SECTION 28 23 29

HD-OVER-COAX TRUE DAY/NIGHT INDOOR/OUTDOOR IR BULLET CAMERA

1. GENERAL
	1. SECTION INCLUDES
		1. Provide an HD-over-coax, true day/night, indoor/outdoor, IR bullet camera for video surveillance, including design, supply, installation and commissioning.
	2. RELATED SECTIONS

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

* + 1. Section 26 05 00 – Common Work Results for Electrical, for interface and coordination with building electrical systems and distribution.
		2. Section 28 05 13 – Conductors and Cables for Electronic Safety and Security, for cabling between system servers, panels, and remote devices.
		3. Section 28 05 28 – Pathways for Electronic Safety and Security, for conduit and raceway requirements.
		4. Section 28 23 23 – Video Surveillance Systems Infrastructure.
		5. Section 28 23 29 – Video Surveillance Remote Devices and Sensors.
	1. REFERENCES
		1. 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. Joint Photographic Experts Group (JPEG).
			7. National Television Systems Committee (NTSC).
			8. Phase Alternating Line (PAL).
			9. Underwriters Laboratories Inc. (UL).
	2. SYSTEM DESCRIPTION
		1. The Performance Series HQA true day/night indoor/outdoor IR bullet camera shall use a vandal-resistant weatherproof enclosure with an integrated mounting bracket for quick installation to a ceiling or wall.
		2. The IR bullet camera shall use a 1/2.9″ 1 megapixel, 1/3″ 2 megapixel, or 1/2.8″ 2.4 megapixel CMOS imager to capture HD images. The lens shall be 3.6 mm fixed, 2.7–12 mm VFMI, or 2.7–12 mm MFZ. As a true day/night solution, the camera shall use IR illumination with twenty-four (24) LEDs that activate at a factory-defined light level to capture clear black and white images at night, as well as perfect color pictures by day with IR illumination disabled. The camera shall use 12 V DC power input.
	3. SUBMITTALS
		1. General: Submittals shall be made in accordance with the Conditions of the Contract and Submittal Procedure Section.
		2. Manufacturer’s Product Data: Submit manufacturer’s data sheets indicating systems and components proposed for use, including instruction manuals.
		3. Shop Drawings: Submit complete shop drawings including connection diagrams for interfacing equipment, list of connected equipment, and locations for major equipment components.
		4. Record Drawings: During construction maintain record drawings indicating location of equipment and wiring. Submit an electronic version of record drawings not later than Substantial Completion of the project.
		5. Operation and Maintenance Data: Submit manufacturer’s operation and maintenance data, customized to the system installed. Include system and operator manuals.
		6. 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.
		7. 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.
	4. QUALITY ASSURANCE
		1. Manufacturer: Minimum ten (10) years experience in manufacturing and maintaining video surveillance systems. Manufacturer shall provide toll-free technical assistance and support available 24/7.
		2. Manufacture Location: Provide equipment assembled in China.
		3. Installer: Minimum two (2) years experience installing similar systems, and acceptable to the manufacturer of the video surveillance system.
		4. Regulatory Requirements:
			1. Emissions: FCC, Part 15B, Class B.
		5. Environmental Requirements:
			1. Operating Temperature: –22°F to 140°F (−30°C to 60°C).
			2. Storage Temperature: −40°F to 158°F (−40°C to 70°C).
			3. Relative Humidity: 10% to 100%, condensing.
		6. Power Requirements: Input voltage shall be 12 V DC.
	5. DELIVERY, STORAGE, AND HANDLING
		1. Deliver materials in manufacturer’s labeled packages. Store and handle in accordance with manufacturer’s requirements, in a facility with environmental conditions within recommended limits.
	6. WARRANTY
