

HIKVISION®



A&E System Specification

iDS-2CD7A26G0/P-IZHS(Y)

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Division 28 – Electronic Safety and Security

Section 28 20 00 – Video Surveillance

Section 28 21 00 – Surveillance Cameras

Section 28 21 13 – IP Cameras

Section 28 27 00 – Video Surveillance Sensors

Part 1 General:

1.1 Summary of Requirements

A. Camera

1. 2 MP ANPR IR Varifocal Bullet Network Camera

B. Related Requirements

- | | |
|------------------------|---|
| 1. Section 27 15 01.13 | Video Surveillance Communications Conductors and Cables |
| 2. Section 27 20 00 | Data Communications |
| 3. Section 28 05 07.13 | Power Sources for video Surveillance |
| 4. Section 28 05 07.21 | Poe Power Sources for Electronic Safety and Security |
| 5. Section 28 05 33 | Safety and Security Network Communications Equipment |
| 6. Section 28 06 10 | Schedules for Access Control |
| 7. Section 28 23 00 | Video Management System |
| 8. Section 28 23 11 | Video Surveillance – Video Management System Analytics |
| 9. Section 28 23 13 | Video Surveillance – Video Management System Interfaces |
| 10. Section 28 33 00 | Video Surveillance – Security Monitoring and Control |

1.2 References

A. Abbreviations

- | | |
|-----------|-------------------------------------|
| 1. ABF | Auto Back Focus |
| 2. AES | Advanced Encryption Standard |
| 3. AGC | Automatic Gain Control |
| 4. AWB | Automatic White Balance |
| 5. BLC | Back Light Compensation |
| 6. DSCP | Differentiated Services Code Point |
| 7. DHCP | Dynamic Host Configuration Protocol |
| 8. DNR | Digital Noise Reduction |
| 9. DNS | Domain Name Server |
| 10. DDNS | Dynamic Domain Name Server |
| 11. FPS | frames per second |
| 12. FTP | File Transfer Protocol |
| 13. GUI | Graphical User Interface |
| 14. HLC | Highlight Compensation |
| 15. HTTP | Hypertext Transfer Protocol |
| 16. HTTPS | Secure HTTP |
| 17. ICMP | Internet Control Message Protocol |
| 18. ICR | Infrared Cut-off Filter |

| | |
|-------------|---|
| 19. IGMP | Internet Group Management Protocol |
| 20. IP | Internet Protocol |
| 21. JPEG | Joint Photographic Experts Group |
| 22. MicroSD | Removable Miniaturized Secure Digital flash memory card |
| 23. MPEG | Moving Pictures Experts Group |
| 24. MWB | Manual White Balance |
| 25. NAS | Network Attached Storage |
| 26. NTP | Network Time Protocol over Ethernet |
| 27. PoE | Power over Ethernet |
| 28. PPPoE | Point-to-Point Protocol over Ethernet |
| 29. QoS | Quality of Service |
| 30. ROI | Region of Interest |
| 31. RTP | Real-Time Transport Protocol |
| 32. RTSP | Real-Time Streaming Protocol |
| 33. SD Card | Secure Digital flash memory card |
| 34. SMTP | Simple Mail Transfer Protocol |
| 35. SVC | Scalable Video Coding |
| 36. TCP | Transmission Control Protocol |
| 37. UDP | User Datagram Protocol |
| 38. UPnP | Universal Plug and Play |
| 39. VMS | Video Management System |
| 40. WB | White Balance |
| 41. WDR | Wide Dynamic Range |

1.3 Certifications, Standards and Ratings

A. Reference Standards

1. EMC
 - a. FCC
 - i. 47 CFR Part 15, Subpart B
 - b. CE-EMC
 - ii. IEC/EN 61000-3-2:2014
 - iii. IEC/EN 61000-3-3:2013
 - iv. IEC/EN 55032:2015
 - v. IEC/EN 50130-4:2011+A1:2014
 - c. RCM
 - i. AS/NZS CISPR 32:2015
 - d. IC
 - i. ICES-003: Issue 6, 2016
 - e. KC
 - i. KN 32: 2015
 - ii. KN 35: 2015
2. Safety
 - a. UL
 - i. UL/cUL 60950-1
 - b. CB
 - i. IEC 60950-1:2005 + Am 1:2009 + Am 2:2013
 - c. CE-LVD
 - i. EN 60950-1:2005 + Am 1:2009 + Am 2:2013

