

SECTION 28 23 29

H.265 8 MEGAPIXEL (4K HD) TRUE DAY/NIGHT IR IP MINIDOME CAMERA

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Provide a high definition 8 megapixel (4K HD) TDN IR IP minidome camera system for video surveillance, including design, supply, installation, and commissioning.

1.2 RELATED SECTIONS

NOTE TO SPECIFIER: Include related sections as appropriate if video surveillance system is integrated to other systems.

- A. Section 26 05 00: Common Work Results for Electrical, for interface and coordination with building electrical systems and distribution.
- B. Section 28 05 13: Conductors and Cables for Electronic Safety and Security, for cabling between system servers, panels, and remote devices.
- C. Section 28 05 28: Pathways for Electronic Safety and Security, for conduit and raceway requirements.
- D. Section 28 23 00: Video Surveillance Equipment, for interface with, and administration of video recording equipment.
- E. Section 28 23 23: Video Surveillance Systems Infrastructure.
- F. Section 28 23 29: Video Surveillance Remote Devices and Sensors.

1.3 REFERENCES

- A. Reference Standards: Provide systems that meet or exceed the requirements of the following publications and organizations as applicable to the work of this Section.
 1. Canadian ICES-003.
 2. Canadian Standards Association (CSA).
 3. Conformity for Europe (CE).
 4. Electronic Industry Association (EIA).
 5. Federal Communications Commission (FCC).

6. Institute of Electronic and Electrical Engineers (IEEE).
7. Joint Photographic Experts Group (JPEG).
8. National Television Systems Committee (NTSC).
9. Phase Alternating Line (PAL).
10. Underwriters Laboratories Inc. (UL).
11. IP Code (Ingress Protection Rating) per IEC 60529.

1.4 SYSTEM DESCRIPTION

- A. The 8 megapixel (4K HD) TDN IR IP minidome camera, H4D8PR1, shall provide:
 1. Superior Image Quality
 - a. 4K HD 8 megapixel (3840 × 2160) resolution, 15 fps image with a 1/2.5" 4K progressive scan CMOS sensor, or full HD 3 megapixel (2304 × 1296) resolution image at 25/30 fps.
 - b. Digital WDR, ensuring glare-free images.
 - c. True day/night functionality providing vivid color images by day and clear black-and-white images at night with ICR.
 - d. Excellent low-light performance with 3D noise reduction, and together with H.265 codec saving storage and bandwidth.
 2. Flexible Surveillance Solution
 - a. 4 mm, F1.6, fixed lens.
 - b. H.265, H.264 and MJPEG codec with triple stream support.
 - c. IR LEDs provide up to 100 ft (30 m) of illumination in dimly lit or nighttime scenes (depending on scene reflectance).
 - d. Smart IR technology provides even distribution of IR light.
 - e. Waterproof (IP66) and IK10 impact-resistant camera housing.
 - f. -22°F to 140°F (-30°C to 60°C) working temperature.
 - g. ONVIF™ Profile S and G support.
 - h. Security features include individual signed certificates and data encryption.
 - i. Cameras can be retrofitted on many existing DVR/NVR installations without requiring additional storage.
 3. Easy to Install and Use
 - a. Built-in PoE (Power over Ethernet 802.3af) eliminates separate power supply and associated wiring; 12 V DC inputs where PoE power is unavailable.
 - b. Included accessories: security screw driver (allen key), mounting screws, wall anchors, and mounting template.

4. Onboard Video Storage

- a. Supports up to 128 GB microSDHC card for local video storage when network is interrupted.

