SECTION 28 23 00

VIDEO SECURITY SURVEILLANCE MANAGEMENT SYSTEM

Display hidden notes to specifier. (Don't know how? [Click Here](https://www.arcat.com/sd/display_hidden_notes.shtml))

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\*\* NOTE TO SPECIFIER \*\* Honeywell Commercial Security; security and automation solutions, access
control.
This section is based on the products of Honeywell Commercial Security, which is located at:
715 Peachtree St. N.E.
Atlanta, GA 30308
Toll Free Tel: 800-323-4576
Email: [request info (Shellie.Redden@Honeywell.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=Honeywell+Commercial+Security&coid=48331&rep=&fax=&message=RE:%20Spec%20Question%20(13702hsg):%20%20&mf=)
Web: <https://buildings.honeywell.com/us/en/brands/our-brands/security>
 [ [Click Here](https://www.arcat.com/arcatcos/cos48/arc48331.html) ] for additional information.
A History of Innovation:
For over 30 years, Honeywell has delivered integrated solutions that business leaders resolve security challenges by providing critical information that informs effective and efficient decision making. When protection is critical, so is the choice of your security system. As industry pioneers, Honeywell has developed many of the groundbreaking advances that have shaped today's commercial security systems. We made systems easier to install and use, following best practices and standards in developing secure and compliant cyber-resilient products.
Research and Development:
For over 75 years as an industry leader, we have prioritized safety. Our commitment to quality and innovation produces connected and comprehensive systems built by teams that are invested in effective. results.
Commitment to Quality:
Our products are built in world-class production facilities and are subject to rigorous testing exceeding. industry standards for quality and performance. Honeywell equipment complies with all ISO-9001 protocols, an internationally recognized standard that defines a quality assurance system. We have more than 30 years of domain expertise, unmatched technical capabilities, a sterling global reputation and the financial stability to provide the support your customers expect and deserve, for decades to

