 1.2 & 1.3, SSL		
37	SDK and API	Support		
38	Intelligent Scene Adaption (ISA)	Support		
39	Decoding Mode	Front-dewarp, Back-dewarp		
40	Display Mode	Front-dewarp (hardware decoding): 1O, 1P, 2P, 1R, 2R, 4R, 1O+ 3R 2P/2R: Supports split screen for 2 windows. 4R: Supports split screen for 4 windows		
41	Heat Map	Support		
42	RS-485	1 (baud rate range: 1200 bps–		

		115200 bps)		
43	Audio Input	1 Channel (RCA port)		
44	Audio Output	1 Channel (RCA port)		
45	Audio Compression	PCM, G.711a, G.711Mu, G.726, G.723, AAC		
46	Ethernet	RJ-45 (10/100 Base-T)		
47	Alarm IN	1 channel in: wet contact, 5 mA 3–5 VDC		
48	Alarm Out	1 channel out: wet contact, 300 mA 12 VDC		
49	Weatherproof Standard	IP67, IK10		
50	Storage	SFTP, Mirco SD card (Max. 512GB)		
51	Certificates	ISO 9001: 2015, ISO 20000-1 : 2018, CE, FCC and RoHS, BIS, STQC approved compliance report		
52	Power Source	12 VDC, 1 A, PoE (802.3af)		
53	Dual Power Backup	When the power adapter and PoE provide power at the same time, disconnect one of them. The device will continue to work, but will not restart.		
54	Operating Temperature	–30 °C to +60 °C (–22°F to +140 °F)		
55	Casing	Metal		

Item Description		Outdoor PTZ Camera 2MP	9.nos	
Sl. No	Parameter	Specifications		
	Model No	CP-UNP-F4521L30-DPQ	Compliance	Remarks
1	Image Sensor	1/2.8" 2MP PS CMOS Image Sensor		
2	Effective Pixels	1920(H) x 1080(V)		
3	Minimum Illumination	Color: 0.005 Lux@F1.6, B/W: 0.0005 Lux@F1.6, 0 Lux@F1.6 (IR on)		
4	Focus Control	Auto/Semi-Auto/Manual		
5	White Balance	Auto/Indoor/Outdoor/Tracking/Manual/Sodium lamp/Natural light/Street lamp		
6	Lens	3.95 mm–177.75 mm		
7	Max. Aperture	F1.6–F4.95		
8	Iris Control	Auto/Manual		
9	Electronic Shutter	1/1 s–1/30,000 s		
10	Back Light Compensation	BLC / HLC / WDR(120dB)		
11	S/N Ratio	≥ 55 dB		
12	Optical Zoom	45×		

13	Digital Zoom	16x		
14	Image Rotation	180°		
15	Pan & Tilt Range	Pan: 0° to 360° endless, Tilt: -20° to +90°, auto flip 180°		
16	Power-off Memory	Support		
17	Manual Speed	Pan: 0.1° ~260° /s, Tilt: 0.1° ~120° /s		
18	Preset Speed	Pan: 300°/s, Tilt: 200°/s		
19	Image Stabilization	Electronic (EIS)		
20	Privacy Masking	Up to 24 Areas can be set, with up to 8 areas in the same view		
21	Special Features	Up to 300 Presets, 5 Pattern, 8 (up to 32 presets per tour) Tour, 5 Scan		
22	Idle Motion	Preset/ Tour/ Pattern/ Scanning		
23	Defog	Electronic		
24	IR Distance	300 Mtr.		
25	IR Number	6 (IR)		
26	IR Control	Zoom Prio, Manual, Smart IR, Off		
27	Day/Night	Auto (ICR)/Color/B/W		
28	Gain Control	Auto/Manual		
29	Video Format	PAL/NTSC		
30	Video Compression	H.265, H.264H, H.264B, H.264, MJPEG(Sub Stream)		
31	Resolution	2MP (1920 × 1080), 1MP (1280 × 720), D1 (704 × 576), CIF (352 × 288)		
32	Frame Rate	Main stream: 2MP/1MP/D1 @(1-25/30 fps) Sub stream 1: 2MP/1MP/D1 @(1-25/30 fps) Sub stream 2: D1/CIF @(1-25/30 fps) Sub stream 3: D1/CIF @(1-25/30 fps)		
33	Stream Capability	Quad Stream		
34	Noise Reduction	2D/3D DNR		
35	Two-way talk	Support		
36	Audio In	1 channel		
37	Audio Out	1 channel		
38	Audio Compression	PCM, G.711a, G.711Mu, G.726, MPEG2-Layer2, G722.1		
39	Alarm I/O	7/2 channel In/Out		
40	Ethernet	RJ-45 (10/100Base-T)		
41	Alarm Event	Motion/Tampering detection, audio detection, network disconnection detection, IP conflict detection, memory card state detection, memory space detection		

42	Protocol	IPv4, IPv6, HTTP, HTTPS, ARP, RTSPS, SMTP, SFTP, DHCP, DNS, UPnP, NTP, Multicast, NFS, PPPoE, SNMP V1/V2/V3, ICMP, IGMP, ONVIF (Profile S, Profile G, Profile T), Unicast, Multicast		
43	Cyber Security	AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, WSSE, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot		
44	Storage	SFTP, NAS, Micro SD card (Support max. 512 GB)		
45	Operating Temperature	-40 °C to +70 °C		
46	SR 332	Quality Level II		
47	Weatherproof Standard	IP67, IK10, TVS 8000V lightning proof, surge protection, voltage transient protection		
48	Certificates	MTBF Certificate from STQC, EMI/EMC, ISO 9001: 2015, ISO 20000-1 : 2018, CE, FCC and RoHS, BIS, STQC approved compliance report		
49	Power Source	24 VDC, 2.5 A ± 25% PoE+ (802.3at)		
50	Casing	Metal		

Item Description		32 CH NVR 8 Sata	1.nos	
Sl. No.	Parameter	Specifications		
	Model No	CP-UNR-4K532R8-EI	Compliance	Remarks
1	Processor	Industrial-grade processor		
2	Operating System	Embedded Linux		
3	IP Camera Input	64 Channel		
4	AI by Camera	Face detection, Face recognition, Video metadata (Human, Motor vehicles, and Non-motor vehicles), Perimeter protection, IMD, Stereo analysis, Crowd distribution, People counting, ANPR, Heat map, PPE detection		
5	Perimeter Performance AI by NVR (Number of Channels)	24 Channels, 10 IVS rules for each channel		
6	Face Detection Performance of AI by Camera (Number of Channels)	Human and vehicle detection on all channels, supporting up to 32 targets per second		
7	Video Output	2 VGA:1920 × 1080, 1280 × 1024, 1280 × 720; 2 HDMI:3840 × 2160, 1920 × 1080, 1280 × 1024, 1280 ×		

		720		
8	Face Detection AI by NVR	Sub screen 4K enabled: 4 Channels (up to 12 face images/sec each channel) Sub screen 4K disabled: 8 Channels (up to 12 face images/sec each channel)		
9	Face Detection AI by Camera	32 Channels		
10	Face Recognition AI by NVR	Sub screen 4K enabled: 16 Channel FD (by camera) + FR (by recorder), image stream: 32 face images/sec 4 Channel FD (by recorder) + FR (by recorder), Video stream: 16 face images/sec Sub screen 4K disabled: 16 Channel FD (by camera) + FR (by recorder), image stream: 32 face images/sec 8 Channel FD (by recorder) + FR (by recorder), Video stream: 16 face images/sec		
11	Face Attributes	6 attributes		
12	Face Database Capacity	Up to 20 face databases with 200,000 images, with a total capacity of 44G		
13	Decoding Capability	AI disabled: 2 Channel 32MP@30fps, 2 Channel 24MP@30 fps, 4 Channel 16MP@30 fps, 5 Channel 12MP@30 fps, 8 Channel 8MP@30 fps, 10 Channel 6MP@30 fps, 12 Channel 5MP@30 fps, 16 Channel 4MP@30 fps, 32 Channel 1080p@30 fps, 64 Channel 720p@30 fps AI enabled: 1 Channel 32MP@30 fps, 1 Channel 24MP@30 fps, 2 Channel 16MP@30 fps, 4 Channel 12MP@30 fps, 6 Channel 8MP@30 fps, 8 Channel 6MP@30 fps, 8 Channel 5MP@30 fps, 12 Channel 4MP@30 fps, 24 Channel 1080p@30 fps, 48 Channel 720p@30 fps, 64 Channel D1@30 fps		
14	License Plate Database Capacity	1. Up to 20,000 plate numbers, 2. Blocklist and allowlist		
15	Non-motor Vehicle	4 attributes		
16	Disk Interface	8 SATA ports each disk can contain up to 20TB, this limit varies depending on the environment temperature		

17	IMD+ by Camera	Human and vehicle detection on all channels, supporting up to 64 targets per second		
18	Network Bandwidth	AI disabled: 512 Mbps incoming, 512 Mbps recording and 512 Mbps outgoing AI enabled: 200 Mbps incoming, 200 Mbps recording and 200 Mbps outgoing		
19	Resolution	32MP, 24MP, 16MP, 12MP, 8MP, 6MP, 5MP, 4MP, 3MP, 2MP, 960p, 720p, D1, CIF, QCIF		
20	People Attributes	9 human body attributes		
21	Intelligent Alarm	Face detection, Face recognition, Video metadata (Human, Motor vehicle, and non-motor vehicle), Perimeter protection, License plate comparison		
22	RAID	RAID 0/1/5		
23	Playback Mode	Instant playback, General playback, Event playback, Tag playback, Smart playback		
24	Multi-channel Playback	Up to 16 channels		
25	Protocols	HTTPS, TCP/IP, IPv4, IPv6, UDP, NTP, DHCP, DNS, SMTP, UPnP, IP Filter, FTP, DDNS, SNMP, Alarm Server, InstaOn, Auto connect, ISCSI, ONVIF (Profile T, Profile S, Profile G), CGI, SDK		
26	Power Redundancy	Support		
27	Video Compression	Instastream, H.265, H.264+, H.264, MJPEG		
28	Audio Compression	G.711a, G.711u, PCM, G726		
29	Audio Input	1 Channel RCA		
30	Audio Output	2 Channel RCA		
31	Alarm Input	16 Channels		
32	Alarm Output	8 Channels (1 channel 12 V 1 A output)		
33	Backup Mode	USB device and network		
34	Interface Ports	4 USB (2 front USB 2.0 ports, 2 rear USB 3.0 ports), 2 HDMI, 2 VGA, 2 RS485 (1 port for half-duplex serial communication, 1 port for full-duplex serial communication), 1 RS232, 1 eSATA		
35	Ethernet Port	2 (10/100/1000 Mbps Ethernet port, RJ-45)		
36	Smart Phone	iOS, Android		
37	Power Supply	100–240 VAC, 50/60 Hz		
38	Operating Temperature	–10°C to +55°C (14°F to +131°F)		

