

Directorate General Border Security Force
(Prov Dte: Mod Cell)

Expression of Interest:

Dy. Inspector General (Prov)
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The Sub-group of technical experts on surveillance equipment constituted by MHA vide their letter No. IV-17017/18/2001-Prov-I dated 05 Jul 2002, letter No. IV-24011/12/2011-Prov.I dated 13th June 2012 and O/No. 11012/02/ 2009-Fin-I/Prov.I-17 dated 02nd January 2018 held its meeting at BSF HQ 03rd May 2019 to formulate the QRs of PTZ type Camera.

After detailed deliberation the referred Sub-group of technical experts has finalized the QRs and TDs of PTZ type camera on 27th May 2019 which are as under :-

S/No	PARAMETERS
A	GENERAL:
	1. Should consist of CMOS , IP based colour camera & IR illuminator in outdoor housing.
	2. Should have suitable ruggedized enclosure to protect equipment from environment/natural hazards
	3. Should be able to be fixed on wall, pole, tower and mast.
	4. Should have facility to remotely clean the camera lens with fitted wipers.
	5. Ingress protection : IP 66
B	TECHNICAL SPECIFICATIONS:-
	1. Image sensor : 1.18" or larger, progressive scan, CMOS sensor.
	2. Pixels : 4k Mega Pixel (3840 X 2160) or better
	3. Video compression : H.265 or better
	4. Video output : PAL
	5. Focal length: 6.5 to 202 mm or better
	6. Focus & Iris control: Automatic with manual override.
	7. SNR (signal to noise ratio): ≥ 45 dB
	8. Resolution &Frame rate : minimum 25 frames per second (FPS) for full HD streams.
	9. Streams & Resolutions: i. Stream 1 @ 3840 X2160 ii. Stream2 @ 1920 X 1080 iii. Stream 3 @ 1280 X 720 iv. Stream 4 @ 640 X 360
10. Multi video resolutions: Quadruple streaming.	

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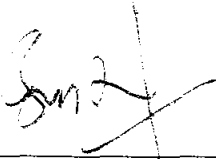
11.	Shutter speed : Max shutter speed should be 1/8000 sec or higher
12.	Minimum illumination: i. Colour mode : 0.1 Lux @ 1.55 ii. Black & white mode: 0 Lux @ (IR LED on)
13.	Image stabilisation : Yes
14.	Angular field of view: i. Wide: 58.2 ⁰ (H), 34.4 ⁰ (V), 65.2 ⁰ (D) ii. Tele: 1.99 ⁰ (H), 1.13 ⁰ (V), 2.3 ⁰ (D) } or equivalent
15.	Wide dynamic range (WDR) : 120 dB true with dynamic range
16.	Lens type : Motorised varifocal
17.	IR distance : 200 Mtrs
18.	Video streaming : Quad compress stream or better.
19.	Auto exposure: Electronic level control
20.	Pan and Tilt mechanism: High precision motorized Pan and Tilt unit with variable speed facility. i. Azimuth (Pan) : 360 ⁰ continuous . ii. Elevation (Tilt) : 0 ⁰ to 180 ⁰ continuous.
21.	Pan/Tilt Speed: 1 ⁰ /Sec to 180 ⁰ /Sec
22.	Preset Speed: 225 ⁰ /Sec ± 0.5 ⁰ accuracy.
23.	Presets: Min 256 presets
24.	Sector Blanking: Min 8 Zones.
25.	Digital Noise Reduction: Configurable 2 DNR or 3 DNR.
26.	Trigger Events: Motion Detection, Alarm in, Tampering, Target Locking and Tracking.
27.	Data Rate: 8 Mbps (Max) for H.265 video compression.
28.	Edge Storage: To be supplied with 128 Gb micro SD/ SDHC/ SDXC, back field NVR on resumption duration 15 Minutes.
29.	Network protocol: Suitable and required network protocol stack to work camera in TCP/IP based Ethernet network environment (as required for system working)
30.	Network Connectivity: Ethernet, 10/100/1000 Base-T IPV4 & IPV6 Compatible.
31.	Discovery Interface: OEM interface to detect the camera automatically and configure network settings.
32.	Web server : Internal web server operating system required with embedded OS.
33.	Security : SSL encryption, multi user authority, IEEE 802.1X, HTTPS, IP filtering.
34.	Image Settings: Configurable exposure, White Balance, Sharpness.
35.	Alarm Input/ Output (Minimum): 1 Input and 1 Output.