- d. BIS
 - i. IS 13252(Part 1):2010+A1:2013+A2:2015
- 3. Sustainability
 - a. RoHS: 2011/65/EU
 - b. WEEE: 2012/19/EU
 - c. Reach: Regulation (EC) No 1907/2006
- 4. Mechanical Standards
 - a. IK10: IEC 62262:2002
 - b. IP67: IEC 60529-2013
 - c. NEMA 4X: NEMA 250-2018 (with –Y model)

1.4 Submittals

A. Product Data

1. Manufacturer's hard (physical) or soft (electronic) datasheets
2. Installation and operating manuals for any and all equipment required for a VMS (Video Management System)
3. Manufacturer's warranty documentation

1.5 Qualifications

A. Requirements

1. This product shall be manufactured by an enterprise whose quality systems are in direct compliance with ISO-9001 protocols.
2. All system components shall be carefully tested and proven in actual use. Comprehensive repair and spare parts shall be given, for which the manufacturer shall provide warranty.
3. All systems and components used must be in compliance with requirements listed in Section 1.3.A.
4. All installations, integration, testing, programming, system commission, and related work shall be done by installers who are trained, authorized, and certified by the manufacturer.

1.6 Delivery, Storage and Handling

A. Delivery

1. The camera shall be delivered in the Manufacturer's unique, sealed, undamaged package.
2. Any and all identification labels shall remain intact.

B. Storage and Handling

1. The camera shall be protected from mechanical and environmental conditions as designated by the manufacturer.

1.7 Warranty and Support

A. Warranty Agreement

1. The manufacturer provides a limited three-year warranty which guarantees the product to be free of any defects in workmanship or material.
2. The manufacturer, either by dealer incentives or additional cost, shall have partner programs in place which can extend the warranty period.

B. Spares and Repairs

1. Spare parts, as well as comprehensive repair parts shall be included for all systems and components.

2. The spare and repair parts, both of warranty and non-warranty items, shall be guaranteed by the manufacturer.

END OF SECTION

Part 2 Product:

2.1 Manufacturer

A. Manufacturer:

Hangzhou Hikvision Digital Technology Co. Ltd.
No. 555 Qianmo Road, Binjiang District, Hangzhou
310052, China
Phone: +86-571-8807-5998 | Fax: +86-571-8993-5635
Web: www.hikvision.com

B. iDS-2CD7A26G0_P-IZHS(Y)

2.2 Product Description

A. 2 MP Outdoor VF Bullet Network Camera with the following significant characteristics:

1. The camera shall provide up to 2 MP High Resolution (1920 × 1080) in 1/1.8" progressive scan CMOS format with a frame rate of up to 60 fps.
2. The camera shall have a lens focal length of 2.8 to 12 mm (motorized lens) with an aperture of F1.2 to 2.5. Will also have a focal length of 8 to 32 mm (motorized lens) with an aperture of F1.7 to F1.73. It will have a focus that is auto, semi-auto, and manual.
 - a. 2.8 to 12 mm integrated lens mount: A horizontal field of view of 107.3° to 39.8°, a vertical field of view of 55.9° to 22.3°, and a diagonal field of view of 130.1° to 45.7°.
 - b. 8 to 32 mm integrated lens mount: A horizontal field of view of 40.3° to 14.4°, a vertical field of view of 22.1° to 8.2°, and a diagonal field of view of 46.9° to 16.5°.
3. The camera shall have 4 IR LEDs and an IR range of up to 50 m (164 ft.) for 2.8 to 12 mm lens. IR range of up to 100 m (328 ft.) for 8 to 32 mm lens.