		1. Manufacturer’s Warranty: Submit manufacturer’s warranty of three (3) years from the manufacture date code under normal use and service for the video surveillance system.
1. PRODUCTS
	1. MANUFACTURER
		1. Camera Manufacturer: Honeywell Performance Series HQA true day/night indoor/outdoor IR bullet camera, [www.honeywell.com/security](http://www.honeywell.com/security).
		2. Accepted Part Numbers:
			1. HB74HD1: TDN, Indoor/Outdoor, IR Bullet Camera, 1/2.9″ 1 MP CMOS, 720p, 30 fps, 3.6 mm Fixed Lens, 24 IR LEDs,12 V DC, NTSC.
			2. HB74HD1X: TDN, Indoor/Outdoor, IR Bullet Camera, 1/2.9″ 1 MP CMOS, 720p, 25 fps, 3.6 mm Fixed Lens, 24 IR LEDs, 12 V DC, PAL.
			3. HB75HD1: TDN, Indoor/Outdoor, IR Bullet Camera, 1/2.9″ 1 MP CMOS, 720p, 30 fps, 2.7–12 mm VFMI Lens, 24 IR LEDs, 12 V DC, NTSC.
			4. HB75HD1X: TDN, Indoor/Outdoor, IR Bullet Camera, 1/2.9″ 1 MP CMOS, 720p, 25 fps, 2.7–12 mm VFMI Lens, 24 IR LEDs, 12 V DC, PAL.
			5. HB74HD2: TDN, Indoor/Outdoor, IR Bullet Camera, 1/3″ 2 MP CMOS, 1080p, 30 fps, 3.6 mm Fixed Lens, 24 IR LEDs,12 V DC, NTSC.
			6. HB74HD2X: TDN, Indoor/Outdoor, IR Bullet Camera, 1/3″ 2 MP CMOS, 1080p, 25 fps, 3.6 mm Fixed Lens, 24 IR LEDs, 12 V DC, PAL.
			7. HB75HD2: TDN, Indoor/Outdoor, IR Bullet Camera, 1/2.8″ 2.4 MP CMOS, 1080p, 30 fps, 2.7–12 mm VFMI Lens, 24 IR LEDs, 12 V DC, NTSC.
			8. HB75HD2X: TDN, Indoor/Outdoor, IR Bullet Camera, 1/2.8″ 2.4 MP CMOS, 1080p, 25 fps, 2.7–12 mm VFMI Lens, 24 IR LEDs, 12 V DC, PAL.
			9. HB76HD2: TDN, Indoor/Outdoor, IR Bullet Camera, 1/2.8″ 2.4 MP CMOS, 1080p, 30 fps, 2.7–12 mm MFZ Lens, 24 IR LEDs, 12 V DC, NTSC.
			10. HB76HD2X: TDN, Indoor/Outdoor, IR Bullet Camera, 1/2.8″ 2.4 MP CMOS, 1080p, 25 fps, 2.7–12 mm MFZ Lens, 24 IR LEDs, 12 V DC, PAL.
	2. SYSTEM COMPONENTS
		1. Bullet camera and cabling.
	3. OPERATIONAL REQUIREMENTS
		1. The Performance Series HQA true day/night indoor/outdoor IR bullet camera system shall meet or exceed the following camera specifications:
			1. Image Sensor:
				1. HB74HD1(X)/HB75HD1(X): 1/2.9″ 1 MP CMOS.
				2. HB74HD2(X): 1/3″ 2 MP CMOS.
				3. HB75HD2(X)/HB76HD2(X): 1/2.8″ 2.4 MP CMOS.
			2. Total Pixels:
				1. HB74HD1(X)/HB75HD1(X): 1280 (H) × 720 (V).
				2. HB74HD2(X): 1920 (H) × 1080 (V).
				3. HB75HD2(X)/HB76HD2(X): 1984 (H) × 1225 (V).
			3. Video Output:
				1. HB74HD1(X)/HB75HD1(X): 1-channel BNC HQA 720p.
				2. HB74HD2(X)/HB75HD2(X): 1-channel BNC HQA 1080p/720p, switchable to CVBS.
			4. Video Frame Rate:
				1. HB74HD1(X)/HB75HD1(X): 720p @ 30/25 fps.
				2. HB74HD2(X)/HB75HD2(X)/HB76HD2(X): 1080p @ 30/25 fps; 720p @ 30/25/60/50 fps.
			5. Lens Type:
				1. HB74HD1(X)/HB74HD2(X): Built-in fixed lens (f=3.6 mm).
				2. HB75HD1(X)/HB75HD2(X): Varifocal manual iris (2.7–12 mm).
				3. HB76HD2(X): Motorized focus and zoom (2.7–12 mm).
			6. Angle of View:
				1. HB74HD1(X): 79.7° horizontal; 43.1° vertical.
				2. HB74HD2(X): 88.0° horizontal; 47.5° vertical.
				3. HB75HD1(X)/HB75HD2(X)/HB76HD2(X): 105.5°–32.9° horizontal; 61.6°–20.3° vertical.
			7. IR LEDs: 850 nm, 24 LEDs.
			8. IR Illumination Distance:
				1. HB74HD1(X)/HB74HD2(X): Up to 65 ft (20 m), depending on scene reflectance.
				2. HB75HD1(X)/HB75HD2(X)/HB76HD2(X): Up to 100 ft (30 m), depending on scene reflectance.
			9. Minimum Illumination:
				1. HB74HD1(X)/HB75HD1(X): 0.01 lux @ F1.2 (AGC on); 0.0 lux (IR LEDs on).
				2. HB74HD2(X)/HB75HD2(X)/HB76HD2(X): 0.05 lux @ F1.2 (AGC on); 0.0 lux (IR LEDs on).
			10. Shutter Speed:
				1. HB74HD1(X)/HB75HD1(X): 1/60 – 1/100,000 seconds (NTSC);
				1/50–1/100,000 seconds (PAL).
				2. HB74HD2(X)/HB75HD2(X)/HB76HD2(X): 1/3 – 1/100,000 seconds (NTSC/PAL).
			11. Synchronization: Internal.
		2. The IR bullet camera shall provide high definition 720p or 1080p images over coaxial cables, up to 984 ft (300 m) over RG59.