Item Description		32 CH NVR 8 Sata	4.nos	
Sl. No.	Parameter	Specifications		
	Model No	CP-UNR-4K532R8-EI	Compliance	Remarks
1	Processor	Industrial-grade processor		
2	Operating System	Embedded Linux		
3	IP Camera Input	64 Channel		
4	AI by Camera	Face detection, Face recognition, Video metadata (Human, Motor vehicles, and Non-motor vehicles), Perimeter protection, IMD, Stereo analysis, Crowd distribution, People counting, ANPR, Heat map, PPE detection		
5	Perimeter Performance AI by NVR (Number of Channels)	24 Channels, 10 IVS rules for each channel		
6	Face Detection Performance of AI by Camera (Number of Channels)	Human and vehicle detection on all channels, supporting up to 32 targets per second		
7	Video Output	2 VGA:1920 × 1080, 1280 × 1024, 1280 × 720; 2 HDMI:3840 × 2160, 1920 × 1080, 1280 × 1024, 1280 × 720		
8	Face Detection AI by NVR	Sub screen 4K enabled: 4 Channels (up to 12 face images/sec each channel) Sub screen 4K disabled: 8 Channels (up to 12 face images/sec each channel)		
9	Face Detection AI by Camera	32 Channels		
10	Face Recognition AI by NVR	Sub screen 4K enabled: 16 Channel FD (by camera) + FR (by recorder), image stream: 32 face images/sec 4 Channel FD (by recorder) + FR (by recorder), Video stream: 16 face images/sec Sub screen 4K disabled: 16 Channel FD (by camera) + FR (by recorder), image stream: 32 face images/sec 8 Channel FD (by recorder) + FR (by recorder), Video stream: 16 face images/sec		
11	Face Attributes	6 attributes		
12	Face Database Capacity	Up to 20 face databases with 200,000 images, with a total capacity of 44G		
13	Decoding Capability	AI disabled: 2 Channel 32MP@30fps, 2 Channel 24MP@30 fps, 4 Channel 16MP@30 fps, 5 Channel 12MP@30 fps, 8 Channel 8MP@30 fps, 10 Channel 6MP@30 fps, 12		

		Channel 5MP@30 fps, 16 Channel 4MP@30 fps, 32 Channel 1080p@30 fps, 64 Channel 720p@30 fps AI enabled: 1 Channel 32MP@30 fps, 1 Channel 24MP@30 fps, 2 Channel 16MP@30 fps, 4 Channel 12MP@30 fps, 6 Channel 8MP@30 fps, 8 Channel 6MP@30 fps, 8 Channel 5MP@30 fps, 12 Channel 4MP@30 fps, 24 Channel 1080p@30 fps, 48 Channel 720p@30 fps, 64 Channel D1@30 fps		
14	License Plate Database Capacity	1. Up to 20,000 plate numbers, 2. Blocklist and allowlist		
15	Non-motor Vehicle	4 attributes		
16	Disk Interface	8 SATA ports each disk can contain up to 20TB, this limit varies depending on the environment temperature		
17	IMD+ by Camera	Human and vehicle detection on all channels, supporting up to 64 targets per second		
18	Network Bandwidth	AI disabled: 512 Mbps incoming, 512 Mbps recording and 512 Mbps outgoing AI enabled: 200 Mbps incoming, 200 Mbps recording and 200 Mbps outgoing		
19	Resolution	32MP, 24MP, 16MP, 12MP, 8MP, 6MP, 5MP, 4MP, 3MP, 2MP, 960p, 720p, D1, CIF, QCIF		
20	People Attributes	9 human body attributes		
21	Intelligent Alarm	Face detection, Face recognition, Video metadata (Human, Motor vehicle, and non-motor vehicle), Perimeter protection, License plate comparison		
22	RAID	RAID 0/1/5		
23	Playback Mode	Instant playback, General playback, Event playback, Tag playback, Smart playback		
24	Multi-channel Playback	Up to 16 channels		
25	Protocols	HTTPS, TCP/IP, IPv4, IPv6, UDP, NTP, DHCP, DNS, SMTP, UPnP, IP Filter, FTP, DDNS, SNMP, Alarm Server, InstaOn, Auto connect, iSCSI, ONVIF (Profile T, Profile S, Profile G), CGI, SDK		
26	Power Redundancy	Support		
27	Video Compression	Instastream, H.265, H.264+, H.264, MJPEG		
28	Audio Compression	G.711a, G.711u, PCM, G726		

29	Audio Input	1 Channel RCA		
30	Audio Output	2 Channel RCA		
31	Alarm Input	16 Channels		
32	Alarm Output	8 Channels (1 channel 12 V 1 A output)		
33	Backup Mode	USB device and network		
34	Interface Ports	4 USB (2 front USB 2.0 ports, 2 rear USB 3.0 ports), 2 HDMI, 2 VGA, 2 RS485 (1 port for half-duplex serial communication, 1 port for full-duplex serial communication), 1 RS232, 1 eSATA		
35	Ethernet Port	2 (10/100/1000 Mbps Ethernet port, RJ-45)		
36	Smart Phone	iOS, Android		
37	Power Supply	100–240 VAC, 50/60 Hz		
38	Operating Temperature	–10°C to +55°C (14°F to +131°F)		

Item Description		10 TB Enterprise HDD	36.nos	
S. No	Parameter	Specification		
	Model No		Compliance	Remarks
1	Capacity	10 TB		
2	Interface	SATA 6 Gb/s		
3	Recording Technology	CMR		
4	AI Channels	32		
5	AI Real Time Capture Events/Sec 1,2	Up to 120		
6	HD Cameras Supported 3	Up to 64		
7	RV Sensors	Yes		
8	Max Data Transfer Rate (MB/s)	Up to 255		
9	Cache (MB)	256		
10	Load/Unload Cycles	300,000		
11	Power-On Hours per year	8,760		
12	Average Read/Write Power * (W) 7	8.8		
13	Operating (Ambient, min °C)	0		
14	Warranty, Limited (years) 5	5 Years		

Item Description		SUPPLY OF CORE I7-8700 6C 65W / 16GB (1X16GB) DDR4 2666 UDIMM NECC / WIN 10 PRO / HP DISPLAYPORT PORT / 1TB 7200RPM SATA / NVD QDR 4GB P1000 (4) MDP GRAPHICS / DVDWR /WARR 3/3/3 SING	1.nos	
S. No.	Parameter	Specification		
	Model No		Compliance	Remarks
1	Operating	Windows 10 Pro 64		

	system			
2	Processor Name	Intel® Core™ i7-8700 with Intel® UHD Graphics 630 (3.2 GHz base frequency, up to 4.6 GHz with Intel® Turbo Boost Technology, 12 MB cache, 6 cores)		
3	Processor family	8 th Generation Intel® Core™ i7 processor		
4	Number of processors	1		
5	Chipset	Intel® C246		
6	Memory	16 GB DDR4-2666 non-ECC SDRAM (1 x 16 GB)		
7	Memory slots-	4 DIMM		
8	Hard drive description	1 TB 7200 rpm SATA		
9	Storage type	HDD		
10	Graphics	NVIDIA® Quadro® P1000 (4 GB GDDR5 dedicated)		
11	Ports	1 headphone/microphone combo; 2 USB 3.0 (1 charging); 1 USB 3.1 Gen 2 Type-C™ 1 audio-in; 1 audio-out; 1 RJ-45; 2 DisplayPort™ 1.2; 2 USB 2.0; 4 USB 3.0		
12	Expansion slots	1 PCIe 3 x4 (x16 connector); 2 M.2 PCIe 3 x4; 1 PCIe Gen 3 x16; 2 PCIe 3 x1 (x4 open ended connector)		
13	Network interface	Integrated Intel® I219-LM PCIe® GbE		
14	Warrenty	3 Years		
	Model	HP Z2 MT 7LV94PA,		

Item Description		Supply of Layer 3 – 24 PORT SWITCH 100/1000 With 4 SFP /2 GIG Uplink24	2.nos	
S.No	Parameter	Specification	Compliance	Remarks
	Model No			
1	Port	4*10/100/1000MCombo+20*SFP, 4*1000M Base-X SFP/10GESFP+ Dual power supply		
2	Switchingcapacity	128Gbps		
3	Packet forwardingrate	95Mbps		
4	Mac	16K		
5	Multicast	1K		
6	Route	512		
7	Memoryandstorage	AC:100~240V 47/63Hz; DC:36V~75V;		
8	Powerconsumption	≤38W		
9	LAN	Support 4K VLAN Support Vlan based on port, MAC and protocol Support dual Tag VLAN, port-based static QinQ and fiexibleQinQ		
10	MAC	16K Mac address Support static MAC address setting Support black hole MAC address filtering Support port MAC address limit		
11	Ring network	Support STP/RSTP/MSTP		

	protocol	Support ERPS Ethernet ring network protection protocol Support Loopback-detection port loopback detection		
12	Port control	Support two-way bandwidth control Support port storm suppression Support 9K Jumbo ultra-long frame forwarding		
13	Port aggregation	Support static link aggregation Support dynamic LACP Each aggregation group supports a maximum of 8 ports		
14	Mirroring	Support port mirroring Support stream mirroring		
15	ACL	Support standard and extended ACL Support ACL policy based on time period Provide flow classification and flow definition based on IP header information such as source/destination MAC address, VLAN, 802.1p, ToS, DSCP, source/destination IP address, L4 port number, protocol type, etc.		
16	Qos	Support flow rate limiting function based on custom business flow Supports mirroring and redirection functions based on custom business flows Support priority marking based on custom service flow, support 802.1P, DSCP priority Remark capability Support port-based priority scheduling function, support queue scheduling algorithms such as SP/WRR/SP+WRR		
17	Safety	Support user hierarchical management and password protection Support IEEE 802.1X authentication Support Radius&TACACS+ authentication Support MAC address learning limit, support black hole MAC function Support port isolation Support broadcast message rate suppression Support IP Source Guard Support ARP flood suppression and ARP spoofing protection Support DOS attack and virus attack protection		
18	Layer 3	Support ARP learning and aging Support static route Support dynamic route RIP/OSPF/BGP/ISIS Support VRRP		
19	System management	CLI, Telnet, WEB, SNMP V1/V2/V3, SSH2.0 Support FTP, TFTP file upload and download Support RMON Support SNTTP Support system work log Support LLDP neighbour device discovery protocol Support 802.3ah Ethernet OAM Support RFC 3164 Syslog Support Ping and Traceroute		