B. Imaging

1. Minimum illumination
 - a. Color 0.001 lux at F1.2
 - b. Black and White 0.0003 lux at F1.2, 0 lux with IR
2. Illuminator
 - a. 850 nm IR LED illuminator
 - b. Effective distance up to 50 meters in 2.8 to 12 mm focal range
 - c. Effective distance up to 100 meters in 8 to 32 mm focal range
 - d. The IR LEDs on camera should support Smart IR function to automatically adjust power to avoid image overexposure.
3. Lens and sensor
 - a. The camera shall provide up to 2 MP resolution (1920 × 1080) with 1/1.8" progressive scan CMOS format.
 - b. The camera should be equipped with a motorized lens (integrated lens mount) with optional focal length of 2.8 mm to 12 mm or 8 mm to 32 mm.
 - c. For the camera with 2.8 to 12 mm lens, the field of view shall be horizontal 107.3° to 39.8°, vertical 55.9° to 22.3°, diagonal 130.1° to 45.7°.
 - d. For the camera with 8 to 32 mm lens, the field of view shall be horizontal 40.3° to 14.4°, vertical 22.1° to 8.2°, diagonal 46.9° to 16.5°.
 - e. For the 2.8 mm to 12 mm model, the aperture should be up to F1.2 to F2.5. For 8 mm to 32 mm lens model, the aperture shall be F1.7 to F1.73.
 - f. The camera shall have p-iris control.

- g. The camera shall support 3 focus control modes, auto, semi-auto, and manual.
 - h. The camera should support rapid focus technology to keep the image clear during the zooming process by predicting the zooming position.
 - i. The ICR should contain a blue glass module, which can greatly reduce ghost phenomenon.
4. Image processing
- a. The "Shutter Speed" of the camera shall be 1 s to 1/100,000 s.
 - b. The camera shall support wide dynamic range up to 140 dB.
 - c. When true WDR is on, the camera shall have the ability to provide maximum resolution of 1920 × 1080 @ 60fps.
 - d. The camera shall have image day/night switch via ICR. Five switch modes are available, staying at night, staying at day, auto switch, scheduled switch and triggering by alarm input. For auto switch, sensitivity level is selectable from 0 to 7.
 - e. Image parameters shall be adjustable on brightness, contrast, saturation, and sharpness.
 - f. The camera shall support the rotation function when you use the camera in a narrow view scene. If the aspect ratio is 16:9, the camera can rotate 90° to get a 9:16 image.
 - g. The camera shall have Backlight Compensation (BLC) with configurable BLC area.
 - h. The camera shall have Highlight Compensation (HLC).
 - i. The camera shall provide digital noise reduction with selectable noise reduction level from 0 to 100 in normal mode and configurable spatial and temporal DNR level in expert mode.
 - j. The camera shall provide defog function to enhance image in foggy weather.
 - k. The camera shall support Electronic Image Stabilization (EIS).
 - l. The camera shall provide selectable white balance modes, including Auto, MWB, Outdoor, Indoor, Fluorescent Lamp, ATW, and Sodium Lamp.
 - m. Image mirror shall be supported.
 - n. The camera shall feature selectable 50/60 Hz flicker control/reduction.
 - o. The camera shall have the ability to overlay a picture (128 × 128, 24 bit, bmp format) on image.
 - p. The camera shall provide lens distortion correction for image distortion.
 - q. The camera should have anti-IR reflection bubble to prevent image blur caused by dust and water on bubble.
 - r. The camera shall offer privacy mask to block privacy areas on live image, 8 masks available.

C. Events and Smart Features

1. Camera shall support events such as:
 - a. Line Crossing Detection – detects action of crossing a straight line of any length with detection of crossing from A to B, B to A, or A to/from B. Up to four lines supported.
 - b. Intrusion Detection – detects action of intruding a four sided polygon region of irregular shape, size, and placement. Up to four regions are supported.
 - c. Region Entrance Detection – detects actions of entering a four sided polygon region of irregular shape, size, and placement. Up to four regions are supported.
 - d. Region Exiting Detections – detects actions of leaving a four sided polygon region of irregular shape, size, and placement. Up to four regions are supported.
 - e. Unattended Baggage Detection – detects objects left over in a pre-defined region such as the baggage, purse, and dangerous materials. Up to four regions are supported.