1.5 SUBMITTALS

- A. General: Submittals shall be made in accordance with the Conditions of the Contract and Submittal Procedure Section.
- B. Manufacturer's Product Data: Submit manufacturer's data sheets indicating systems and components proposed for use, including instruction manuals.
- C. Shop Drawings: Submit installation drawings, including connection diagrams for interfacing equipment, list of connected equipment, and locations for major equipment components. Shop drawings shall indicate surrounding construction as provided for the Project.
- D. Project Record Drawings: Indicate location of equipment and wiring on project record drawings. Submit an electronic version of the project record drawings not later than Substantial Completion of the Project.
- E. Operation and Maintenance Data: Submit manufacturer's operation and maintenance data customized to the system installed. Include operator manuals.
- F. Field Tests: Submit results of field testing of every device, including date, testing personnel, retesting date (if applicable), and confirmation that every device passed field testing.
- G. Maintenance Service Agreement: Submit a sample copy of the manufacturer's maintenance service agreement, including cost and services for a one year period for Owner's review. Maintenance shall include, but not be limited to, labor and materials to repair the system, tests and adjustments, and regular inspections.

1.6 QUALITY ASSURANCE

- A. Manufacturer: Minimum 10 years experience in manufacturing and maintaining video surveillance systems. Manufacturer shall provide toll-free technical assistance and support available 24/7.
- B. Manufacture Location: Provide equipment assembled in China.
- C. Installer: Minimum 2 years experience installing similar systems and shall be acceptable to the manufacturer of the video surveillance system.
- D. Regulatory Requirements:
 1. Emissions: FCC, Part 15B; EU – EN 55032.
 2. Immunity: EU – EN 50130-4; EN 55024.
 3. Safety: North America UL Listed to UL/CSA 60950-1; EU – EN 60950-1
 4. RoHS: EN50581: 2012.

E. Environmental Requirements:

1. Operating temperatures shall be between -22°F (-30°C) and 140°F (60°C).
2. Relative Humidity: Less than 95%, non-condensing.
3. Ingress Protection: IP66.
4. Impact Resistance: IK10.

F. Power Requirements:

1. Input Voltage: 12 V DC +/-10%, PoE IEEE 802.3af.
2. Power Consumption: PoE (802.3af), 12 V DC, 6.7 W (with IR LEDs on).

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Packing and Shipping: Deliver products in manufacturer's labeled packages.
- B. Storage and Protection: Store and handle products in accordance with manufacturer's requirements, in a facility where environmental conditions are within recommended limits.

1.8 WARRANTY

- A. Manufacturer's Guarantee: Five (5) years from the manufacture date code under normal use and service for the video surveillance system.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Specified Manufacturer: Honeywell 8 megapixel low light IR minidome IP camera, www.honeywell.com/security.
- B. Accepted Part Numbers:
 1. H4D8PR1: Network TDN Low Light IR Rugged Dome Camera, 1/2.5" CMOS, 8 MP, 4.0 mm fixed lens, IR LEDs, PoE, H.265.

2.2 SYSTEM COMPONENTS

- A. 8 megapixel low light, IR IP minidome camera, camera housing, cabling, and a web based GUI that provides complete control of camera settings and live video access.

2.3 OPERATIONAL REQUIREMENTS

- A. The 8 MP low light, IR IP minidome camera system shall meet or exceed the following camera specifications:
1. Image Sensor: 1/2.5" 8 MP Progressive CMOS.
 2. Total Pixels: 3840 × 2160.
 3. Minimum Illumination: 0.1 lux color / 0 lux BW with IR LEDs on @ F1.6.
 4. Wide Dynamic Range: Digital WDR.
 5. IR Distance: Up to 100 ft (30 m), depending on scene reflectance.
 6. Backlight Compensation: BLC/HLC/DWDR.
 7. Day/Night: Auto (ICR)/Color/BW.
 8. Gain Control: Auto/Manual.
 9. Noise Reduction: 3DNR.
 10. Privacy Masking: Up to 4 areas.
 11. Electronic Shutter Speed: Auto, Manual, 1/3(4) to 1/100,000 seconds.
 12. Video Standard: NTSC/PAL.
 13. White Balance: Auto/Manual/Natural/Street Lamp/Outdoor/Regional Custom.
 14. Signal-to-Noise Ratio: >42 dB.
 15. Corridor Mode: Yes.
 16. Lens: 4.0 mm fixed lens, F1.6.
 17. Angle of View: 88° (Horizontal); 48° (Vertical).
 18. Audio Stream: Two-way, Line In/Out. Full duplex, simplex.
 19. Audio Compression: G.726/G.711a/G.711u/AAC.
 20. Alarm Input/Output: 1/1.
 21. Communication: ONVIF Profile S and G support.
- B. The 8 MP low light, IR IP minidome camera system shall provide true day/night functionality with an infrared (IR) cut filter for day mode.
- C. The 8 MP low light, IR IP minidome camera system shall provide, in high contrast lighting conditions, higher quality images and better dynamic range than conventional IP cameras.
- D. The 8 MP low light, IR IP minidome camera system shall provide up to 4 fully configurable privacy zones to mask sensitive areas of a video image.
- E. The 8 MP low light, IR IP minidome camera system shall support the ONVIF Profile S and G specification for interoperability between network video products.