Item Description		Layer 2 - 24 PORT POE SWITCH 100/1000 With 2 SFP /4 GIG Uplink	18.nos	
Sl. No.	Parameter	Specifications		
	Model No		Compliance	Remarks
1	Item	AP-SG4500-28GT-4XFP		
2	Physical port	24 x 10/100/1000BaseT + 4 x 10GE(SFP+)		
3		1x Console port		
4	Performance			
5	Switching Capacity	128Gbps		
6	Throughput	95Mpps		
7	Jumbo Frame	10K		
8	MAC Address	16K		
9	ACL Table	512		
10	Physical			
11	Dimension (W*H*D)	NBD		
12	Relative Humidity	10%~90% non-condensing, storage 95%		
13	Temperature	Working 0°C~50°C, storage -40°C~70°C		
14	Power Supply	AC: 100~240VAC, 50~60Hz;		
15	Power Consumption	NBD		
16	Main Features			
17	L1, L2 Features	IEEE802.3(10Base-T), IEEE802.3u(100Base-TX), IEEE802.3z(1000BASE-X), IEEE802.3ab(1000Base-T), IEEE802.3ae(10GBase), IEEE802.3x, IEEE802.3ak(10GBASE-CX4)		
		Port loopback detection		
		LLDP and LLDP-MED		
		ULDP		
		802.3ad LACP, max 128 group trunks with max 8 ports for each trunk		
		LACP load balance		
		N:1 Port Mirroring		
		RSPAN		
		IEEE802.1d(STP)		
		IEEE802.1w(RSTP)		
		IEEE802.1s(MSTP)		
		Root Guard		
		BPDU Guard		
		BPDU Tunnel		
		802.1Q, 4K VLAN		
		MAC VLAN, Voci VLAN, PVLAN, Protocol VLAN, Multicast VLAN		

		QinQ, Flexible QinQ		
		GVRP		
		Broadcast / Multicast / Unicast Storm Control		
		IGMP v1/v2/v3 Snooping and L2 Query		
		ND Snooping		
		MLDv1/v2 Snooping		
		Port Security		
		Flow Control: HOL, IEEE802.3x		
		Bandwidth Control		
18	QoS	8 Queues		
		SP, DWRR, SDWRR		
		Traffic Classification Based on 802.1p COS, ToS, DiffServDSCP, ACL, port number		
		Traffic Policing		
		PRI Mark/Remark		
19	ACL	IP ACL ,MAC ACL,IP-MAC ACL		
		Standard and Expanded ACL Based on source/destination IP or MAC, IP Protocol, TCP/UDP port, DSCP, ToS, IP Precedence), VLAN, Tag/Untag, CoS		
		Redirect and statistics		
		Rules can be configured to port, VLAN		
		Time Ranged ACL		
20	Security	802.1x AAA		
		Port, MAC based authentication		
		Accounting based on time length and traffic		
		Guest VLAN and auto VLAN		
		RADIUS for IPv4 and IPv6		
		TACACS+ for IPv4 and IPv6		
		MAB		
21	DHCPv4/v6	DHCP Server/Client for IPv4/IPv6		
22	Traffic Monitor	DHCP Relay/Option 82		
		DHCP Snooping/Option 82		
23	Traffic Monitor	sFlow Traffic Analysis		
24	Security Network Management	CLI, WEB, Telnet, SNMPv1/v2c/v3 through IPv4 and IPv6		
		Syslog and external Syslog Server		
		HTTP SSL		
		SNMP MIB, SNMP TRAP		
		FTP/TFTP		
		SNTP/NTP		
		RMOM 1,2,3,9		
		Authentication by Radius/TACACS		
		SSH v1/v2		

		Dual firmware images/ Configuration files		
		802.3ah OAM, 802.1ag OAM		

Item Description		8 PORT POE SWITCH 100/1000 Mbps With 2 SFP Uplink	12.nos	
S.No	Specification		Compliance	Remarks
1	PoE Mode: End-span			
2	Switch Capacity: 20Gbps			
3	Surge Immunity:6KV			
4	Uplink Ports: 1x 10/100/1000Base-TEthernet Ports & 1x 1000Base-X SFP Port			
5	Operating Temperature: - 10°C~ 45°C			
6	Power Consumption: 5W			
7	Net Weight(g):500g			
8	Dimension: 200mm x 101.8mm x 27mm			
9	Relatively Operating Humidity: 5%-95%(Non-condensing)			
10	PoE Output: Single PoE Output≤30W(54V DC), Whole machine PoE output≤120W			
11	PoE Power Supply: 1/2(+),3/6(-)			
12	PoE Standard: 802.3af/at(PSE)			
13	Power Source:DC 48V~57V			
14	Downlink Ports: 8x10/100/1000Base-T Ethernet Ports(PoE)			
15	Exchange Capacity:storage&Fowarding			
16	ESD Protection: Contact discharge 6K, Air discharge 8KV, Per: IEC61000-4-2			
17	Packet Forwarding Rate: 14Mpps			
18	MAC Address List: 4K			

Item Description		8*10/100/1000M PoE Ports + 2*1000M SFP Port	22.nos	
Sl. No	Parameter	Specifications	Compliance	Remarks
	Hardware			
	Power	Input: AC 100-240V		
	Ethernet	8 Port 10/100/1000M PoE		
		2 Port 1000M SFP Uplink		
	Performance			
	Switching Capacity	20Gbps		
	Throughput	14.88Mpps		
	Packet Buffer	2M		
	MAC Address	8K		
	Jumbo Frame	9216Kbytes		
	Transfer Mode	Store and forward		
	MTBF	100000 hour		
	Standard			
	Network protocol	IEEE802.3 (10Base-T)		

		IEEE802.3u (100Base-TX)		
		IEEE802.3ab (1000Base-TX)		
		IEEE802.3z (1000Base-FX)		
		IEEE802.3x (Flow control)		
	PoE Protocol	IEEE802.3af (15.4W)		
		IEEE802.3at (30W)		
	Industry Standard	EMI: FCC Part 15 CISPR (EN55032) class A		
		EMS: EN61000-4-2 (ESD)、 EN61000-4-4 (EFT)		
		Shock: IEC 60068-2-27		
		Free Fall: IEC 60068-2-32		
		Vibration: IEC 60068-2-6		
	Network Medium	10Base-T : Cat3、4、5 or above UTP(≤100m)		
		100Base-TX : Cat5 or above UTP(≤100m)		
		1000Base-TX : Cat5 or above UTP(≤100m)		
	Optical	Multimode Fiber: 850nm, 1310nm, Transmission Distance: 550m/2Km		
		Single-Mode Fiber: 1310nm, 1550nm, Transmission Distance: 20/40/60/80/100/120km		
Protection				
	Security Certificate	CE、FCC、RoHS		
Environment				
	Working Environment	Working Temperature : -20~50°C		
		Storage Temperature : -40~85°C		
		Working Humidity : 10%~90%, non-condensing		
		Storage Temperature : 5%~90%, non-condensing		
		Working Height : Maximum 10,000 feet		
		Storage height : Maximum 10,000 feet		
Indication				
	LED Indicators	PWR (power supply), mode (DIP), 1-10 (Link &Data)		
	DIP Switch	Extend ON : Link extension mode, 7-8 ports PoE power supply and data transmission distance can be extended to 250 meters, the transmission rate becomes 10M		
		Extend OFF : Normal mode, all port can communicate with each other		
Mechanical				
	Structure Size	Product Dimension (L*W*H): 270*185*45mm		
		Package Dimension (L*W*H): 312*262*84mm		

		N.W : 1.1kg		
		G.W : 1.7kg		
	Packing Info	Carton MEAS : 540*435*332mm		
		Packing Qty : 10 units		
		Packing Weight : 18KG		
	Power Voltage	Input Voltage : AC 100-240 V		
		Power supply : 52V2.3A		
	Package List	Switch 1 pcs, Power cord 1 pcs, User manual 1 pc, Warranty card 1 pc		
Ordering Info				
	AP-ESG1910P-2SF	10-Ports 10/100/1000M with 2SFP Uplink PoE Switch		

Item Description		2 Port 100/1000 POE Swith + 1 SFP +1 Giga ETH	6.nos	
S. No.	Specification			
			Compliance	Remarks
1	Network Port: PoE : 2 POE 10/100/1000Mbps PoE ports 1 * SFP 100/1000 Mbps			
2	Switch Capacity: Bandwidth 6.0 Gbps			
3	PoE Standard: IEEE 802.3i 10BASE-T IEEE 802.3u 100BASE-TX/ IEEE 802.3ab 1000BASE-T IEEE 802.3x Flow Control IEEE 802.3af/at/bt Power over Ethernet			
4	Transmission Distance: 100 Meter For UTP Ports; 0~120 KM for Fiber Ports			
5	LED Display : Power , POE, Ethernet			
7	Max. Power Per Port: 15.4 W (IEEE802.3af) default, 30W (IEEE 802.3at)			
8	Fiber Specification: Fiber Port : SC (default). FC/ST/LC (SFP) Wavelength/Distance Dual Fiber 1310nm (2/20/40km); 1550 nm(60/80/100/120km) Single Fiber 1310/1550nm (24/40km); 1490/1550 nm(60/80/100/120 km)			
9	2 POE + UTP: 2 POE +1 SFP			

Item Description		100/1000 SFP Module SM SF	60.nos	
S. No	Specification			
			Compliance	Remarks
1	Small Form-Factor Pluggable (SFP) Gigabit Interface Converter links your switches and routers to the network. The hot-swappable input/output device plugs into a Gigabit Ethernet port or slot. Optical and copper models can be used on a wide variety of Cisco products and intermixed in combinations of 1000BASE-T, 1000BASE-SX, 1000BASE-LX/LH, 1000BASE-EX, 1000BASE-ZX, or 1000BASE-BX10-D/U on a port-by-port basis.			

	<p>Features and benefits</p> <ul style="list-style-type: none"> • Hot swappable to maximize uptime and simplify serviceability • Flexibility of media and interface choice on a port-by-port basis, so you can “pay as you populate” • Robust design for enhanced reliability • Supports digital optical monitoring (DOM) capability • 1000BASE-T SFP for Copper Networks • Dual LC/PC connector (1000BASE-SX, 1000BASE-LX/LH, 1000BASE-EX and 1000BASE-ZX) • Single LC/PC connector (1000BASE-BX-D and 1000BASE-BX-U) • RJ-45 connector (1000BASE-T) • 2-Channel 1000BASE-BX10-D for Single-Fiber Bidirectional Applications 		
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Item Description		55 inch LED TV for display System		5.nos	
S No	Parameter	Specification			
	Model No			Compliance	Remarks
1	MODEL INFORMATION	Inch	32H / 42 / 47 / 55/ 60		
		Category	SuperSign TV		
		Production Model	32 / 42 / 47 / 55 / 60LY340C-TA		
		Chassis Platform	L14 (Commercial)		
2	LCD PANEL SPECIFICATION	Backlight Type	LED (Slim Direct L)		
		Resolution	32": 1366 x 768 (HD), 42/47/55/60": 1920 x 1080 (FHD)		
		Brightness (cd/m2)	32/42/47": 300, 55/60": 300		
		Dynamic Contrast Ratio (Dynamic MCI (Hz))	32" : 1,000,000:1 / , 42 / 47 / 55" : 2,000,000:1, 60" : 4,000,000:1		
		Static (Panel) Contrast Ratio	1200:01:00		
		Viewing Angle Degree	178 x 178		
		Response Time (G to G)	32" : 9ms, 42 / 47" : 8ms, 55" : 9ms, 60" : 4ms		
		Frame Rate Life Span (hrs)	32/42/47/55" : 60Hz, 60" : 120Hz		
			30,000		
3	BROADCASTING SYSTEM	Analog	• (PAL / NTSC-M)		
		Digital Terrestrial			
			• (DVB-T)		
4	VIDEO	XD Engine	•		
		Real Cinema 24p (3:3 Pull	•		