- f. Object Removal Detection – detects objects removed from a pre-defined region, such as the exhibits on display. Up to four regions are supported.
 - g. Audio Exception – monitors sudden audio increase/decrease and audio loss. This requires connection and configuration of optional external microphone.
 - h. Motion Detection – user-defined areas and configurable sensitivity levels in normal mode and additional image settings switch in expert mode.
 - i. Vibration Detection – detect whether the camera is vibrating.
 - j. Video Tampering – Video changed in the configured area in image.
 - k. Scene Change Detection – detect camera scene change
 - l. Defocus Detection – detects defocus of the camera
 - m. Exception – HDD full, HDD error, network disconnected, IP address conflicted, and illegal login
 - n. The camera should support all the events at same time, including line crossing, intrusion, region entrance, region exiting, unattended baggage detection, object removal detection, scene change detection, defocus detection.
2. The camera shall have the ability to count objects that crosses a pre-defined line, and display real-time data of entering and exiting.
 3. The camera shall have the ability to recognize vehicle license plate.
 4. The camera shall have the ability to detect vehicle and pedestrians leaving or approaching, recognize license plate, and capture vehicle without license plate.
 5. The camera shall have the ability to compare the license plates with those in blocklist and allowlist and push alarms according to the results.
 6. The blocklist and allowlist shall be able to cover up to 10000 records with configurable expire time.
 7. The camera shall support EPTZ function that has patrol and auto-tracking mode.
 8. The camera shall provide arming schedule settings for events and linkage actions settings as response to detected actions.
 9. The camera shall provide linkage actions as sending email, notifying surveillance center, uploading to FTP/memory card/NAS, triggering channel recording, etc. Some of which may not be supported by certain events.
 - a. Send Email – Alarm information is sent to a configured email recipient.
 - b. Upload to FTP/Memory Card/NAS – Captured picture is sent to a configured FTP server, mounted local memory card, or configured NAS.
 - c. Notify Surveillance Center – Alarm information is sent to the surveillance center (PC or mobile client software)
 - d. Alarm Output – Send alarm signal to external devices.
 - e. Trigger Channel Recording – Trigger camera to record a video.
 10. The camera should be able to provide metadata of line crossing, intrusion, region entrance/exit, unattended baggage detection, and object removal detection for further data analysis and using.
 11. The camera shall have Dual-VCA function. VCA information can be written in streams, and back-end devices can search for video clips contain specified type of events.
 12. Metadata
 - a. The camera should be able to provide metadata, which provides the ability to support the function of quick retrieving the relevant images from abundant video data in the backend device.

- b. The metadata should support events including intrusion detection, line crossing, intrusion, region entrance/exit, unattended baggage detection, and object removal detection.

D. Video & Audio

1. The camera shall offer 5 defined video streams and up to 5 custom streams.
2. Compression
 - a. Main stream: H.265, H.265+, H.264, H.264+
 - b. Sub-stream: H.265, H.264, MJPEG
 - c. Third stream: H.265, H.264, MJPEG
 - d. Fourth stream: H.265, H.264, MJPEG
 - e. Fifth stream: H.265, H.264, MJPEG
 - f. Custom stream: H.265, H.264, MJPEG
3. Streams
 - a. Main stream:
 - 50Hz: 50fps (1920 × 1080, 1280 × 720)
 - 60Hz: 60fps (1920 × 1080, 1280 × 720)
 - b. Sub-stream:
 - 50Hz: 25fps (704 × 576, 640 × 480)
 - 60Hz: 30fps (704 × 480, 640 × 480)
 - c. Third stream:
 - 50Hz: 25fps (1920 × 1080, 1280 × 720, 704 × 576, 640 × 480)
 - 60Hz: 30fps (1920 × 1080, 1280 × 720, 704 × 480, 640 × 480)
 - d. Fourth stream:
 - 50Hz: 25fps (1920 × 1080, 1280 × 720, 704 × 576, 640 × 480)
 - 60Hz: 30fps (1920 × 1080, 1280 × 720, 704 × 480, 640 × 480)
 - e. Fifth stream:
 - 50Hz: 25fps (704 × 576, 640 × 480)
 - 60Hz: 30fps (704 × 480, 640 × 480)
 - f. Custom stream:
 - 50Hz: 25fps (1920 × 1080, 1280 × 720, 704 × 576, 640 × 480)
 - 60Hz: 30fps (1920 × 1080, 1280 × 720, 704 × 480, 640 × 480)
4. H.264 and H.264+
 - a. Baseline profile, main profile and high profile (H.264)
 - b. H.264+ is available for main stream
5. H.265 and H.265+
 - a. Main profile (H.265)
 - b. H.265+ is available for main stream
6. The video stream bit range shall be in the range of 32 kbps to 16 mbps.
7. The camera shall provide constant and variable bit rate control.
8. Scalable Video Coding (SVC) shall be supported when H.264 or H.265 is used. With SVC on, the camera should be able to extract frames from the original video when the network bandwidth is insufficient.
9. The camera shall support audio in/out, mono sound track