- F. The 8 MP low light, IR IP minidome camera system shall include, as standard, a web based GUI that provides complete control of the camera settings. The web based GUI shall:
1. Permit 20 users @ 8 MP resolution at 10 Mbps in simultaneous unicast.
 2. Provide multiple user access levels with password protection.
 3. Offer video access from a web browser. The web browser shall offer live viewing for up to 20 users @ 8 MP resolution at 10 Mbps with full-control of all camera settings available to the administrator.
 4. Be easily discovered through Honeywell IPC Config Tool or other appropriate device search tools.
 5. Be available to record streaming video or snapshot images to a PC hard disk. The administrator must have the ability to turn the recording function on or off through the web based GUI.
 6. Require the following hardware as a minimum for the web browser:
 - a. Operating system: Windows 7 32-bit/64-bit.
 - b. Processor: Intel® Pentium® M processor, 2.16 GHz or faster
Intel® Core™2 Duo processor, 2.0 GHz or faster
 - c. System memory (RAM): 2 GB
 - d. Graphics card: AGP graphics card 64 MB RAM, DirectDraw
 - e. Network card: 10Base-T (10 Mbps) or 100Base-TX (100 Mbps) operation
 - f. Web browser: Microsoft Internet Explorer 11.0 or later.
 - g. Viewer: ActiveX control plug-in for Internet Explorer
- G. The 8 MP low light, IR IP minidome camera system shall support IPv4/v6, HTTP, TCP/IP, DHCP, IGMP, DDNS, RTSP, RTP, UDP, FTP, ICMP, SMTP, PPPoE, HTTPS, SSL, UPnP, IP Filter, IEEE 802.1x, SNMP, QoS, Bonjour, Multicast, ONVIF, DNS, and NTP protocols.

NOTE TO SPECIFIER: Some development may be required in specific user cases to support some of these protocols in the field as naturally the protocols will mature over time.

- H. The 8 MP low light, IR IP minidome camera system shall provide triple H.265, H.264 and/or H.264/MJPEG video streams simultaneously. The streams shall have the following functions:
1. Main Stream: Support for 8 MP resolution (3840×2160) at 1-15 frames per second (NTSC/PAL). 6M resolution (3072×2048) at 1-20 fps. 4M (2688×1520)/WQHD (2560×1440) at 1-25 fps. The camera can also support lower resolutions at 1-30/25 frames per second: 3M (2048×1536), 1080p (1920×1080), 720p (1280×720), D1 (704×576/704×480), CIF (352×288/352×240) resolutions.
 2. Sub Stream: 1-25/30 fps D1 (704×576/704×480), CIF (352×288/352×240).
 3. Triple Stream: 1-25/30 fps 720p (1280×720), D1 (704×576/704×480).

4. The 8 MP low light, IR IP minidome camera shall transmit additional H.265, H.264 or MJPEG video streams simultaneously with the primary H.265, H.264 or MJPEG stream (up to 3 streams).
 5. The bit rate for the H.265, H.264 and MJPEG streams can be set to constant or variable bit rate. The resolutions and frame rates for all streams are adjustable by the administrator.
 6. The fully featured 8 MP low light, IR IP minidome camera shall support three (3) H.264 profiles: High profile, Main profile, and Baseline profile.
- I. The 8 MP low light, IR IP minidome camera system shall feature web GUI menus for programming camera parameters. A minimum of the following menus must be available:
1. Live
 2. Playback
 3. Camera Conditions Setup
 - a. Conditions
 - b. Profile Management
 4. Video Setup
 - a. Video
 - b. Snapshot
 - c. Overlay
 - d. ROI
 - e. Path
 5. Network Setup
 - a. TCP/IP
 - b. P2P
 - c. Connection
 - d. ONVIF
 - e. PPPoE
 - f. DDNS
 - g. IP Filter
 - h. SMTP (Email)
 - i. UPnP
 - j. SNMP
 - k. Bonjour
 - l. Multicast