		Down)			
5	AUDIO	Aspect Ratio	● 8 modes (16:9, Just Scan, Original, Full wide, 4:3, 14:9, Zoom, Cinema Zoom 1)		
		Audio Output	10W + 10W		
		Speaker System Sound Mode	2.0 ch		
		Clear Voice II	● 6 modes (Standard, News, Music, Cinema, Sport, Game)		
			● 6 modes (India only) (Standard, News, Bollywood, Cinema, Sport, Game)		
			●		
6	FEATURE	Remote Diagnosis	● (USB)		
		Smart Share			
		MHL	●		
		HDMI-CEC	●		
		HTNG-CEC	●		
		Lock Mode	●		
		IR Out	● (RS-232C)		
		External Speaker Out	● (Int/Fixed, 3.5mm, Stereo, Single Ended Type (GND,L / R), 1W with 8W)		
		RJP Interface	● (RS232C, HDMI CEC)		
		RJP Compatibility USB	● LG / Teleadapt (RS232C), Teleadapt / Guestlink (HDMI CEC)		
		USB Auto Play Back	● (USB 2.0)		
		Moving Picture Playback (SD / HD / Plus HD)	●		
		Picture	Divx HD		
		Audio Codec	JPEG		
		USB Cloning	MP3, AC3, MPEG, AAC, HEAAC, CDDA, LPCM		
		Multi IR Code	●		
		Welcome Screen (Splash Image)	●		
		Auto Off / Auto Sleep	●		
		Smart Energy Saving	●		
		Anti-Theft System	●		
		Kensington Lock			

		Digital Signage Digital Signage CMS	●		
			●		
7	INTERFACE	Set Side Headphone Out	1		
		HDMI In	1		
		USB (2.0)	2		
		Set Rear RF In	1		
		AV In	1		
		Component in (Y, Pb, Pr) + Audio	1 (Commonly Used W/AV)		
		Digital Audio Out (Coaxial / Optical)	1 (Optical)		
		HDMI/HDCP Input	1		
		RGB In (D-sub 15pin) – PC	1		
		PC Audio Input	1 (Commonly Used W/AV)		
		RS-232C (D- Sub 9pin)	1		
		LAN Port	1		
		External Speaker Out(3.5mm PhoneJack)			
			1 (Spk-out 1)		
8	ACCESSORY	Remote Type	L-CON		
		Cable Manual / ESG	Power Cord		
			CD Title (Simple Manual)		
9	POWER	Voltage, Hz	100 ~ 240V, 50 / 60Hz		
		Max (Watts)	32" : 82W, 42" : 110W, 47" : 117W, 55" : 139W, 60" : 139W		
		Typical (Watts)	32" : 58W, 42" : 84W, 47" : 91W, 55" : 114W, 60" : 114W		
		Energy saving (Min)	32" : 44W, 42" : 66W, 47" : 66W, 55" : 83W, 60" : 85W		
		Energy saving (Med)	32" : 35W, 42" : 51W, 47" : 50W, 55" : 62W, 60" : 65W		
		Energy saving (Max) Stand-by	32" : 25W, 42" : 33W, 47" : 30W, 55" : 36W, 60" : 40W		
			32" : 0.19W, 42" : 0.19W, 47" : 0.20W, 55"		

			: 0.15W, 60" : 0.23W		
10	TOOL DESCRIPTION	Tool Name	LB56 (w/Red LG Logo)		
		Bezel Width (Left / Right, Upper, Bottom)	32" : 11.6 / 11.6, 11.3, 16.3, 42" : 11 / 11, 11, 16.5, 47" : 11 / 11, 11, 16.5, 55" : 11 / 11, 11, 16.5, 60" : 16.5 / 16.5, 15.7, 20.5		
		: On bezel based Bezel Width (Left / Right, Upper, Bottom)	32" : 10.5 / 10.5, 10, 14, 42" : 8.5 / 8.5, 8.5, 14, 47" : 8.5 / 8.5, 8.5, 14, 55" : 8.5 / 8.5, 8.5, 14, 60" : 11.5 / 11.5, 11.5, 16.3		
		: Off Bezel Based VESA Compatible	32" : 200 x 200, 42" : 400 x 400, 47" : 400 x 400, 55" : 400 x 400, 60" : 400 x 400		
11	REQUIRED LISTING	Safety	CB, BIS, SIRIM, TISI, BPS		
12	(CERTIFICATION)	EMC ETC.	CISPR		
			MEPS, Tick, EE, CIF		

Item Description		OUTDOOR Termination Box Pole Mount	22.nos	
S. No.	Parameter	Specification		
	Model No		Compliance	Remarks
1	Usability	Network Switches, Telecom, Surveillance, Network & Surveillance Backup, Fiber management system		
2	Front Door	- lockable steel door with gasket sealing, 2 Fan option for hot air execution		
3	Cable Entry Cut	Through PG IP Glands		
4	Cooling Option	2 AC/DC fan Provision mounted on Front Door		
5	Load Bearing Capacity	Up to 30 -35 KG		
6	Construction	Welded Galvanized Steel Construction 1.2mm Thick Load Bearing angles are 1.6 mm		
7	Power Distribution Unit-	6 Socket 5 & 15 AMP Horizontal (optional)		
8	Cable Management	Horizontal Metal & PVC		
9	Protection Rating	IP55 Compliance Structure Protection from Rain Water or Natural way		
10	Protection	IP55 Compliance Structure Protection		


	Rating	From level of harmful dust		
11	FAN	Cooled Cabinet Through Single/Dual FAN		
12	Filters	Aluminum Wire Mesh Filter 100mm x 200mm which prevent level of harmful dust entering into cabinet		
13	Size	350mm* 575mm* 400mm		
14	Usable Area	267mm* 482.6mm* 200mm		
	Photo			
				

Item Description		42U RACK / 42 800& 1200 Deep configurations and 600 Width configurations	1.nos	
Sl. No.	Parameter	Specifications		
	Model No		Compliance	Remarks
1	Basic Frame	NRA - Composite (Aluminium Section & Steel), NRS - Steel folded		
2	Construction	NRA - CKD Type, NRS - Welded OR CKD design		
3	Top & Bottom Cover	Bolted to Frame with Cable entry exit cut outs		
4	19" Mounting Angle	Formed Steel		
5	Std. Equipment Mounting	DIN Std. 10mm Sq. Slots		
6	Standard Finish	Powder coated		
7	Standard Mounting	Caster wheels (2 with Brake & 2 without Brake) OR Levelers OR Plinth		
8	Rack Standard	Conforms to DIN 41494 or equivalent standard		
9	Static Load	750Kg with casters, 1250Kg with Levelers / Plinth		

Item Description	9 U RACK SERVER RACK-600 MM	19.nos	
S.No	Specification	Compliance	Remarks
	Model No :		
1	Wall Mount Rack 9U 630mm deep 19".		
2	1.6mm Vertical Mounting Rail with clear 'U'		

	Marking.		
3	0.8mm CRCA Sheet.		
4	Cooling Fan options (min 2).		
5	Cable entry/exit provision (minimum 2) at top and bottom with rubber at edges.		
6	Front with Toughened Glass Door & Lock (5mm).		
7	Powder coated Color- RAL- 7035.		
8	Wall Mounting Kit.		
9	conforms to DIN41494 or equivalent ISO 9001:2015 and 14001:2015 Standards.		
10	For Small Networking, Telecom, Audio video, CCTV applications.		
11	CE & RoHS Compliance.		
12	For India Market Only		

Item description		3 C – 1.5 Sq.m POWER CABLE Un Armoured	2,200 mtrs	
S. No	Parameter	Specification		
	Model No		Compliance	Remarks
1	Cable size	2.5 sq. mm		
2	No of cores	3		
3	Conductor material	Bare Copper		
4	Insulation Material	Cross Linked Polyethylene (XLPE)		
5	Jacket Material	PVC Type ST2		
6	Armour Material	Galvanized Steel		
7	Voltage Rating	1.1 KV		
8	Standards	IS 1554		
9	Type	Armoured		
10	Preferred make	Polycab or similar		
Item Description		12 F OFC Cable SM Multitube Un armoured ADSS OFC	7,000 mtrs	
Sl. No.	Parameter	Specifications		
	Model No		Compliance	Remarks
	Environmental Specifications (Temperature)	Operation and Storage: -30°C to +70°C Installation: -30°C to +70°C		
	Standards Compliant	ITU-T , Telecordia GR-20, IEC 60793 & 60794 , EIA/TIA , EN187000		
	Features	• Available with up to 144 fibers • Multiple Fiber types available • Galvanized Steel Wire Armouring		
	Applications	• Suitable for indoor duct, tray or buried installations such as tunnels. • Excellent mechanical features. • High anti-rodent protection.		
	Fiber Count	12F		

Item Description		40mm HDPE Pipe	
S. No	Product Description	Parameter	Compliance
	Model No:		
1	Specifications	RDSO	
	Application	Conduit,Duct,Sheathing	
	Material	HDPE	
	Color	Blue,Green,Red,Yellow,Orange	
	Diameter	40 mm OD / 33mm ID	
	Pressure Rating	15 Bar	
	Usage/Application	Optical Fibre Cable	
	Thickness	3.5 mm +/- 0.2mm	
	PN Grade	16	
	Standard Length	1000 ± 100 metres	
	Maxm. OD of OF cable that can be installed by blowing technique	16mm	
	Certificate	TEC Specifications No. TEC/GR/TX/CDS-008/03/MAR-11 or Latest / RDSO Specification No. RDSO/SPN/TC/45/2013	
			

36. SUPPLY OF CAT 6 UTP Cable - 9000 Mtr			
S. No	Parameter	Specification	Compliance
1	33.Category-6 UTP Cable:-SYSTIMAX / MOLEX/KRONE/AMP/SIEMON <ul style="list-style-type: none"> ✓ Meet all TIA/EIA-568-B.2-1 Cat 6 standards ✓ Component complaint for Category-6 ✓ ETL / UL verified ✓ Accompanied by Test Report for worst Channel performance. ✓ Aluminium Wire Armoring ✓ Operates at bandwidth of 250 MHz ✓ Conductor : Solid Bare Electrolytic Grade Copper ✓ Insulation : Polyethylene ✓ Sequential Marking : At Every Meter ✓ Outer Jacket : PE (Suitable for Burial) ✓ Armouring :Aluminium Wire ✓ Filler : HDPE ✓ Outer Jacket : PE (Suitable for Burial) 		
	** Brand : Molex		

Item Description		1 " PVC Pipe	3900 Mtr	
S. No	Parameter	Specification		
	Model No		Compliance	Remarks
1	Type	LMS		
2	Material	PVC		
3	Size	25mm		
4	Color	White		
5	Length	3 Mtr		
6	Fire Resistant	Yes		
7	Brand	Modi or Equavlent		