10. The camera shall provide audio function with compression standards of G.711 (64 kbps), G.722.1 (16 kbps), G.726 (16 kbps), MP2L2 (32 to 192 kbps), and PCM.
11. The sampling rate of the camera shall be 8 kHz/16 kHz/32 kHz/44.1 kHz/48 kHz.
12. The camera shall have environment noise filter to improve audio quality.
13. ROI
 - a. The camera shall provide Region of Interest (ROI) encoding with 4 configurable fixed areas for each stream, that is 20 in total, and dynamic face tracking.
 - b. The ROI areas are encoded with better image quality than the background.
14. The camera shall support target cropping to cut and stream selected part of the full size image.
15. The camera shall have the ability to support 20 simultaneous live view.
16. The camera shall have smooth streaming function to improve streaming quality. Three modes are available, auto, resolution priority and error correction. In auto and resolution priority modes, bit rate and resolution are automatically adjusted to ensure streaming quality when network is poor. Error correction mode is used to correct data error and packet loss when bandwidth is sufficient.

E. Network

1. Following network protocol shall be supported:
TCP/IP, ICMP, HTTP, HTTPS, FTP, SFTP, SRTP, DHCP, DNS, DDNS, RTP, RTSP, RTCP, PPPoE, NTP, UPnP™, SMTP, SNMP, IGMP, 802.1X, QoS, IPv6, UDP, Bonjour™, SSL/TLS
2. Security
 - a. User permission control to assign different permissions to different user levels. Three user levels are available: admin, operator and user.
 - b. IP address filtering to block or allow certain IP addresses.
 - c. Password protected access not dependent on a server.
 - d. Secure activation for the first time access.
 - e. Video stream watermark.
 - f. RTSP and web authentication: digest and basic/digest
 - g. Illegal login lock to limit failed login attempts.
 - h. End-device access control via EAP-TLS1.2. Only permitted device can access to the video surveillance network to avoid the risky access of unknown devices.
 - i. The video streams can be encrypted via RTP over HTTPS, AES128 and AES256 are supported.
 - j. Signaling is encrypted via HTTP in transmission link, AES128 and AES256 are supported.
 - k. The camera chip shall have a security boot mechanism and a hardware encryption module to generate a unique encrypted root key to enhance chip safety.
 - l. Together with platform, up to 6-month camera log can be saved.
3. System compatibility
 - a. Onvif profile G, profile S and profile T
 - b. ISAPI
 - c. SDK
 - d. ISUP
4. Network storage
 - a. NAS (NFS, SMB/CIFS)
 - b. Auto Network Replenishment (ANR) for recording

F. System

1. The camera support web browser and client software access:

- a. Plug-in required live view: IE8+
Plug-in free live view: Chrome 57.0+, Firefox 52.0+, Safari 11+
Local service: Chrome 41.0+, Firefox 30.0+
- b. Client software: iVMS-4200, Hik-Connect, Hik-Central
2. The camera shall support up to 32 users with 3 user levels (admin, operator and user).
3. The camera shall provide 33 language options for web browser access:
English, Russian, Estonian, Bulgarian, Hungarian, Greek, German, Italian, Czech, Slovak, French, Polish, Dutch, Portuguese, Spanish, Romanian, Danish, Swedish, Norwegian, Finnish, Croatian, Slovenian, Serbian, Turkish, Korean, Traditional Chinese, Thai, Vietnamese, Japanese, Latvian, Lithuanian, Portuguese (Brazil), Ukrainian
4. The camera should support new firmware notification via the client software and online upgrade.
5. The camera should support file system backup for the firmware to ensure the stable device running in case of the abrupt power shut down or network interruption during upgrading.
6. The camera shall support heartbeat function to allow the connected device or software to acquire camera status.
7. The camera shall provide reset button on camera body and in client software to restore device the parameters.