- m. 802.1x
- n. QoS
- o. Certificate
- 6. Event Setup
 - a. Video Detection
 - 1) Motion Detection
 - 2) Video Tamper
 - 3) Scene Changing
 - b. Smart Plan
 - c. Face Detection
 - d. Abnormality
 - 1) SD Card
 - 2) Network
 - 3) Illegal Access
- 7. Storage Setup
 - a. Schedule
 - 1) Record Schedule
 - 2) Snapshot Schedule
 - 3) Holiday Schedule
 - b. Destination
 - 1) Path
 - 2) Local
 - 3) FTP
 - 4) NAS
 - c. Record Control
- 8. System Setup
 - a. General
 - b. Date&Time
 - c. Account
 - d. Default
 - e. Import/Export

- f. Auto Maintain
- g. Upgrade
- 9. Alarm
- 10. Information
 - a. Version
 - b. Log
 - c. Online User
- J. The 8 MP low light, IR IP minidome camera system must provide the option of restoring all displays, alarms, camera settings, and diagnostic settings to factory default with a Web GUI command. In addition, the unit shall offer a simple “reboot” with a Web GUI command.
- K. The 8 MP low light, IR IP minidome camera system should provide a warning message through relay output/FTP/Email, upload an image through FTP/Email or record video to a micro SD card/network recorder upon motion detection. The administrator must have the ability to turn the motion detection function on or off through the web GUI.
- L. The 8 MP low light, IR IP minidome camera system should provide a warning message through relay output/FTP/Email, or record video to a micro SD card upon network failure detection, the minimum detecting period is 5 seconds. The administrator must have the ability to adjust the detecting period and turn the network failure detection function on or off through the web GUI.
- M. The 8 MP low light, IR IP minidome camera system should provide micro SD card recording for backup when there is an event (Alarm, Motion detection, Network failure detection) or scheduling. The administrator must have the ability to turn the recording function on or off through the web GUI. The micro SD card storage size can be varied from 8 GB to 128 GB. The micro SD card can be inserted, replaced or removed by the installer or the user. The 8 MP low light, IR IP minidome camera does not come with a micro SD card installed. It is recommended to use a high quality micro SD card for recording, such as a Class 10 micro SD card.

NOTE TO SPECIFIER: IMPORTANT! Any damaged files on an installed micro SD card incurred by malfunction or error in files saved on the micro SD card, regardless of the cause, are not guaranteed by Honeywell.

- N. The 8 MP low light, IR IP minidome camera system shall provide Network share recording for backup when there is an event (alarm, motion detection) or scheduling. The administrator must have the ability to turn the recording function on or off through the web GUI.
- O. The 8 MP low light, IR IP minidome camera housing shall consist of die cast aluminum with a white powder coat finish (white: RAL9003).
- P. The 8 MP low light, IR IP minidome camera shall be available in indoor/outdoor configurations designed for installation with wall, surface and ceiling mount configurations. The 8 MP low light, IR IP minidome camera units include IP66 ingress protection standards and IK10 impact resistance standards.