Item Description		UPS On-Line, 5kVA/ 5kW, Rackmount 5U, 230V	1.nos	
Sl. No.	Parameter	Specifications		
	Model No		Compliance	Remarks
1	Main Input Voltage	230 V AC		
2	Product or component type	Uninterruptible power supply (UPS)		
3	Other Input Voltage	220 V 240 V		
4	Main Output Voltage	230 V		
5	Other Output Voltage	220 V 240 V		
6	Rated power in W	5000 W		
7	Rated power in VA	5000 VA		
8	Output connector type	Hard wire 3-wire (1P + N + E) 1		
9	Battery type	Lead-acid battery		
10	Battery voltage	240V		
11	Extended runtime	1		
12	Number of battery filled slots	1		
13	Battery recharge time	5 Hr		
14	Battery charger power	469 W rated		
15	Max runtime	8 Min		
16	Mounting position	Horizontal		
17	Switching current capacity	50A		
18	Input voltage limits	110...300 V half load , 176...300 V full load		
19	Number of input connectors	1 hard wire 3-wire (1P + N + E)		
20	Network frequency	40...70 Hz auto sensing		

21	Maximum configurable power in VA	5000 VA		
22	Maximum configurable power in W	5000 W		
23	Output frequency	50/60 Hz +/- 3 Hz sync to mains		
24	UPS type	Double conversion online		
25	Wave type	Sine wave		
26	Efficiency	94 % (full load)		
27	Bypass type	output voltage Bypass type		
28	Acoustic level	55 dBA		
29	Warranty	2 years repair or replace		
30	Backup time	1 Hr with suitable Batteries		

Item Description		GANG Box AND STAND Outdoor	275.nos	
S.No	Specification			
	Model No		Compliance	Remarks
1	Material: Plastic			
2	Power Source: Corded Electric			
3	International Protection Rating: IP65			
4	Waterproof and dustproof			
5	Material: plastic			
6	Dimension: 4 x 4 inch			

SUPPLY OF OUTDOOR TERMINATION BOX FOR CCTV AS PER SPECIFICATION.			
Outdoor Box for DVR/ POE Switch			
S.No	Specification		Compliance
1	Usage/Application: Outdoor Enclosure Solution		
2	Material: Metal		
3	IP Rating: IP55		
4	Shape: Rectangular		
5	Type: Junction Box		
6	Color: White		
7	Cable Entry: Bootom		
8	3 Socket		
9	1.5 Metre Mains cord		

10	Physical Structure - 1.5 mm
11	Thickness : 1.2 mm
12	Size : 490 H * 305 W * 180 D
13	Mounting Model : Wall / Pole

Photo



Supply of 4 Way Encloser With MCB/RCCB 60 Nos

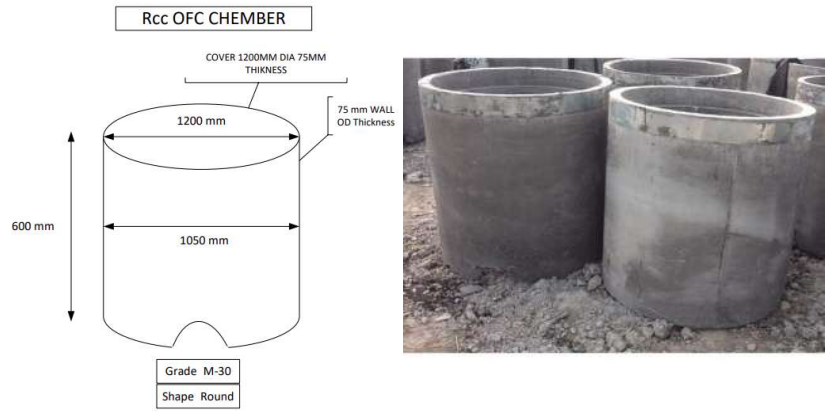
4 Way/module Outdoor Enclosure

Parameters	Specifications
Enclosure insulation	Class 2
IP rating	IP 65
Shock resistance rating	IK 09
Temperature Resistant	650 degrees C
Compliance	AS/NZS 3439.3 and IEC 62262
Voltage	230/415V AC, 50/60 Hz
Module Type	4
Rated current	1.6 A
Class	A/Z
No of poles	2
Voltage	230 V
Rated Short circuit breaking capacity	
Frequency	50 Hz
Degree of Protection	IP 20
Standards	IEC/EN 60898-1
Rating	10 A
Sensitivity	30 mA
No of poles	2
Voltage	230 V
Frequency	50 Hz

Degree of Protection	IP 20
Standards	IS 12640 (Part 1) : 2008 IEC 61008-1 : 1996
Make & Model	Legrand or Similar

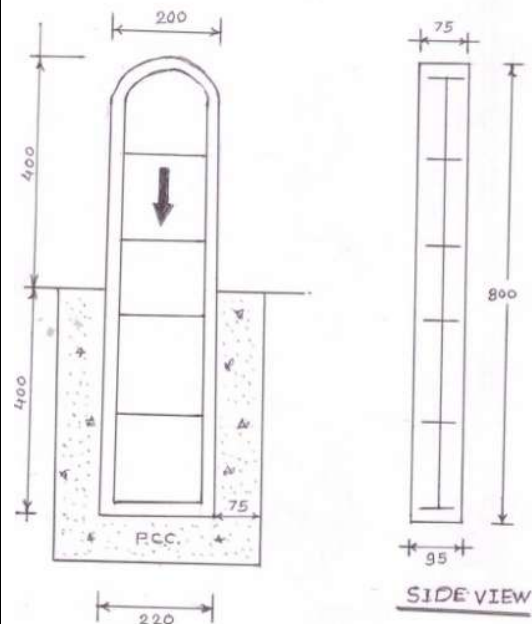
Item Description		12/24 PORT OFC FMS	50.nos																			
S.No	Specification																					
	Model No		Compliance	Remarks																		
1	<p>The oFDT product accommodates 6, 12 or 24 fibers. Distribution cable fibers are terminated on standard SC/APC, SC/UPC and LC/APC adapters that are easily accessible for service connection and maintenance</p> <p>Features and benefits</p> <ul style="list-style-type: none"> • Accommodates smaller fiber counts; 6-, 12- and 24-fiber • Eliminates need for transitional NEMA box that provides for mini-ducts • Liquid tight fittings offer cost savings • Supplied pigtails and splice tray • Wall-mount; efficient use of wall space • Cable termination and splicing • Complete connector access • Lockable 216 tool/padlock offers flexible security options • Environmental enclosure provides heavy-duty protection from wind, dust, rain, and other contaminants • Lightweight structure provides for easy installation • Cable entrance ports seal cable at entry • Cable management and routing limits radius and adds strain relief • Standard stub lengths of 100, 300, 500, and 1000 feet 																					
2	<table border="1"> <thead> <tr> <th>Specifications</th> <th>Brand : Syrotech</th> </tr> </thead> <tbody> <tr> <td>Installation Type:</td> <td>Outdoor</td> </tr> <tr> <td>Fibers</td> <td>12-24</td> </tr> <tr> <td>Splice Trays</td> <td>2 Trays</td> </tr> <tr> <td>Cable Ports</td> <td>4 Bottom</td> </tr> <tr> <td>Rating</td> <td>Nema-4</td> </tr> <tr> <td>Height</td> <td>13.5"</td> </tr> <tr> <td>Width</td> <td>19"</td> </tr> <tr> <td>Depth</td> <td>8.25"</td> </tr> </tbody> </table>	Specifications	Brand : Syrotech	Installation Type:	Outdoor	Fibers	12-24	Splice Trays	2 Trays	Cable Ports	4 Bottom	Rating	Nema-4	Height	13.5"	Width	19"	Depth	8.25"			
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Height	13.5"																					
Width	19"																					
Depth	8.25"																					

Supply of RCC Chamber			
S.No	Parameter	Specification	Compliance
1	Shape	Round	
2	Size	800 mm or 1000 mm in diameter and height, 1200 mm in length and height, 600 mm in height, 600 x 600 x 100 mm for manhole covers	
3	Wall thickness	75 mm	
4	Cover thickness	75mm	
5	Material	RCC	
6	Concrete Grade	M30	
7	Reinforcement Grade	Fe 415	
8	Load Capacity	2.5 MT to 25 MT	



OFC Route Marker Specification

9	Usage/Application	Cable Marking	
10	Material	Reinforced Cement Concrete	
11	Dimension	800mm(H), Top -200mm (W) Bottom - 220 mm, Thickness - 75mm (Top), 95mm Bottom	
12	Design Type	As Per Drawing	
13	Approximate weight:	40 KG or More	



Item Description		Converged Next-Generation Firewall and SD-WAN	100 User	1.nos
Sl. No.	Parameter	Specifications		
	Model No		Compliance	Remarks
1	Hardware			
2	Hardware Accelerated GE WAN Ports	1		
3	Hardware Accelerated GE RJ45 Ports	3		
4	Hardware Accelerated GE RJ45 FortiLink Port (Default)	1		
5	USB Port	1		
6	Console Port (RJ45)	1		
7	Internal Storage	64 GB SSD		
8	Trusted Platform Module (TPM)			
9	Bluetooth Low Energy (BLE)			
10	Signed Firmware Hardware Switch			
11	Antenna Ports (SMA)	3		
12	SIM Slots (Nano SIM)	0		
13	Wireless Interface	Dual Radio (2.4 GHz/ 5 GHz), 802.11 a/b/g/n/ac/ax		
14	IPS Throughput	2.25 Gbps		
15	NGFW Throughput	1.25 Gbps		
16	Threat Protection Throughput	1.1 Gbps		
17	Firewall Throughput (1518/512/64 byte UDP packets)	5 / 5 / 4 Gbps		
18	Firewall Latency (64 byte UDP packets)	2.42 μ s		
19	Firewall Throughput (Packets Per Second)	6 Mpps		
20	Concurrent Sessions (TCP)	720 000		
21	New Sessions/Second (TCP)	85 000		
22	Firewall Policies	2000		

23	IPsec VPN Throughput (512 byte) 1	4.5 Gbps		
24	Gateway-to-Gateway IPsec VPN Tunnels	200		
25	Client-to-Gateway IPsec VPN Tunnels	250		
26	SSL-VPN Throughput			
27	Concurrent SSL-VPN Users (Recommended Maximum, Tunnel Mode)			
28	SSL Inspection Throughput (IPS, avg. HTTPS)	1.3 Gbps		
29	SSL Inspection CPS (IPS, avg. HTTPS)	699		
30	SSL Inspection Concurrent Session (IPS, avg. HTTPS)	74 000		
31	Application Control Throughput (HTTP 64K)	2.8 Gbps		
32	CAPWAP Throughput (HTTP 64K)	3.8 Gbps		
33	Virtual Domains (Default/Maximum)	5/5		
34	Maximum Number of FortiSwitches Supported	8		
35	Maximum Number of FortiAPs (Total/Tunnel Mode)	16/8		
36	Maximum Number of FortiTokens	500		
37	High Availability Configurations	Active-Active, Active-Passive, Clustering		
38	Compliance	FCC, ISED, CE, UL/cUL, CB		
39	Certifications	USGv6/IPv6		
40	Multiple User (MU) MIMO	2 x 2		
41	Maximum Wi-Fi Speeds	1201 Mbps @ 5 GHz, 574 Mbps @ 2.4 GHz		
42	Maximum Tx Power	21.0 dBm per chain @ 2.4GHz, 19.5 dBm per chain @ 5GHz		