G. Physical

1. The camera shall have a built-in memory card slot, available for microSD/SDHC/SDXC memory card, capacity up to 256 GB.
2. The camera shall support heater on.
3. ROM: 8GB; RAM: 2GB
4. Interfaces:
 - a. 1 RJ45 10M/100M/1000M Ethernet port
 - b. 1 RS-485 (half duplex, HIKVISION, Pelco-P, Pelco-D, self- adaptive) (-Y supports)
 - c. Audio:
With -Y:
1 input (line in), 3.5 mm connector, max. input amplitude: 3.3 vpp, input impedance: 4.7 K Ω , interface type: non-equilibrium; 1 output (line out), 3.5 mm connector, max. output amplitude: 3.3 vpp, output impedance: 100 Ω , interface type: non-equilibrium, mono sound
 - d. Alarm: 2 input, 2 outputs (max. 24 VDC, 1 A)
 - e. Power output: With -Y: 12 VDC, max. 200 mA (supported by all power supply types)
 - f. Wiegand: With -Y: 1 wiegand(CardID 26bit, SHA-1 26bit, Hik 34bit)
5. Power supply:
12 VDC \pm 20%, three-core terminal block, reverse polarity protection; PoE: 802.3at, Type 2 Class 4
6. Power consumption and current:
12 VDC, 1.33 A, max. 16.0 W
PoE: (802.3at, 42.5V-57V), 0.43 A to 0.31 A, max. 18.0 W
7. Dimension
 - a. Without -Y: \varnothing 144 \times 347 mm (\varnothing 5.7" \times 13.7")
 - b. With -Y: \varnothing 140 \times 351 mm (\varnothing 5.5" \times 13.8")
8. Weight
 - a. Camera: approx. 1920 g (4.2 lb.)
 - b. With package: 3060 g (6.7 lb.)
9. Material

- a. Body: aluminum alloy
 - b. Screw: With -Y: SUS316, without -Y: SUS304
10. Environment
- a. Starting and Operating Temperature: -40° C to 60° C (-40° F to 140° F)
 - b. Humidity: 95% or less (non-condensing)
11. Surge Protection
- Power (12 VDC): 4KV
- PoE: 6KV

2.3 PC Requirement

- A. **Minimum PC** Intel® Core® 2 Duo Microprocessor, 2.6 GHz
- B. **Screen Resolution** 1024 x 768 pixels or higher, 16-32-bit or 64-bit pixel color resolution

2.4 Compatible Accessory

A. Bracket

-Y model:

- 1. Corner mount: DS-1476ZJ-Y
- 2. Vertical pole mount: DS-1475ZJ-Y

Without -Y model:

- 3. Corner mount: DS-1476ZJ-SUS
- 4. Vertical pole mount: DS-1475ZJ-SUS

END OF SECTION

Part 3 Execution

3.1 Examination

- A.** Inspect chosen area of installation prior to receiving devices and report any conditions that affect the installation process or any subsequent operation.
- B.** Please do not begin installation until all unacceptable conditions are rectified.

3.2 Preparation

- A.** Devices packaged in such way to help prevent any damage during construction.

3.3 Installation

- A.** Devices must be installed in accordance with the manufacturers' instructions provided, as well as instructions based off any indicated floor design specifications.
- B.** Location of installation must provide reasonable conditions for optimum device functionality. Temperature and humidity level conditions must be taken into consideration.
- C.** All installations must be performed with qualified service professionals only.
- D.** All devices must be installed in accordance with the National Electric Code or applicable local codes.
- E.** Ensure location of installation provides a minimum possibility of accidental damage.

3.4 Field Quality control

- A.** Assess the compatibility of mounting screws for all equipment to be installed.
- B.** Make sure all video systems are tested properly and meet standard operational requirements.
- C.** Define, conclude, and report all issues with equipment to the manufacturers' customer service representatives.

3.5 Adjusting

- A.** Execute the necessary modifications to the Video Management System for proper operation in accordance with the instructions provided by the manufacturer.
- B.** Ensure the customers unique requirements are reflected in the camera settings.

3.6 Demonstration

- A.** Upon final inspection, validate the video solutions system and its device functions correctly.

END OF SECTION