		3. The IR bullet camera shall provide true day/night functionality with Smart IR technology for even distribution of IR illumination. When ambient light drops below the factory-defined threshold, the 24 IR LEDs shall activate, and the image shall change automatically from color to black-and-white.
		4. The IR bullet camera shall provide 2D (720p models) or 2D/3D (1080p models) digital noise reduction.
		5. The 1080p model IR bullet camera shall provide up-the-coax OSD menu access on Honeywell Performance Series HQA digital video recorders.
		6. The IR bullet camera shall provide 12 V DC operation.
		7. The IR bullet camera shall have a multidirectional bracket (360° pan, 90° tilt, and 360° horizontal rotation) for precise camera positioning.
		8. The IR bullet camera housing shall consist of die-cast aluminum with a light gray powder finish and shall be vandal-resistant and waterproof, rated to IP66.
	4. SYSTEM HARDWARE
		1. The IR bullet camera shall have the following mechanical specifications:
			1. Unit Dimensions (W × H, including mounting bracket and sunshield):
				1. HB74HD1(X): 6.09″ × 2.56″ (154.7 mm × 65.0 mm).
				2. HB74HD2(X): 7.02″ × 2.76″ (178.4 mm × 70.0 mm).
				3. HB75HD1(X)/HB75HD2(X)/HB76HD2(X): 8.39″ × 3.56″ (213.0 mm × 90.4 mm).
			2. Unit Weight:
				1. HB74HD1(X): 0.84 lb (0.38 kg).
				2. HB74HD2(X): 1.1 lb (0.5 kg).
				3. HB75HD1(X): 1.1 lb (0.5 kg).
				4. HB75HD2(X)/HB76HD2(X): 1.21 lb (0.55 kg).
			3. Video Output: BNC connector (75 ohms).
			4. Power Input: 2.1 mm plug.
		2. The IR bullet camera shall have the following electrical specifications:
			1. Voltage: 12 V DC.
			2. Input Range: 12 V DC ± 10%.
			3. Power Consumption:
				1. HB74HD1(X): 3.5 W maximum (IR LEDs on).
				2. HB74HD2(X): 4.5 W maximum (IR LEDs on).
				3. HB75HD1(X): 4.0 W maximum (IR LEDs on).
				4. HB75HD2(X): 5.0 W maximum (IR LEDs on).
				5. HB76HD2(X): 7.4 W maximum (IR LEDs on).
		3. The IR bullet camera shall be designed to meet the following environmental conditions:
			1. Operating Temperature: –22°F to 140°F (–30°C to 60°C).
			2. Storage Temperature: –40°F to 158°F (–40°C to 70°C).
			3. Relative Humidity: 10% to 100%, condensing.
			4. Emissions: FCC, Part 15B, Class B.
	5. MANUFACTURER SUPPORT
		1. Manufacturer shall provide customer service, pre-sales applications assistance, after-sales technical assistance, access to online technical support, and online training using Web conferencing.
		2. Manufacturer shall provide 24/7 technical assistance and support by means of a toll-free telephone number at no extra charge.
2. EXECUTION
	1. EXAMINATION
		1. 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.
	2. INSTALLATION
		1. All components of the camera system shall be thoroughly tested before shipping to the project location.
		2. Camera system shall be installed, programmed, and tested in accordance with manufacturer’s installation instructions.
			1. Coordinate interfaces with Owner’s representative where appropriate.
			2. Provide conduit, cable and wire for a complete and reliable installation. Obtain Owner’s approval for exact location of the camera and all boxes, conduit, cable, and wiring runs prior to installation.
			3. Install conduit, cable, and wire parallel and square with building lines, including raised floors areas. Do not exceed 40 percent fill in conduits. Gather wires and tie to create an orderly installation.
			4. Coordinate with other trades to provide proper sequencing of installation.
	3. FIELD COMMISSIONING AND CERTIFICATION
		1. Field Commissioning: Test bullet 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.
	4. TRAINING
		1. Conduct on-site system administrator and security/surveillance operator training, with the number of sessions and length of sessions as recommended by the video surveillance system manufacturer. Training shall include, but not limited to, camera administration, provisioning, configuration, operation, and diagnostics.

END OF SECTION