Item Description		IPBX	1.nos	
Sl. No.	Parameter	Specifications		
	Model No		Compliance	Remarks
1	Unique Features	<ul style="list-style-type: none"> v Inbuilt OpenVPN (Support BSNL SIP trunk) v Inbuilt Firewall v Support Fail2ban v Secure SIP calling (TLS encryption) v Support SIP & IAX2 		
6	General Features	<ul style="list-style-type: none"> § IVR § LDAP Service § Phonebook § Flexible Voice Recording § Meet Me Conference § DISA (Direct Inward System Access) § Ring Group § Speed Dial § Wakeup Service § Group Call Pickup 		
7	Administrative Features	<ul style="list-style-type: none"> Ø Extension User Privileges Ø Support Backup/Restore Ø Remote Management Ø Flexible Inbound/Outbound Route 		
8		<ul style="list-style-type: none"> § Call Details Recording (CDR) § Directed Call Pickup § Barge - in § Do Not Disturb § Call Forward all § Call Forward – Busy § Call Forward - No answer § Call Follow Me § Call Waiting § Call Transfer § Blacklist § Speaking Time § Speaking Extension 		
9	Users	Expandable upto 800		
10	Max Concurrent Calls	100		
11	Protocol	SIP (RFC3261), IAX2		
12	Transport Protocol	UDP, TCP, TLS, SRTP		
13	Codec	G711 a/u law, G722, G723.1, G726, G729, GSM,ADPCM, iLBC, OPUS, SILK, AMR-NB/WB, H263,H263P, H264, VP8		
14	DTMF	In-band, RFC2833, SIP INFO		

15	LAN	1* 10/100M		
16	WAN	1* 10/100M		
17	IP Services	Static IP, DHCP, VPN, Firewall, PPPoE, Bridge		
18	Recording	86,000 mins (.gsm); 9,500 mins (.wav)		
19	Firewall	YES		
20	T.38 FAX	YES		
21	External Storage	SD Card, upto 128GB		
22	USB	1		
23	MIC Interface	1		
24	SPK Interface	1		
25	Power Consumption	12V/2A, 24W MAX		
26	Operating Temperature	0°C to 50 °C		
27	Storage Temperature	-20 °C ~ 65 °C		

Item Description		16 Port FXS	2.nos	
Sl. No	Parameter	Specifications		
	Model No		Compliance	Remarks
1	FXS	16*RJ11		
2	FXO	-		
3	Network Interface	4*GE RJ45		
4	Net Size	44*21*4.4cm		
5	Input Voltage	110-240VAC		
6	Power Consumption	35W		
7	Console	1*RJ45 115200bps		
8	USB	1*USB2.0, full speed		
9	Operation Mode	Support Gateway, Routing, Bridge		
10	Working environment	Operating temperature -5°C~55°C		
		Ambient relative humidity ≤95%(non condensation)		
		The concentration of particles in the air less than 180mg/m ³		
		No performance decrease within 3000m altitude Pressure 86KPa~106KPa		
11	Basic Function	Support Static IP, DHCP Client, PPPoE multiple access way		
		Support WAN Multi-sub interface		
		Support DHCP Server, NAT, DNS, IGMP, VLAN		
		Support Switch VLAN, Trunk Port Support NTP Client		
		Support Bandwidth Control, QoS Policy		

		Support Security Firewall, APR Defense, DDoS Defense		
		Support Static Route, Dynamic Route, Policy Route		
		Support PPTP, L2TP, IPsecSSL, VPN		
12	Voice Features Support	Basic Calling, DNIS, DNIS Limit, Forward Unconditional, Forward on Busy, Forward on No-answer, CNIS, Call Waiting, 3-Party Conference, Support MCAL, Call Permission, DND Abbreviated Dialling, Hotline, Alarm clock service, Call back on Busy, Conference Call, IMS Voice Service, NGN Voice Service, H.248 Voice Service		
13	Speech codec	Support G.711 U, Support G.711 A, Support G.729, G.729a, G.723, G.722		
14	Voice Quality Assurance	Support Echo Cancellation, Mute Detection, Mute Compression, Comfort Noise Generator, Support Jitter Buffer, Voice Packet Loss Compensation, Gain Adjustment		
15	Log Function	Support Log Information Checking, Remote Syslog, Log Type Level Setting		
16	Local Management	Local Http Web Management, Remote Https Web Management, ssh2 Console, Configuration Backup & Recover, Support Factory Default Reset, Support Software Upgrade, Support System Reboot, Debug Tool, Support Gateway Status Monitor		
17	Remote Management	Support Remote Update, Support SNMP / TR069 / SYSLOG		

Item Description		IP PHONE	23.nos	
Sl. No.	Parameter	Specifications		
	Model No		Compliance	Remarks
1	Protocols/Standards	SIP RFC3261, TCP/IP/UDP, RTP/RTCP, RTCP-XR, HTTP/HTTPS, ARP, ICMP, DNS(A record, SRV, NAPTR), DHCP, PPPoE, SSH, TFTP, NTP, STUN, SIMPLE, LLDP-MED, LDAP, TR-069, SNMP, 802.1X, TLS, SRTP, IPv6		
2	Network Interfaces	Dual switched auto-negotiation 10/100 Mbps Ethernet ports, integrated PoE (GRP2601P only)		
3	Wi-Fi	GRP2601W, Single frequency, 2.4 GHz, 802.11 b/g/n/ax (2.4G only)		
4	Graphic Display	132 x 48 (2.41") LCD display		

5	Feature Keys	4 XML programmable context sensitive soft keys, 5 (navigation, menu) keys. 8 dedicated function keys for: MESSAGE(with LED indicator), TRANSFER, HEADSET, MUTE, SEND/REDIAL, SPEAKERPHONE, VOL+, VOL-		
6	Voice Codecs and Capabilities	Support for G.729A/B, G.711 μ /a-law, G.726, G.722(wide-band), G.723.1, iLBC, Opus, in-band and out-of-band DTMF(in audio, RFC2833, SIP INFO), VAD, AEC, CNG, PLC, AGC, AJB		
7	Telephony Features	Hold, transfer, forward, 5-way conference, call park, call pickup, downloadable phonebook(XML, LDAP, up to 2000 items), call waiting, call log(up to 800 records), off-hook auto dial, auto answer, click-to-dial, flexible dial plan, hot-desking, personalized music ringtones and music on hold, server redundancy and fail-over		
8	Auxiliary Ports	RJ9 headset jack (allowing EHS with Plantronics & Jabra & Sennheiser headsets)		
9	Base Stand	Yes, 1 angle position available (45 $^{\circ}$), Wall Mountable (*wall mount sold separately)		
10	QoS	Layer 2 QoS (802.1Q, 802.1P) and Layer 3 (ToS, DiffServ, MPLS) QoS		
11	Security	Ordinary user and administrator level passwords based on SHA-256 and SHA-256 sess authentication, SIP authentication algorithms based on SHA-256, SHA-256 sess, SHA-512/256, SHA-512/256 sess, MD5 sess. AES security profile, SRTP, TLS call encryption, 802.1X media access control.		
12	Multi-language	English, Chinese, Korean, Japanese, German, Italian, French, Spanish, Portuguese, Russian, Croatian and more		
13	Upgrade/Provisioning	Firmware upgrade via FTP/TFTP / HTTP / HTTPS, mass provisioning using GDMS/TR-069 or AES encrypted XML configuration file		
14	Power & Green Energy Efficiency	Universal Power Supply Input 100-240VAC 50-60Hz; Output +5VDC, 600mA; PoE: IEEE802.3af Class 1, 3.84W; IEEE802.3az (EEE) (GRP2601P Only)		
15	Temperature and Humidity	Operation: 0 $^{\circ}$ C to 40 $^{\circ}$ C Humidity: 10% to 90% Non-condensing Storage: -10 $^{\circ}$ C to 60 $^{\circ}$ C		
16	Package Content	GRP2601/2601P/2601W phone, handset with cord, base stand, universal power supply (not included with GRP2601P), network cable, Quick Installation Guide		

17	Physical	Dimension: 208mm (L) x 180mm (W) x 63.4mm (H) (with handset) Unit weight: 650g (651g for GRP2601W); Package weight: 810g (860g for GRP2601)		
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48. TRENCHLESS DUCK TYPE BOARING WITH OFC LAYING TO END AS PER SPECIFICATION

- a. The depth of the drilled portion should be more than 2500 mm. This depth shall be achieved at a distance of 10 meters from the leading edge of the proposed Manhole. b. Manhole to be opened for the entry pit and the exit pit shall be minimum of 1.5 x 1.5 x 1.7 mtrs. Both entry and exit pits shall be opened before drilling is commenced.
- b. Drilling wherever possible, should be at the road boundary and as far as possible, straight. Where 4 PLB pipes are less are to be laid, 100mm dia bore may be done by the HDD machine. Where 5 to 8 PLB pipes are to be laid, 200 mm dia bore shall be done by the HDD machine. The machines should be capable of drilling for minimum 150 mtrs at a time without fail in the soft soil. The drill lengths of 200 to 250 mtrs are also desirable. In general, the machines with 10 tones or more thrust capacity are having the capability for this purpose. The depth at the entry pit shall be 1650 mm. For achieving this depth in the manhole a pilot entry pit shall be opened with min 200 mm depth for enabling the drill pilot to enter. The pilot entry pit shall be at least 4 meters away from the manhole.
- c. Whenever curves or deviations are encountered it should be a very smooth curve, the deviations should not be more than 1000 mm from the mean line joining the centre of entry pit and the centre of the exit pit. A nylon wire shall be fixed between these two pits before the drilling operation. After the drilling operation commences, the depth and offset of the pilot is to be recorded at every 3 mtrs using the hand held tracker. The tracker should have been properly calibrated. The offset of the drill shall be recorded with reference to the edge of the road and also the deviation with reference to the mean line represented by the Nylon rope on the ground. The depth, deviations and offset readings will be provided by the machine automatically, apart from the manual records made.
- d. Bottom of the trenches should be at uniform level without any abrupt ups and downs. After the trenching is done for sufficient length, the bottom leveling should be inspected for uniformity to ensure that pipe could be laid without sharp bends. In exceptional case, the depth of the trench could be less than 2.50 M due to undulating terrain. However, in no case it should be less than 1.20M. In certain cases, in a uniform terrain a sudden burrow pit/old culvert of short length might be encountered. In such case, the HDPE pipe can be further protected by GI/RCC pipes of suitable size.
- e. In water logged area drilling should be done in the dry areas and dewatering should be got done before pipe laying. When trenching is done close to power cables precautions detailed in EB lines & cables underground should be observed.
- f. When trenching is undertaken along streets and railway lines safety precautions given in EB lines and cables underground should be observed.
- g. Caution boards should be provided at each entry, exit and pilot pit of the trench to caution the traffic. Caution tapes/red flags may also be planted around the working area throughout the drilling path. This is essential to track the drill pilot with the tracker and to record the accurate depth and offset. If the manholes are to remain open at night red

lamps or luminous caution boards on either ends should be provided.