36.	Power source (Input Voltage): 24 V AC, PoE (IEEE 802.3bt), 70 Watt (Heater on, IR LED on)
37.	Operating temperature: -20 ⁰ C to +60 ⁰ C
38.	Operating Humidity : 0% to 90% non condensing
39.	Enclosure Protection: IK 10 and IP66.
40.	Regulatory approval/certification: UL/CE/FCC/BIS complied.
41.	Range: Day Detection: 500 Mtr Recognition : 100 Mtr

D

MISCELLANEOUS :

1. User manual/ operational manual.
2. Technical manual with technical specifications.
3. Should provide suitable mounting mechanism for fixing on pole/mast.
4. Tools for minor repair, installation, maintenance and cleaning kit
5. Spare parts list.
6. Copy of operating software (CD/DVD) required for the system should be provided.



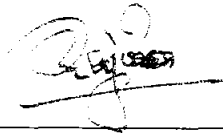
(Ashok Kumar Sharma),
ADG (Log), BSF



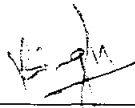
(R A Khan), DIG
SIW BSF



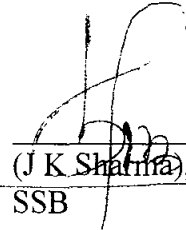
(J P Singh), Sc 'G'
IRDE, DRDO



(Rajnish Kumar), PSO (E)
BPR&D



(Vikram Singh), T/Cdr
NSG



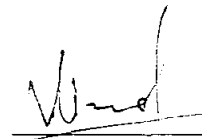
(J K Sharma), DC
SSB



(A P Singh), DC
SIW BSF



(Ravindra kr meel), DC
CISF



(Nb/Sub Vinod Kumar)
Assam Rifles

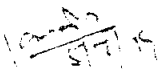


(SI/ Tele Mahabir Singh)
ITBP



(SI/T Ashwani Kumar)
SIW BSF

Approved/Not approved



(Rajni Kant Mishra) IPS
DIRECTOR GENERAL
BORDER SECURITY FORCE

TRIAL DIRECTIVES FOR PTZ TYPE CAMERA

S/No	PARAMETER	TRIAL PROCEDURE SUGGESTED FOR BOARD OF OFFICERS	RESULT EXPECTED/ DESIRED	
A	GENERAL:			
	1.	Should consist of CMOS , IP based colour camera in outdoor housing	To be physically checked by the BOO.	The camera must be as per requirement mentioned in the QRs.
	2.	Should have suitable ruggedized enclosure to protect equipment from environment/natural hazards	To be physically checked by the BOO and Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	The enclosure must be ruggedized for field utilization. The certificates should clearly support the parameter.
	3.	Should be able to fixed on wall, pole, tower and mast.	To be physically checked by the BOO by mounting the camera on wall, pole, tower and mast.	The camera must be easily mountable on wall, pole, tower and mast.
	4.	Should have facility to remotely clean the camera lens with fitted wipers.	To be physically checked by the BOO.	The camera must be fitted with wipers for remotely cleaning the camera lens.
	5.	Ingress protection : IP 66	Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	The camera must comply with IP 66 standard as specified in parameters.
B	TECHNICAL SPECIFICATIONS:-			
	1.	Image sensor : 1.18" or larger,	Firm has to submit national/ International	The certificates must clearly

