PUBLIC-INTEREST FINDING FOR PROPRIETARY-MATERIAL USE

ROUTE: VAR   DES NO: VAR
PROJECT NO: VAR   COUNTY: VAR
PROJECT DESCRIPTION: Programmatic approval.
FHWA OVERSIGHT: ☒YES ☐ NO
PROPRIETARY MATERIAL:
Closed Circuit TV (CCTV) system, including:

1103Z IP Camera Dome with UDP Support

Manufactured by TKH Group (TREEHAVEN technologies, Inc.)

1. Description of Need:

The ITS Technology Deployment Division of the Indiana Department of Transportation is seeking approval to create a recurring special provision and ultimately incorporate into the Standard Specifications equipment essential to the providing Traffic Management Center (TMC) with real time visualized information from the roadways.

CCTV systems are designed to provide real time video stream from location, where system had been installed. They allow local and remote control of the Pan/Tilt/Zoom functions, which, in turn, allows operator to select the best view of the road, or incident.

Required functionalities include:

- Provide unique addressing in the network using internal protocol, compatible with existing INDOT Network.
- Provide 1 mile viewing area in any direction.
- Provide interface to existing INDOT Network.
- Provide capability of local and remote programming.
- Provide local and remote maintainability.
- Provide capability for UDP support.

2. Product History: Previously used camera was suddenly discontinued by manufacturer. Submitted product has the same capability, as previously used, plus can be utilized in digital (IP based) format. Desired product is currently listed on INDOT Approved Materials <u>List</u> for Traffic Signal and ITS Control Equipment under ITS Closed Circuit TV Cameras. Testing was conducted according the **ITM No. 951-10P and ITM   No. 952-10P**

3. Product Availability: Desired products, manufactured by TKH Group (TREEHAVEN Technology, inc.,) are meeting all requirements and compatible with existing system. Although there are PTZ Cameras and field interfaces for them, very few of such products are capable of interfacing with existing network. Google search for High Speed Analog PTZ Dome returns multiple devices, meeting some of the requirements, but not all.

4. Product Cost: This product is priced less, than WTI manufactured similar cameras, used currently by INDOT.

5. Project Compatibility: Desired product is one of the few products on the market that are compatible with existing ITS hardware.

6.   Maintenance: Desired equipment is designed such a way, that most of maintenance functions: monitoring, restoring functionality, programming/reprogramming – can be done remotely. Training is available on line in Wiki Notes, accessible for tech personnel from any location in Indiana. Low failure rate (less than 3% including "acts of God") and short order turnaround time results in the minimal storage requirement.

7. Engineering Analysis: This application is programmatic by nature and unique not to a specific ITS project, but to the ITS architecture that is already in place. CCTV systems are essential components that allow monitoring of the live traffic. The specifications are needed for synchronization with existing system and not unique to the specific project.

8. Expanded Economic Analysis: Due to the fact, that this product is completely sealed and is not affected by ailments, it may be stated that actual yearly maintenance cost is low. The average life cycle of the desired product is evaluated as 5 years. Annual replacement rate, including damage done by lightning, is negligible.

9. Contractual or Performance Implications: Use of desired items does not impose any restrictions on the use of other items on the contracts.

10. Attach Supplemental Documentation: Attached are:
   a) INDOT ITS Architecture;
   b) 1103Z IP Camera Dome with UDP Support.

11. Length of Time that Approval is Effective: 07/2017 to 07/2020

Prepared By: Konstantin Veygman

Field Engineer

INDOT-ITS Technology Deployment Division

Date: 07/17/2017

Based upon the above finding, the use of the proprietary material listed is in the public interest and is hereby approved.

APPROVED: _Trevor Hull_ Date: 7/19/17
INDOT Deputy Commissioner
Engineering & Asset Management

APPROVED: _Thomas L Duncan_ Date: 7/20/17
Federal Highway Administration

- 1/3" Progressive scan CMOS imager
- 3MP @ 30 fps (2048 x 1536)
- Motorised 36x optical zoom (4.5 - 162 mm) autofocus lens
- 120 dB WDR
- Support defog, BLC, HLC
- Intelligent VCA
- Autotracking
- Low bit rate, low latency
- IP66
- ONVIF Profile S and G conformant

PD1103Z2-E
3MP Intelligent IP outdoor PTZ dome camera

Description

The PD1103Z2-E is a 3 megapixel IP outdoor PTZ dome camera providing clear images in any situation. A motorised 36x optical zoom autofocus lens ensures sharp and clear images at all times, both nearby and far away. The camera has a wide range of intelligent features to offer good image quality at all times, low storage costs and video analytics to detect numerous events.

Multistream high definition
The integrated camera has multistream capability for simultaneous streaming of H.264/H.264 or H.264/MJPEG. Streaming 3 megapixel HD (2048 x 1536) @ 30 fps is possible. Multiple combinations of resolution and frame rate can be configured to satisfy different live viewing and recording scenarios.

Open standards
Multiple options are available to easily integrate the PD1103Z2-E to a video management system. In support of open standards, the PD1103Z2-E is compliant with a range of APIs and standards, such as ONVIF (Profile S / Profile G).