- h. After the pipe laying is completed, bed of manhole shall be prepared for constructing the RCC manhole. After the manhole is constructed the PLB duct shall be ready for laying the OF cable. It is very much necessary to use the ground penetrating radar to localizing other utilities in the absence of accurate documents depicting the position of other utilities. Hence, the ground penetrating radar is a must during survey and as well as while carrying out the job to follow the path of the horizontal drilling.

48.1 Pipe Laying

- a. PLB pipes are uncoiled from the PLB coils using the roller jack mechanism. Removing the pipes from the coil in this manner will avoid the coil effect, which makes the pipes to wind in curls even though the pipes shall be laid straight. Pipes shall be cut from the original coil using the duct cutter only. The pipe may be laid in the most economical manner. The total length of the PLB pipes left unused may not be more than 5% of the length measured between the centre of the two manholes (entry pit and exit pit).
- b. The start reading and the end reading for each PLB pipe shall be recorded by the Engineer-In-Charge. The pipes may be laid in the manholes so that the bunch of pipes shall overlap on the pipes laid from the other side. Push-fit couplers may be used for joining the PLB pipes. Open Trenching or pulling the cable manually through the pipes, it is necessary to have suitable manhole made at every 200 M length and at suitable bends and corners. The pipes are laid for 200 M or less, at a time, depending upon the distance between two manholes. For a 200 M trench 200 M length of 50 mm PLB pipes of continuous length and two end plugs are required for laying one duct. In addition for closing the ends of the two extreme end pipes two special types of caps shall be provided. A 4 mm polypropylene rope could be drawn through the pipes and safely tied to the caps at either end with hooks. These 4 mm ropes have to be provided throughout the route which could serve to pull the 12 mm rope which is ultimately required to pull the cable. Indicators are not required as the manhole provide the identity for the PLB ducts. Cuddapah slabs/ Stone Slabs/RCC slabs may be used as a protection measure for these multiple pipes. Necessary offset diagrams shall be available for indicating the distance from the centre of the road. The depth of the trench is to be recorded.

48.2 Horizontal direction Drilling (HDD).

The multiple PLB pipes shall be bunched together at the exit pit. At every one meter length, the pipes shall be bundled using the flexible iron wire tightly. The end plugs shall be tightly fixed on both ends. Chinese fingers shall be used as the pulling grips for all these bundled pipes. All the Chinese fingers shall be combined and tightened together to connect to the back reamer of the HDD machine. The machine pulls the pipes towards it. After the pipes are pulled out for about one and half meter from the drill entry point in the Entry pit which is near the HDD machine, the pipes shall be de linked from the back reamer. The Chinese fingers shall be detached from the PLB pipes. Leaving one and half meter length of the bunch of pipes in the exit pit, the additional pipes shall be cut and necessary.

48.3 General Instructions on OFC cable laying by HDD General Precautions

- a. The optical fibre cable drums should be handled with utmost care. The drums should not be subjected to shocks by dropping etc. The drum should not be rolled along the road for long distance and when rolled, should be in the direction indicated by the arrow. The covering planks should be removed only at the time of actual laying.
- b. The previously laid pipes, manholes and portion of bends etc. on the cable route as per records maintained at the time of laying pipes, should be got cleaner of earth and the pipes may be cleaned thoroughly before pulling of cable is started.
- c. Depending upon the length of the drum (1 km / 2 km) and cooling required for jointing purposes, chain measurement is taken from the starting end of section and exact joint location is marked. If it does not fall at the existing manhole location, a separate manhole of 2M x 2M is to be made to accommodate the joint box as well as coil. All the joint locations are fixed in a similar manner. The intermediate manholes of 2 M x 2M shall be kept ready for pulling purposes.
- d. As the cable drums are standardized for 2 km, it shall be preferable to lay the cable by placing the cable drum at the manhole point nearest to 1 km from the joint locations.
- e. The standard practice is to keep the clock wise end of the cable to the 'A' side of the route and the anti clock wise end to 'B' side. Also, it is the practice to have the click wise end on top and anti-clock wise at the bottom of the drum. With the above in view, cable drum is to be mounted on the jack and wheel with drum shaft (Axle) in horizontal position. The rope end shall be fixed at one end of a swivel (Antitwist device) permanently or by means of a shackle. The other end of the swivel shall be tied to the pulling eye of the cable. If a pulling eye is not available, then a cable grip shall be used. As the cable length is 2 km, during cable laying work, proper communication shall be established.
- f. Precaution against Damage by Termites & Rodents. In the rodent prone areas Optical Fibre cable joint closures should be applied with BHC 10% dust (Benzene Hydro chloride 10%) to prevent rodent & termite damage. The method suggested shall be "BHC" 10% dust of 1 kg is to be mixed in an approximate 2 kg of sand and applied around the optical fibre cable joint enclosures.

48.4 Cable Laying

- a. Cable laying shall be either by traditional Cable pulling method or by Cable blowing method.
- b. Sometimes there shall be considerable lapse of time between the pipe laying and cable laying. This intervening period could have heavy rains too. Therefore there shall be possibility of entering dissolved muddy water into the HDPE pipes. This dissolved muddy water may transform into a thick paste or solid mud. Cleaning of the pipes before the cable laying is absolutely necessary to remove any such obstructions. A 4 mm nylon rope is already laid in HDPE pipe. One end of this rope shall be connected to Mandrill. The other end of mandrill shall be connected to another rope of 4 mm size and suitable length to cover the distance between two manholes. The existing 4 mm rope shall be

pulled from other manhole and thus the mandrill will clear the pipes. Similar operation shall be then done by replacing mandrill with nylon brush and rags. For manual pulling, the rope shall be attached to a diameter and then to the pulling eye which shall be fixed to the cable end by supplier. The pulling shall be done either manually under close supervision watching all the time the pulling tension or by means of winch with automatic cut off at set tension monitored through dynamometer fitted in the pulling winch.

- c. To reduce the friction between the cable and HDPE, a suitable lubricant may be continuously applied with a sponge to the cable surface during pulling at every intermediate man-hole. The standard lubricants with low frictional coefficient may be used. As soon as 1 km cable or so is pulled towards one side of the route, sufficient overlap of cable may be kept at splicing location so that the ends may be taken into the Air conditioned splicing van placed at a convenient and nearby place. 15 metre cable shall be the maximum requirement.
- d. Laying the remaining half of the cable:
- e. Take out the winch to the other end if machine pulling is done. Uncoil the cable and make the formation of 8. This should be done manually with sufficient care and minimum bending radius. Repeat the process of connecting the end of the cable with eye or pulling grip to the swivel to which the pulling rope is attached. Repeat the process of pulling the cable by winch or manual with special attention to lubricant supervision and coiling the overlapping length in the pit.
- f. The mouth of the HDPE pipes at every man hole shall be closed by rubber bushing. This shall be mainly required for prevention of rodent entry.

48.5 INSTRUCTIONS FOR EXCAVATION & BACK FILLING OF TRENCHES :

- a. The clearing of cable route including removal & cutting of bushes, trees, or any other temporary obstructions if any, to lay cable shall be carried out by the contractor.
- b. The cable trench in all types of soil shall be and 260mm wide at the bottom 1200 mm deep. The representative of Contractor will mark the route of the cable in white chalk or lime as per the route plan and the instructions given to him by the SSE/Tele in coordination with TNPESU site engineer representative. The marking will be given on the track/road side of the trench. In the difficult terrains such as water logged areas, the position of the cable route will be specified by off sets from the centre line of the road.
- c. The excavation of trenches shall generally be done in such lengths consistent with the average rate of cable laying possible to cover, the trench during the course of the same day. The trenches shall not remain uncovered over night unless authorized by the TNPESU site engineer.
- d. Excavation shall include trial holes.
- e. The bottom of the trench shall be thoroughly prepared, & shall be free from any stones and sharp and hard objects.
- f. Where the direction of the trench has to change it shall be done in a gentle curve of not less than 40 times the outer diameter of the cable.
- g. If any mound of earth shall be encountered in the path, a deeper trench shall be made so as to ensure that the bottom of the trench shall be at least 1000mm below the ground level.

48.6 ROAD CROSSINGS :

- a. When crossing roadways, it is necessary to lay the cable in such a manner as to avoid the necessity of handling the cable sharply and minimize the excavation of road surface as far as possible.
- b. The crossing of main roads often involves difficulties especially if traffic is heavy. Precautions to avoid accidents to workmen, pedestrians and vehicles should be taken. Pipes should be installed quickly in the cutting which is then filled in, thereby reducing to a minimum, the time for which the road is closed. Some roadways which are broad may be opened half the width only at a time. RCC pipes of 80 mm dia shall be used. In all cases pipes should be laid at a depth of 1200 mm. below the formation level or lower as may be required. The length of the pipe shall be longer than the width of the road by 2 meters on either side. If required such work may have to be taken up on Sundays or during nights.

48.7 LAYING OF CABLE THROUGH PIPES :

For laying the cables through HDPE pipes, galvanized steel wires of a cross section not less than 10 SWG shall be used as lead wire. Two such lengths of wires shall be laid through the pipes, so that after the cable is threaded through the pipe, one lead wire shall be Permanently left in the pipe with a suitable overlay at two ends, to enable the cable to be pulled out at a later stage if required to do so.

4.8 CABLES IN CONJUSTED RESIDENTIAL AREAS AND MARSHY AREAS :

- a. When laying the cable in residential sections, the cable should be specially protected on both sides up to a distance of about 300 meters beyond the building line. In such cases the cable should be protected by means of RCC ducts/troughs which are placed directly over the cable. This is better than using bricks as in a residential area bricks are usually found, while digging and its special significance of cable protection may be over looked.
- b. In marshy area where it is not possible to divert the cable route the cable shall be suitably laid and protected as per decision of TNPESU site engineer depending on site condition, like laying cable in GI pipe 75 mm dia or RCC pipe 80 mm dia Supported on masonry pillars/iron channels, etc.

48.9 POWER CABLES :

The trench shall be dug as far away from the route of the power cable as practicable.

48.10 RUNNING OF CABLES AT FOUNDATIONS OTHER THAN O.H.E. MASTS AND FROM PIPE OUTLETS :

Damages to cable is likely to occur if care is not taken in laying cable where the bed changes from solid support such as a foundation pipe or bridge to soft support such as soft soil. The cable must not press against the edge of the solid support. The soft soil near the edge must be tamped and the cable raised slightly.

