



TERMS OF REFERENCE

SUPPLY & DELIVERY OF CCTV EQUIPMENT FOR AGRI BOAT

1. BACKGROUND

Agro National Corporation (AgroNat) is a state-owned enterprise formed on 21 April 2020, with the overall mandate of developing the agricultural industry and making it an economically viable industry. To expand agriculture in Maldives and work towards reducing the dependency on imports, the company aims to establish mechanisms to ensure sales of agricultural produce from local farmers and provide income generating opportunities to the farmers.

To address the challenges faced by farmers in timely delivery of agricultural produce to the market, the company is building two purpose-built transport vessels, which will be utilized for transportation of local agricultural produce.

2. OBJECTIVES

The main objective of this TOR is to obtain a vendor to supply and deliver CCTV Equipment.

3. SCOPE OF SERVICES AND EXPECTED DELIVERABLES

- i. Supply and delivery of CCTV Equipment.

4. MARKING CRITERIA

#	Details	Marks
1	Price	60
2	Delivery Duration	10
3	Experience	5
4	Technical evaluation	25

4.1 Price (60% of the Total score)

The highest score shall be awarded to the bid with the lowest bid price. For the remaining bids, points will be given to using the formula below:

$$\text{Price Score} = \frac{\text{Lowest proposed total price from among the bids received}}{\text{Particular Bidder's proposed total price}} \times 60\%$$

5.2 Duration (10% of the Total score)

The maximum points allocated under this criterion will be awarded to the bidder with the lowest proposed Delivery Period, and the remaining bidders will be awarded points on a pro rata basis in descending order.

The formula thus used for the computation of the score is as follows:

Delivery Period Score:

$$\frac{\text{Lowest Proposed delivery period from among the bids received}}{\textit{Particular Bidder's proposed delivery period}} \times 10\%$$

5.3 Experience (5% of the Total score)

Experience will be considered for the work completed in the last 5 years related to supply and delivery of IT Equipment.

The work experience letter should be on the contractor's letterhead with the contractor's stamp and signature. Marks will be given to a maximum of 5 experience letters. Each letter will carry 1 mark.

5.4 Technical Evaluation (25% of the Total score)

#	DETAILS	MARKS
1	Compliance with required specifications	90
2	Warranty (Minimum 1 year)	10

Surveillance CCTV Camera	
Mechanical	
Enclosure materials	Aluminum alloy, polycarbonate, hard-coated dome
Mount materials	Polycarbonate, stainless steel
Weatherproofing	IPX4
Resistance	IK08
Optics	
Sensor	5MP CMOS sensor
Lens	Fixed focal length
View angle	H: 102.4°, V: 71.4°, D: 134.3°
Night mode	Built-in IR LED illumination and IR cut filter
Video	
Video compression	H.264
Resolution	4MP 2688 x 1512 (16:9)
Max. frame rate	30 FPS
Image settings	Color, brightness, sharpness, contrast, white balance, exposure control, 2DNR, 3DNR, NR by motion, masking, text overlay
System	
Processor	Dual-core Arm® Cortex®-A7 based chip
Networking interface	10/100 MbE RJ45 port
Max. power consumption	5W
Power method	PoE
Supported voltage range	37–57V DC
LED	R/G/B/W
Button	Factory reset
Mounting	Wall, ceiling mount
Operating temperature	-20 to 40° C (-4 to 104° F)
Audio	
Microphone	Yes (Can be disabled)
Speaker	Yes

NVR/Controller/Router/Gateway (All in one device)	
Mechanical	
Enclosure materials	Aluminium CNC, SGCC steel
Mount material	SGCC steel
Hardware	
Processor	Quad-core ARM® Cortex®-A57 at 1.7 GHz
System memory	4 GB DDR4
On-board storage	16 GB eMMC Integrated 128 GB SSD
Management interface	Ethernet Bluetooth
Networking interface	(8) LAN: GbE RJ45 ports (1) WAN: 2.5 GbE RJ45 port
SFP+ interface	(1) LAN: 10G SFP+ (1) WAN: 10G SFP+
PoE interface	(6) PoE (Pair A 1, 2+; 3, 6-) (2) PoE+ (Pair A 1, 2+; 3, 6-)
IDS/IPS throughput	3.5 Gbps
Power method	(1) Universal AC input, 100–240V AC, 4.4A Max., 50/60 Hz (1) USP-RPS DC input, 52V DC, 3.94A
Power supply	AC/DC, internal, 240W
Supported voltage range	100–240V AC
Max. power consumption	50W (Excluding PoE output)
Max. PoE wattage per port by PSE	PoE: 15.4W PoE+: 30W
Voltage range PoE mode	PoE: 44–57V PoE+: 50–57V
ESD/EMP protection	Air: ± 15kV, contact: ± 8kV
Button	Factory reset
Operating temperature	-10 to 40° C (14 to 104° F)
Gateway Features	
Performance	Redundant WAN with failover and load balancing WiFi QoS with APs Application, domain, and country-based QoS Application and device type identification Additional internet failover with LTE Backup Internet quality and outage reporting
Next-generation security	
Advanced networking	License-free SD-WAN WireGuard, L2TP and OpenVPN server OpenVPN client OpenVPN and IPsec site-to-site VPN Policy-based WAN and VPN routing DHCP relay Customizable DHCP server