Day/Night, BLC and WDR
The camera provides automatic day/night functionality, for use in low-light situations. Backlight compensation enhances image visibility in difficult lighting situations. This ensures quality pictures at all times. The wide dynamic range function brings details in the darker areas of an image without saturation in the brighter parts.

Power source choices
The PD1103Z2-E can be powered with 24 Vac or over the network with Hi-PoE (60 W) sources.

Intelligent features
A wide variety of intelligent features can be used to influence image quality and fluency such as smart IR, defog, BLC and HLC. With regional cropping, details can be seen in the image even with low bandwidth.
The camera features an extensive set of intelligent VCA which assists the operator in detecting any anomalies and watching over your safety.

Technical Specifications
PD1103Z2-E

Camera

Image sensor	1/3" Progressive scan CMOS
Lens	Motorised 4.5 - 162 mm, F1.6
Zoom	36x Optical zoom, 16x digital zoom
Focus	Autofocus
Horizontal field of view	54.5° ~ 2.7°
Min. illumination	Colour: 0.05 lux, B/W: 0.01 lux
Day/Night	IR-cut filter with auto switch
WDR	120 dB
Shutter speed	1 s ~ 1/30,000 s
Slow shutter	Support

Image control

Max. resolution	2048 x 1536
Frame rate	50 Hz: 30 fps @ 2048 × 1536 60 Hz: 30 fps @ 2048 × 1536
Third stream	Independent with main stream and substream, up to 50/60 Hz: 10 fps @ 1280 ×720
Image enhancement	BLC / HLC / 3D DNR / Defog
Image setting	Corridor mode, saturation, brightness, contrast, sharpness
Regional cropping	Support
Day/Night switch	Auto/Schedule/Triggered by Alarm In
Picture overlay	Picture can be overlaid on video with 128x128 24-bit bmp format
Privacy masks	24

Pan and tilt

Pan travel	360° Continuous
Tilt travel	-15°~90°
Preset speed	Pan: 540°/s, Tilt: 400°/s
Manual speed	Pan: 0.1°~300°/s, Tilt: 0.1°~240°/s
Presets	300
Cruise	10
Sequence	8
Proportional pan and tilt	On/off
Home function	Preset / Cruise / Sequence / Autoscan / Tilt scan / Random scan / Frame scan / Panorama scan

Video

Video compression	H.264/MJPEG
H.264 type	Baseline Profile / Main Profile / High Profile
Video bit rate	32 kbps – 16 Mbps
Region of interest	6 Areas with adjustable levels

Audio

Audio compression	G.711/G.722.1/G.726/MP2L2
Audio bit rate	64 kbps (G.711) / 16 kbps (G.722.1) / 16 kbps (G.726) / 32-128 kbps (MP2L2)
Environment noise filtering	Support
Audio I/O	Support dual audio track, stereo
Audio sampling rate	16 kHz / 32 kHz / 44.1 kHz / 48 kHz

Network

Network storage	NAS (Support NFS, SMB/CIFS), ANR
Alarm trigger	Motion detection, Tampering alarm, Network disconnect, IP address conflict, Storage exception
Protocols	TCP/IP, UDP, ICMP, HTTP, HTTPS, FTP, DHCP, DNS, DDNS, RTP, RTSP, RTCP, PPPoE, NTP, UPnP, SMTP, SNMP, NTCIP, IGMP, 802.1X, QoS, IPv6, Bonjour
Security	User authentication, Watermark, IP address filtering, Anonymous access
Standard	ONVIF (Profile S, Profile G), PSIA, CGI, ISAPI

Intelligent features

Behaviour analysis	Line crossing detection, Intrusion detection, Region entrance, Region exiting
Line crossing detection	Cross a user-defined virtual line, unidirectional or bidirectional
Intrusion detection	Enter and loiter in a user-defined region
Region entrance	Enter a user-defined region
Region exiting	Exit from a user-defined region
Exception detections	Scene change detection, Sudden audio increase/decrease detection, Audio loss detection, Defocus detection
Recognition	Face detection recognition
Statistics	Object counting (Entrance and Exit object number is accounted and shown on screen in real time)
Autotracking	Manual / Panorama / Intrusion trigger / Line crossing trigger / Region entrance trigger / Region exiting trigger

Mechanical

Audio	1x 3.5 mm audio in (mic in/line in) / out interface
Communication interface	1 RJ-45 10M/100M/1000M Ethernet port, 1 RS-485 interface
Alarm	7 input, 2 output
Video output	1 Vp-p composite output (75 Ω / BNC)
On-board storage	Built-in micro SD/SDHC/SDXC slot, up to 128 GB
Reset button	Yes
Dimensions	Ø 260 x 331 mm
Weight	8 kg
Colour	RAL 9003 (signal white)

Environmental

Protection level	IP66
Impact protection	IK10
Operating conditions	-40 °C – 65 °C (-40 °F – 149 °F), Humidity 90% or less (non-condensing)
Power supply	24 Vac ± 10%, Hi-PoE (60 W)
Power consumption	Max. 60 W

Ordering information

Models	Description
PD1103Z2-E	Intelligent IP outdoor PTZ dome, 3 MP, 36x opt.zoom, WDR, autotracking

TKH GROUP SECURITY SOLUTIONS