	progressive scan, CMOS sensor.	accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	support the parameter.
2.	Pixels : 4k Mega Pixel (3840 X 2160) or better	Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	The certificates must clearly support the parameter.
3.	Video compression : H.265 or better	Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	The certificates must clearly support the parameter.
4.	Video output : PAL	To be physically checked by the BOO.	Video output must be as specified in parameters.
5.	Focal length: 6.5 to 202 mm or better	Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	The certificates must clearly support the parameter.
6.	Focus & Iris control: Automatic with manual override.	To be physically checked by the BOO.	The focus & Iris must be controlled automatically and manually.
7.	SNR (signal to noise ratio): \geq 45dB	Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM	The certificates must clearly support the parameter.

		Certificate in respect of the same.	
8.	Resolution & Frame rate : minimum 25 frames per second (FPS) for full HD streams.	Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	The certificates must clearly support the parameter.
9.	Streams & Resolutions: i. Stream 1 @ 3840 X 2160 ii. Stream 2 @ 1920 X 1080 iii. Stream 3 @ 1280 X 720 iv. Stream 4 @ 640 X 360	Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	The certificates must clearly support the parameter.
10.	Multi video resolutions: Quadruple streaming.	Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	The certificates must clearly support the parameter.
11.	Shutter speed : Max shutter speed should be 1/8000 sec or higher	Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	The certificates must clearly support the parameter.
12.	Minimum illumination: i. Colour mode : 0.1 Lux @ 1.55 ii. Black & white mode: 0 Lux @ (IR LED on)	Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	The certificates must clearly support the parameter.
13.	Image stabilisation : Yes	To be physically checked by the BOO.	The camera must be able to produce stable image while on motion (Pan/Tilt).

14.	Angular field of view: i. Wide: 58.2 ⁰ (H), 34.4 ⁰ (V), 65.2 ⁰ (D) or equivalent ii. Tele: 1.99 ⁰ (H), 1.13 ⁰ (V), 2.3 ⁰ (D) or equivalent	To be physically checked by the BOO. In case facility/ expertise not available, Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	Angular FOV must meet the specified parameters must be supported with certificates.
15.	Wide dynamic range (WDR) : 120 dB true with dynamic range	Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	The certificates must clearly support the parameter.
16.	Lens type : Motorised varifocal	To be physically checked by the BOO.	The lens of camera must be as specified in parameters.
17.	IR distance : 200 Mtrs	To be physically checked by the BOO.	IR distance must be as specified in parameters.
18.	Video streaming : Quad compress stream or better.	To be physically checked by the BOO.	Video streaming must be as specified in parameters.
19.	Auto exposure: Electronic level control	To be physically checked by the BOO.	Auto exposure must be as specified in parameters.
20.	Pan and Tilt mechanism: High precision motorized Pan and Tilt unit with variable speed facility. i. Azimuth (Pan) : 360 ⁰ continuous . ii. Elevation (Tilt) : 0 ⁰ to 180 ⁰ continuous.	To be physically checked by the BOO.	Camera must comply with specified parameters.

21.	Pan/Tilt Speed: 1 ⁰ /Sec to 180 ⁰ /Sec	To be physically checked by the BOO.	Camera must comply with specified parameters.
22.	Preset Speed: 225 ⁰ /Sec ± 0.5 ⁰ accuracy.	To be physically checked by the BOO.	Camera must comply with specified parameters.
23.	Presets: Min 256 presets	To be physically checked by the BOO.	Camera must comply with specified parameters.
24.	Sector Blanking: Min 8 Zones.	To be physically checked by the BOO.	Camera must comply with specified parameters.
25.	Digital Noise Reduction: Configurable 2 DNR or 3 DNR.	Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	The certificates must clearly support the parameter.
26.	Trigger Events: Motion Detection, Alarm in, Tampering, Target Locking and Tracking.	To be physically checked by the BOO.	Camera must comply with specified parameters.
27.	Data Rate: 8 Mbps (Max) for H.265 video compression.	Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	The certificates must support the parameter.
28.	Edge Storage: To be supplied with 128 Gb micro SD/ SDHC/ SDXC, back field NVR on resumption duration 15 Minutes.	To be physically checked by the BOO.	Camera must comply with specified parameters.