	IGMP proxy IPv6 ISP support
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Industrial-grade 3.5" 1TB HDD

Mechanical

Dimensions	147 x 101.6 x 26.1 mm (5.75 x 4 x 1")
Hard disk form factor	3.5-inch

Hardware

Management interface	SATA 6Gb/s
Rotation speed	5400 RPM
Power method	5V/12V input
Supported voltage range	5V ± 5%/12V ± 5%
Power consumption	Spin-up, max: 17.6W Read/write: 3.3W

Industrial-grade 3.5" 1TB HDD

Hardware

Processor	Octa-core ARM®
Memory	4 GB low power DDR4X
Networking interface	GbE RJ45 port
Power method	PoE
Max. power consumption	9.5W
ESD/EMP protection	Air: ± 8kV, contact: ± 4kV
Bluetooth	5.0
Antennas	Bluetooth
Antenna gain	2 dB
Button	Factory-reset

32" LCD TV - CCTV Viewing	
Configuration	
Operation System	Android 11.0
	ARM A55 Quad core, 1.5GHz, GPU: Mali G31MP2, DDR: 1GB, Flash: 8GB
Display	
Screen Size	32 inch
Resolution	1366 x 768
Backlight Type	Direct
Direct distance	OD38
Set Brightness (nit) (Typ.)	200
Full Screen	Yes
Refresh frequency	50/60Hz, HDR10
Terminal (Ports):	
USB - X2, HDMI - X2, LAN - X1	

Switching	
Enclosure material	SGCC steel 1U
Hardware	
Management interface	Ethernet In-Band
Networking interface	(24) GbE RJ45 ports (2) 1/10G SFP+ ports
PoE interface	(16) PoE/PoE+ (Pins 1, 2+; 3, 6-) (8) 60W PoE++; PoE/PoE+ (Pins 1, 2+; 3, 6-) / PoE++ (Pair A 1, 2+; 3, 6-) (Pair B 4, 5+; 7, 8-)
Total non-blocking throughput	44 Gbps
Switching capacity	88 Gbps
Forwarding rate	65.472 Mpps
Power method	Universal input, 100–240V AC, 50/60 Hz USP RPS DC input, 52V DC, 7.69A / 11.5V DC, 2.61A
Power supply	AC/DC, internal, 450W
Supported voltage range	100–240V AC
Max. power consumption	50W (Excluding PoE output)
Total available PoE	400W
Max. PoE wattage per port by PSE	PoE+: 32W PoE++: 64W
Voltage range PoE mode	PoE: 44–57V PoE+: 50–57V
ESD/EMP protection	Air: ± 16kV, contact: ± 12kV

Button	Factory reset
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Mini Rack

Mechanical

Materials	Frame/bracket: Cold rolled carbon steel (SPCC) Handle: Stainless steel
Treatment	Liquid coating
U height	6U
Rack type	Open frame

All-In-One Sensor - Environment Sensors - Cold Storage/Storage/Engine Room/Genset

Enclosure material	Polycarbonate
Mount materials	Flat wall mount: polycarbonate, adhesive Corner mount: polycarbonate, adhesive
Additional gear	Magnet Water sensor adapter
Hardware	
Networking interface	Bluetooth 5.0, BLE
Max. TX power	5 dBm
Max. power consumption	77mW
Power method	Lithium battery CR123A
Sensor features	Motion sensor (5 m/16 ft max. range) Magnetic entry sensor for door or window open/close Accelerometer for garage door open/close Temperature sensor Humidity sensor Ambient light sensor Alarm sound sensor Water sensor for detecting leaks and floods BLE connectivity from access point in indoor setting
Antenna	2.4GHz
Antenna gain	0.5 dBi

Button	Factory reset
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Access Point	
Enclosure materials	UV-stabilized polycarbonate
Mount materials	Polycarbonate, SGCC steel, plastic
Wind survivability	33.2 N at 200 km/h (7.5 lbf at 125 mph)
Weatherproofing	IPX6
Networking interface	(1) GbE RJ45 port
Management interface	Ethernet
Power method	PoE
Supported voltage range	44–57V DC
Max. power consumption	8W
Max. TX power 2.4 GHz 5 GHz	20 dBm 20 dBm
MIMO 2.4 GHz 5 GHz	2 x 2 2 x 2
Throughput rate 2.4 GHz 5 GHz	300 Mbps 866.7 Mbps
Antenna gain 2.4 GHz 5 GHz	4.7 dBi 6 dBi
Antenna	(1) Internal antenna (2) RP-SMA connectors for optional external antennas
Button	Factory reset
Mounting	Wall, ceiling, pole mount (Included)