2.4 SERIES INTEGRATIONS

- A. The following accessories are compatible with the 8 MP low light, IR IP minidome camera:
1. HQA-BB2 – Junction Box, Off-White
 2. HQA-WK – Wall Mount Bracket, Off-White
 3. HQA-PM2 – Pole Mount Adapter, Off-White (requires compatible junction box: HQA-BB2)
 4. HB34S2-CM – Corner Mount Adapter, Off-White (requires compatible junction box: HQA-BB2)
- B. The following embedded NVRs are recommended for the 8 MP low light, IR IP minidome camera:
1. HEN081*4: 8-channel, 2 HDD, 8 PoE, 4K, H.265
 2. HEN161*4: 16-channel, 2 HDD, 16 PoE, 4K, H.265
 3. HEN321*4: 32-channel, 2 HDD, 16 PoE, 4K, H.265
 4. HEN162*4: 16-channel, 4 HDD, 16 PoE, 4K, H.265
 5. HEN322*4: 32-channel, 4 HDD, 16 PoE, 4K, H.265
 6. HEN642*4: 64-channel, 4 HDD, 16 PoE, 4K, H.265
 7. HEN163*4: 16-channel, 8 HDD, 16 PoE, 4K, H.265, RAID 5&6
 8. HEN323*4: 32-channel, 8 HDD, 16 PoE, 4K, H.265, RAID 5&6
 9. HEN643*4: 64-channel, 8 HDD, 16 PoE, 4K, H.265, RAID 5&6

NOTE TO SPECIFIER: * = hard drive capacity in TB.

2.5 SYSTEM HARDWARE

- A. The 8 MP low light, IR IP minidome camera system shall have the following mechanical specifications:
1. Unit Dimensions (W x H): $\varnothing 4.3 \times 3.2$ inches ($\varnothing 110 \times 81$ mm).
 2. Unit Weight: 0.9 lb (0.406 kg).
- B. The 8 MP low light, IR IP minidome camera system shall have the following electrical specifications:
1. Input Voltage: 12 V DC +/-10%, PoE IEEE 802.3af.
 2. Power Consumption: PoE (802.3af), 12 V DC, 6.7 W max (IR LEDs on).
- C. The 8 MP low light, IR IP minidome camera system shall be designed to meet the following environmental conditions:
1. Operating temperature: -22°F (-30°C) to 140°F (60°C).

2. Relative Humidity: Less than 95%, non-condensing.
3. Ingress Protection: IP66
4. Impact Resistance: IK10
5. Emissions: FCC – Part 15B; EU – EN 55032.
6. Immunity: EU – EN 50130-4; EN 55024.
7. Safety: North America UL Listed to UL/CSA 60950-1, EU – EN 60950-1.
8. RoHS: EN 50581: 2012.

2.6 MANUFACTURER SUPPORT

- A. Manufacturer shall provide customer service, pre-sales applications assistance, after-sales technical assistance, access to online technical support, and online training using Web conferencing.
- B. Manufacturer shall provide 24/7 technical assistance and support by means of a toll-free telephone number at no extra charge.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine site conditions prior to installation. Notify Architect and Owner in writing if unsuitable conditions are encountered. Do not start installation until site conditions are acceptable.

3.2 INSTALLATION

- A. All components of the camera system shall be thoroughly tested before shipping to the project location.
- B. Camera system shall be installed, programmed, and tested in accordance with manufacturer's instructions and recommendations.
 1. Coordinate interfaces with other products with Owner's representative where appropriate.
 2. Provide conduit, cable, and wire for complete and reliable installation. Obtain Owner's approval for exact location of cameras, boxes, conduit, cable, and wiring runs prior to installation.
 3. Install conduit, cable, and wire parallel and square with building lines, including raised floor areas. Do not exceed 40 percent fill in conduits. Gather and tie wires for orderly installation.

4. Coordinate with other trades to provide proper sequencing of installation.

3.3 FIELD COMMISSIONING AND CERTIFICATION

- A. Field Commissioning: Test camera system as recommended by manufacturer, including the following:
 1. Conduct complete inspection and testing of equipment, including verification of operation with connected equipment.
 2. Test devices and demonstrate operational features for Owner's representative and authorities having jurisdiction, as applicable.
 3. Correct deficiencies until satisfactory results are obtained.
 4. Submit written copies of test results.

3.4 TRAINING

- A. Conduct on-site system administrator and security/surveillance operator training in accordance with the manufacturer's instructions and recommendations. Training shall include, but not be limited to: camera administration, provisioning, configuration, operation, and diagnostics.

END OF SECTION