48.11 HANDLING OF CABLE DRUMS & LAYING OF CABLES :

- a. The drums shall be unloaded by the side of road carefully so as not to cause any damage to the cable. The drums at site shall be protected from rain, sun heat and theft by suitably covering the drums with tarpaulin until the cable is laid under ground and refilling completed.
- b. The drums shall always be kept upright, i.e. axle in the parallel position to the base. The drums shall be handled slowly and with care. The walls should not be damaged while moving the drums for unrolling.
- c. The drums shall normally be unrolled at the same place and the cable carried by workmen near the trench. The drums, shall not be dragged in any case, but where drums of cable have to be moved, they shall be rolled in the direction of the arrow, otherwise the coils tend to unwind and the cable may get battered. In case no direction arrow is marked on the drum remove some battens and determine the direction in which the cable is coiled. The arrow should then be painted on the drum pointing in the opposite direction in which the upper cable end is coiled so that future handling of the cable drum is facilitated and then replace the battens carefully.
- d. The drum should be properly mounted on Jacks (or on a cable wheel) making sure that the spindle is large enough to carry the weight without bending and that it is lying horizontally in the bearings so as to prevent the drum creeping to one side or the other while it is rotating. Before attempting to pull off the cable, remove the end protection box attached to the flange of the drum and cut the security ropes so as to leave the cable free to move.
- e. If a portion of the cable only is taken out from the cable drum the battens should be immediately replaced to prevent damage to the balance of the cable.
- f. The use of steel bars between the belt heads to 'Jump' or turn the drum' around is dangerous to staff and likely to damage the drums. A better method is to use two steel plates with grease between them by standing the drum these greased plates. It can thus be elevated round to the desired position.
- g. All care should be taken in handling cable drums with a view to ensure safety not of the cables alone but "also of the workmen handling them. The man should not be allowed to break the cable drum by standing in front but do it only from side.

48.12 CABLE LAYING :

The conditions of the cable shall be visually checked/ examined throughout its length and in case any damage or defect is noticed, the trench shall not be filled up until the TNPESU site engineer is notified to examine and corrective measure has to be ensured before closing the trench.

48.13 BACK FILLING :

The back filling of trenches shall be done by tamping and consolidating the excavated soil in layers of 15 cm so as to ensure that the backfilling does not suffer any sinkage in monsoon.

48.14 TESTING OF CABLE :

The 'testing' of the cable shall be carried out immediately after completing laying and back filling, of a drum of cable to prove its condition.

- 48.15** Trench less digging (Moiling/ HDD) is to be used for Road/ Concrete level crossings, Railway Track crossings and RCC flooring within the sheds with at a depth of at least 12ft. HDPE pipe TEC approved would be laid.

SUPPLY OF ROUTE PLAN :

i. The tenderer shall make foot by foot survey of the entire cable route and make a cable route plan showing final locations of terminations and splicing.

ii. Cable route plan and schedule for splicing of cable will be prepared and submitted by the contractor in consultation with the TNPESU site engineer before the commencement of the work.

49. INSTRUCTIONS FOR EXCAVATION & BACK FILLING OF TRENCHES :

- I. The clearing of cable route including removal & cutting of bushes, trees, or any other temporary obstructions if any, to lay cable shall be carried out by the contractor.
- J. The cable trench in all types of soil shall be and 260mm wide at the bottom 1200 mm deep.
- K. The excavation of trenches shall generally be done in such lengths consistent with the average rate of cable laying possible to cover, the trench during the course of the same day. The trenches shall not remain uncovered over night unless authorized by the TNPESU site engineer.
- L. Excavation shall include trial holes.
- M. The bottom of the trench shall be thoroughly prepared, & shall be free from any stones and sharp and hard objects.
- N. Where the direction of the trench has to change it shall be done in a gentle curve of not less than 40 times the outer diameter of the cable.
- O. If any mound of earth is encountered in the path, a deeper trench shall be made so as to ensure that the bottom of the trench is at least 1000mm below the ground level. The trench shall be dug as far away from the route of the power cable as practicable.

B. CONCRETE TRENCHING WITH FILLING OF SOIL

- a. Wherever cables are required to be taken through any Cement concrete floor area, the contractor shall break the concrete suitably to lay the cable.
- b. The permission shall be sought by the contractor in writing from the authorities concerned well in advance and he cannot claim for the delays in later date.
- c. All required materials shall be contractor's scope of supply d. After breaking the concrete floor the contractor shall re-plaster / re-do the broken concrete floor using with RCC to the ratio of 1:3:4 with his own masonry material

C. CABLE LAYING :

- a. Before commencement of the laying, inspection of the trench and inspection of protection works should be carried out so as to ensure their conformity with the specification.
- b. The cable drum should be brought as close to the cable trench as possible. It should be lifted with the cable firmly mounted on a support of stone or wood.
- c. Cables should always be bent (or straightened) slowly. They should never be bent to small radius while handling. The minimum safe bending radius for the cable should be 40 times the diameter of the cable but wherever possible larger radius should be used.

D. BACK FILLING :

The back filling of trenches shall be done by tamping and consolidating the excavated soil in layers of 15 cm so as to ensure that the backfilling does not suffer any sinkage in monsoon.

E. TESTING OF CABLE :

The 'testing' of the cable shall be carried out immediately after completing laying and back filling, of a drum of cable to prove its condition

50 .Supply of Electrical Accessories		
S.No	Specification	Compliance
1	CAT 6 UTP Patch Cable 2 Mtr – 50 Nos Brand Molex	
2	1" PVC Pipe and Accessories - 250 Sets ISO Brand	
3	CAT 6 I/O / Faceplate/Box – 50 Nos MOLEX	
4	5/15 Amps Socket with 3 Core Cable – 50 Nos	
5	Cable Tie - size 150,250 mm – 50 Pockets	
6	Additional Rack Trays – 150 Meters	
7	Screw Box,Plug Woods, U Clamp – 25 Box	
8	Stay Rope Tighter and Stay Clamp – 5 Coil	
9	CAT 6 JACK RJ45 in Box – 10 Box	

51.0 INSTALLATION AND INTEGRATION CHARGES FOR THE ABOVE WORK

- a. The OFC system installations shall be erected and commissioned to the satisfaction of TNPESU
- b. OCF cables shall be tested as called in the relevant IEC/ISS standards
- c. Good engineering practices suggested by TNPESU site engineer shall be followed by the contractor while carrying out the erection work.
- d. The contractor shall get the work inspected during the execution by TNPESU site engineer or his authorized representative at every stage as indicated below:
- e. The contractor shall supply the sample qty. (both purchase and manufacture items) for each supply items for inspection and necessary approval by TNPESU site engineer before supplying the bulk qty.

- f. The contractor shall offer stage inspection for completion of each work and should get clearance for every stage before proceeding to the next stage.

PREPARATION OF CABLE FOR SPLICING

- a. During the installation, a minimum of 10 meters of cable of each end is coiled in the jointing pit to provide for jointing to be carried out as well as spare length to be available for future use in case of failures.
- b. Bracket to support the cable coil shall be fixed on the wall of the pit.
- c. The cable shall be coiled on to the pit wall in the same position as required after the joint is complete. The marking is done on all the loops so that it will be easier to install it later.
- d. The contractor shall be responsible for ensuring that the SPLICING are done strictly and meticulously conforming to RDSO & CCITT standards.
- e. The splicing joint enclosure shall be conforming to TEC Spn. No. TO 910 G 92 Latest.
- f. The termination Box for OFC shall conform to TEC Spn.No.TV 210 J 93 g. The joint closure shall be fixed to the bracket on the pit wall and pit is closed.
- g. For attending to faults etc., manufacturers supply special kits for opening of the joint and the steps to be followed.

III. ICF SCOPE OF SUPPLY:

- h. Electrical energy required for works / activities such as welding, drilling, grinding will be supplied by this administration at chargeable basis.
- i. TNPESU site engineer will co-ordinate with the contractor in supplying air free of cost only if the contractor desires to use his air operated / concrete power breakers.
- j. TNPESU site engineer will co-ordinate for availing necessary power shut downs in case of requirement. The contractor shall approach TNPESU site engineer site supervisor with written request well in advance for getting the shutdown.

IV. INSPECTION, TESTING AND COMMISSIONING OF THE INSTALLATIONS AFTER COMPLETION OF THE WORK:

- a. Good engineering practices suggested by TNPESU site engineer shall be followed by the contractor while carrying out the erection work.
- b. The contractor shall get the work inspected during the execution by TNPESU site engineer or his authorized representative at every stage as indicated below:
- c. The contractor shall supply the sample qty. (both purchase and manufacture items) for each supply items for inspection and necessary approval by TNPESU site engineer before supplying the bulk
- d. The contractor shall offer stage inspection for completion of each work and should get clearance for every stage before proceeding to the next stage.
- e. After completion of all wiring and installation the following tests are to be conducted

before commissioning.

- f. The insulation resistance value of the all wiring circuitry cables shall be measured and to be recorded.
- g. The earth resistance value of the individual earth pit shall be checked and to be recorded.
- h. The earth continuity up to the all Electrical installation shall be checked and to be recorded.
- i. Any other checks and tests as instructed by TNPESU site engineer site engineer shall be conducted and to be recorded.

COMPLETION TIME: The contractor shall complete the entire work in all respects within SIX MONTHS from the date of issue of Letter of Acceptance.

Note:

- a) However, early completion of the entire work is mostly preferred. If any unavoidable delays cause in the part of TNPESU site engineer and its associated departments in later stages, extension of completion time will be given subject to the advanced approval obtaining from the competent authority by appropriate written request.
- b) If the work is not completed within the due date, the contract will be terminated by giving 7 days and 48 hours notice as per the General Conditions of Contract

Therefore, the pre-bid meeting will be held on 03.06.2026.

- 1 Pre-Bid conference will be held with the interested Bidders for the purpose of holding technical & commercial discussions and providing clarifications by the Purchaser.
- 2 The time and venue shall be as stipulated in the University Syndicate Hall at 11.30 a.m.
- 3 In the Pre-Bid Conference, clarifications pertaining to technical, commercial and other issues regarding the items stipulated in the Bid Document may be required by the interested bidders will be provided.
- 4 A list of clarifications/deviations required to be discussed in the Pre-Bid Conference shall be intimated/communicated to the Purchase Executive over e-mail as per the tender document before attending the Pre-Bid Conference.
- 5 Based upon the discussion held in the Pre-Bid Conference, a Minutes of Meeting (MOM) shall be prepared and if required, a Corrigendum/Addendum shall be issued and it shall be treated as a part of the Tender document.
- 6 However, the decision of the purchaser in this regard will be final.
- 7 No further Pre-Bid suggestions for clarifications/deviations will be entertained after the Pre-Bid Conference.

- The University has rights to accept any tender in full or in part or reject any tender without assigning any reason is reserved. Pre-Bid Meeting will be held with suppliers/Vendors/firms before one week of the tender opening. The opening of the bid will be on 10.06.2026 (Wednesday) at 2.30 p.m. All the other terms and Conditions and other tender document will remain unchanged.
- Further, it is informed that the **previous work order value shall be more than 1 Crore** and also the bidders are requested to quote the rate accordingly.
- **Annual Maintenance Contract (AMC)**
After the installation of the CCTV camera and firewall security solutions in the University, who are installed the above; the concerned contractor shall maintain it up to three years. The University shall made agreement with supplier.

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Registrar