29.	Network protocol: Suitable and required network protocol stack to work camera in TCP/IP based Ethernet network environment (as required for system working)	Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	The certificates must support the parameter..
30.	Network Connectivity: Ethernet, 10/100/1000 Base-T IPV4 & IPV6 Compatible.	BOO to check physically. Firm to submit OEM certificate regarding IPV4 & IPV6 Compatibility.	Camera must comply with specified parameters and certificate to clearly support IPV4 and IPV6 compatibility.
31.	Discovery Interface: OEM interface to detect the camera automatically and configure network settings.	To be checked physically by the BOO	Must be able to detect camera automatically and configure network settings.
32.	Web server : Internal web server operating system required with embedded OS.	To be checked physically by the BOO	Web server must have required embedded OS.
33.	Security : SSL encryption, multi user authority, IEEE 802.1X, HTTPS, IP filtering.	To be checked physically by the BOO	Security/ Encryption must be as specified in the parameters.
34.	Image Settings: Configurable exposure, White Balance, Sharpness.	To be checked physically by the BOO	Image setting must be configurable and adjustable as per specified parameters.
35.	Alarm Input/ Output (Minimum): 1 Input and 1 Output.	To be checked physically by the BOO	Alarm Input/ Output must be available as per specified parameters.
36.	Power source (Input Voltage): 24 V AC, PoE (IEEE 802.3bt), 70 Watt (Heater on,	To be checked physically by the BOO	Power source must be of specified parameters and camera should work satisfactorily on the power

	IR LED on)		source provided.
37.	Operating temperature: -20 ⁰ C to +60 ⁰ C	Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	Certificates must support to the specified parameter.
38.	Operating Humidity : 0% to 90% non-condensing	Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	Certificates must support to the specified parameter.
39.	Enclosure Protection: IK 10 and IP66.	Firm has to submit national/ International accredited lab certificate in respect of the same. If no such lab available in India then, firm has to submit any Indian Govt Lab/ OEM Certificate in respect of the same.	Certificates must support to the specified parameter.
40.	Regulatory approval/certification: UL/CE/FCC/BIS complied.	To be physically checked by the BOO	Regulatory approval/ certification must be as specified in the parameters.
41.	Range: Day Detection: 500 Mtr Recognition : 100 Mtr	To be checked physically by the BOO.	Camera must be able to detect and recognise the objects as per parameters specified.
D	MISCELLANEOUS		
	1. User manual/ operational manual. 2. Technical manual with technical specifications. 3. Should provide suitable	To be checked physically by the BOO	Firm to produce the given items before the BOO

mounting mechanism for fixing on pole/mast.

4. Tools for minor repair, installation, maintenance and cleaning kit
5. Spare parts list.
6. Copy of operating software (CD/DVD) required for the system should be provided.

(Ashok Kumar Sharma),
ADG (Log), BSF

(R A Khan), DIG
SIW BSF

(J P Singh), Sc 'G'
IRDE, DRDO

(Rajnish Kumar), PSO (E)
BPR&D

(Vikram Singh), T/Cdr
NSG

(J K Sharma), DC
SSB

(A P Singh), DC
SIW BSF

(Ravindra K. Meel), DC
CISF

(Nb/Sub Vinod Kumar)
Assam Rifles

(SI/Tele Mahabir Singh)
ITBP

(SI/T Ashwani Kumar)
SIW BSF

Approved/Not approved

(Rajni Kant Mishra) IPS

Director General

Border Security Force