WiFi standards	802.11a/b/g/n/ac
Wireless security	WPA-PSK, WPA-Enterprise (WPA/WPA2, TKIP/AES)
BSSID	8 per radio
VLAN	802.1Q
Advanced QoS	Per-user rate limiting
Guest traffic isolation	Supported
Concurrent clients	200+
Supported Data Rates	
802.11a	6, 9, 12, 18, 24, 36, 48, 54 Mbps
802.11b	1, 2, 5.5, 11 Mbps
802.11g	6, 9, 12, 18, 24, 36, 48, 54 Mbps
802.11n (WiFi 4)	6.5 Mbps to 300 Mbps (MCS0 - MCS15, HT 20/40)
802.11ac (WiFi 5)	6.5 Mbps to 866.7 Mbps (MCS0 - MCS9 NSS1/2, VHT 20/40/80)

Reader Hub / Reader - Cold Storage 1	
Enclosure material	Polycarbonate
Mounting material	Polycarbonate
Hardware	
Networking interface	(5) 10/100/1000 Base-T
Power method	PoE++ UL 294 Power-limited Class 2 PSU UL 60950/62368 LPS/PS2 PSU
Max. power consumption	Without PoE output: 30W With PoE output: 50W
PoE input	50V DC, 1A
PoE output	PoE passthrough, (4) PoE, 50V DC, total 20W
Button	(1) Factory-reset
Digital input	Request to exit/request to enter/remote release/door position sensor

Dry output relay	Lock: 30V DC, 1A Aux: 30V DC, 1A
Powered output relay	Lock: 12V DC, 1A Aux: 12V DC, 0.33A 12V DC, 0.33A
PoE cabling requirements	The minimal conductor gauge permitted to connect between the PSE or power injector and the PD shall be 24 AWG (0.21 mm ²) for horizontal or riser cable.
Mounting	In wall, gang box
Weatherproofing	IP55
Hardware	
Networking interface	(1) 10/100 MbE RJ45 port
Connectivity	BLE 4.1
Power method	PoE UL 294 Power-limited Class 2 PSU UL 60950-1/62368-1 LPS/PS2 PSU
Supported voltage range	48V DC
Max. power consumption	5W
ESD/EMP protection	Air: ±15kV, contact: ±8kV
Sensors	Proximity sensor
Speaker	(1) 8 ohm, 0.7W
LEDs	R/G/B/W
Button	(1) Factory-reset
NFC frequency	13.56 MHz
NFC read range	< 30 mm
NFC standards	ISO 14443A, 14443B, 15693
NFC technology	NFC Tag 1,2,3,4,5 MIFARE Classic MIFAREPlus MIFARE Ultralight MIFARE DESFire
Format	ISO 7810 ID-1
NFC frequency	13.56 MHz
NFC technology	ISO/IEC 14443 Type A MIFARE DESFire

Additional Reader - Cold Storage 2	
Enclosure material	Polycarbonate, glass
Mounting	In wall, gang box
Weatherproofing	IP55
Networking interface	(1) 10/100 MbE RJ45 port
Connectivity	BLE 4.1
Power method	PoE UL 294 Power-limited Class 2 PSU UL 60950-1/62368-1 LPS/PS2 PSU
Supported voltage range	48V DC
Max. power consumption	5W
ESD/EMP protection	Air: ±15kV, contact: ±8kV
Sensors	Proximity sensor
Speaker	(1) 8 ohm, 0.7W
Button	(1) Factory-reset
NFC frequency	13.56 MHz
NFC read range	< 30 mm
NFC technology	NFC Tag 1,2,3,4,5 MIFARE Classic MIFAREPlus MIFARE Ultralight MIFARE DESFire
Operating humidity	5 to 90% noncondensing
PoE cabling requirements	Cable 5e cabling is the minimum performance category recommended. The performance category utilized should match the transmission speed required at the installation site. The minimal conductor gauge permitted to connect between the PSE or power injector and the PD shall be 26 AWG (0.13 mm ²) for patch cords; 24 AWG (0.21 mm ²) for horizontal or riser cable.

Door Access Control	
Enclosure materials	Lock body: zinc alloy Front plate/latches: stainless steel
Voltage	12VDC
Current power	400mA ±10%
Wiring connection	Connect the two screw terminal separately to powered lock relay on UA-Hub: NO, COM
Lock type	Fail secure lock Single door
Lock holding force	1,200 kg (2,645 lb)
Suitability	Wooden Steel Aluminum
Screw terminal	+ and -
Operating temperature	-10 to 45° C (14 to 113° F)
Operating humidity	5 - 90% noncondensing