1. GENERAL
	1. SECTION INCLUDES
		1. Video surveillance and management system
			1. Video Management System (VMS).
			2. Video Management System Integrations.
			3. Network Video Recorders (NVR).
			4. Network Video Recorder Servers
			5. Embedded Video Recorders
			6. NDAA Compliant Cameras
	2. RELATED SECTIONS
		1. Section 26 05 00 - Common Work Results for Electrical.
		2. Section 26 05 00 - Common Work Results for Electrical.
		3. Section 25 15 16 - Integrated Automation Software for Control and Monitoring Networks.
	3. REFERENCES
		1. Canadian ICES-003.
		2. Canadian Standards Association (CSA).
		3. Consultative Committee for International Radio (CCIR).
		4. Conformity for Europe (CE).
		5. Electronic Industry Association (EIA).
		6. Federal Communications Commission (FCC).
		7. Institute of Electronic and Electrical Engineers (IEEE).
		8. IP Code (Ingress Protection Rating) per IEC 60529.
		9. Joint Photographic Experts Group (JPEG).
		10. National Television Systems Committee (NTSC).
		11. National Defense Authorization Act (NDAA)
		12. Phase Alternating Line (PAL).
		13. Underwriters Laboratories Inc. (UL).
		14. Moving Pictures Experts Group (MPEG)
		15. Motion Joint Photographic Experts Group (MJPEG)
		16. ITU-T Video Coding Experts Group (VCEG)
		17. Physical Security Interoperability Alliance (PSIA)
		18. Open Network Video Interface Forum (ONVIF)
		19. Real Time Streaming Protocol (RTSP)
	4. DEFINITIONS
		1. HD (High definition): Refers to video having resolution higher than traditional television systems. HD has one or two million pixels per frame.
		2. CIF (Common Intermediate Format): Refers to a standard video format, which is categorized based on the resolution.
	5. SUBMITTALS
		1. General: Submittals shall be made in accordance with the Conditions of the Contract and Submittal Procedure Section 01 30 00 - Administrative Requirements.
		2. Manufacturer's Product Data: Manufacturer's data sheets indicating systems and components proposed for use, including instruction manuals.
		3. Shop Drawings: 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: Manufacturer's operation and maintenance data, customized to the system installed. Include system and operator manuals.
		6. Field Tests: 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: Sample copy of the manufacturer's maintenance service agreement, including cost and services for a one-year period for Owner's review. Maintenance includes, but is not limited to, labor and materials to repair systems, tests and adjustments, and regular inspections.
		8. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color, and patterns.
	6. QUALITY ASSURANCE
		1. Manufacturer: Minimum of ten years' experience in manufacturing and maintaining video management systems. The manufacturer shall provide toll-free technical assistance and support available 24/7.
			1. Customer service, pre-sales applications assistance, after-sales technical assistance, access to online technical support, and online training using Web conferencing.
			2. The manufacturer shall provide 24/7 technical assistance and support by means of a toll-free telephone number at no extra charge.
		2. Manufacturing Location: Provide equipment assembled in the United States.
		3. Installer: Minimum two years' experience installing similar systems, and acceptable to the manufacturer of the video management system.
		4. Power Requirements: Components shall have the following electrical specifications: 100-240 V AC (50 Hz/60 Hz) or as specified for individual products within part 2 of the specification.
		5. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
			1. Finish areas designated by Architect.
			2. Do not proceed with remaining work until workmanship is approved by the Architect.
			3. Rebuild mock-up area as required to produce acceptable work.
	7. PRE-INSTALLATION MEETINGS
		1. Convene minimum two weeks prior to starting work of this section.
	8. DELIVERY, STORAGE, AND HANDLING
		1. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
		2. Handling: Handle materials to avoid damage.
	9. PROJECT CONDITIONS
		1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
	10. SEQUENCING
		1. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
	11. WARRANTY
		1. Manufacturer's Warranty: Submit manufacturer's standard warranty for the video surveillance system.
2. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: Honeywell Commercial Security, which is located at: 715 Peachtree St. N.E.; Atlanta, GA 30308; Toll Free Tel: 800-323-4576; Email: [request info (Shellie.Redden@Honeywell.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=Honeywell+Commercial+Security&coid=48331&rep=&fax=&message=RE:%20Spec%20Question%20(13702hsg):%20%20&mf=); Web: <https://buildings.honeywell.com/us/en/brands/our-brands/security>
		2. Substitutions: Not permitted.
		3. Requests for substitutions will be considered in accordance with the provisions of Section 01 60 00.
		4. NOTE TO SPECIFIER: Delete if VMS is not required.
	2. VIDEO MANAGEMENT SYSTEM (VMS)
		1. System Description: Video Management System; Software, Client License, Server, and Workstations
			1. Control multiple sources of video surveillance subsystems in a facility to collect, manage and present video in a clear and concise manner.
			2. Intelligently determine capabilities of each subsystem across a single or multiple sites.
			3. Video management of any compatible analog or digital video device through a unified configuration platform and viewer.
		2. Operational Requirements: VMS
			1. Single graphical user interface (GUI) to monitor, control and administer digital video surveillance equipment from multiple systems and platforms.
			2. Scalable enterprise-class media management system to enable simultaneous live monitoring from multiple stations and be configurable for storage both on and off site.
			3. Software to be configured to store and to view images captured by one camera or numerous cameras and monitor connections across an unlimited number of servers.
		3. Major Capabilities:
			1. Managing pentaplex user operations of attached recording devices simultaneously.
			2. Live viewing, recording, playback, and video data archiving to an external storage device.
			3. Handling the exchange of data between the server and a remote workstation.
			4. Live Viewing:
				1. At CIF Resolution: Up to 64 cameras per workstation. Up to monitors set up.
				2. For 1080p and up to 4K Resolution: The number of live streams is to be benchmarked based on the client hardware configuration deployed.
			5. Integration:
			6. Multiple digital and network video recording devices.
			7. Multiple video matrix switchers and matrix keyboards.
			8. The Number of Recorders and Switchers: Scalable within a network to handle any size installation.
			9. Manage multiple digital IP cameras through compatible recording devices.
			10. With electronic access control systems.
			11. Honeywell Video Analytics integration
			12. Video analytics and a data management utility.
			13. Manage the Following:
			14. Failover and redundant capabilities of recording devices and database server.
				1. 1+1/N+M MAXPRO NVR failover and failback automatically or manually.
				2. View and playback on one client panel.
				3. Investigation and video archive search tools of the recording devices.
				4. Advanced search capabilities of the recording devices.
				5. Motion detection-based recording.
				6. Multi-level user access rights for managing viewing rights and access to the recorder functions.
				7. Continuous, scheduled, manual, event-based and alarm-based recording features of the recording devices.
			15. Support for Unicast network topologies and communication protocols.
			16. Macro capability for custom scripts providing customization and third-party integration.
			17. Support centralized and distributed architectures.
			18. Simultaneous use of multiple video compression including H.264, H.265(including camera dependent smart codec support), MPEG-4 and MJPEG.
			19. Utilize off-the-shelf workstations, servers, networking, and storage equipment.
			20. Person anonymization for GDPR compliance.
			21. Web client that supports web browser such as Google Chrome, Microsoft Edge:
			22. In Single Browser Instance: View live, playback, and control PTZ for one or more cameras.
			23. SetStream Preferences: Allows configuring same stream as thick clients or a lower or higher quality video stream for web clients to cater to remote web clients.
			24. Two-way audio integration with IP cameras.
		4. Cyber Security Features:
			1. Enhanced Password Security: Non-recoverable passwords, enforcing complex passwords, password expiry, and no default passwords.
			2. Addressed Unauthenticated/Unauthorized channels.
			3. Secured firewall configuration.
			4. Secured Web Client: Enabled HTTPS and TLS 1.2, and protection from CSRF and XSS attacks.
			5. Restricted folder and Registry access to operators.
			6. Secured Assemblies: Digital signing.
			7. Secure communication with the equIP Cameras using Honeywell proprietary protocol and Encrypted video streams with 30 Series, 35 Series, 60 Series, and 70 Series cameras using TLS 1.2
		5. User Login Mode: VMS Server and Workstation will have two modes of user logins:
			1. Windows Authentication: Uses the Windows logged-in username.
			2. User DB Authentication: Uses a preconfigured username and password.
		6. VMS Workstation shall provide the following operator functions:
			1. Configuration: Operators (with Administrator privileges) may configure VMS. VMS supports live updates of all configurations.
			2. Possible Configurations:
			3. Recorders: Add, edit, and deleterecorders.
			4. Cameras: Add, edit, and delete cameras.
				1. Associate cameras to particular recorders or switchers and map to a particular site, partition, or event group.
				2. Monitors: Add, edit, and delete monitors,
				3. Map monitors to a particular site, partition, event group or keyboard.
				4. Add digital monitors and associate them with particular workstations.
				5. Configure digital monitors with a default salvo and startup in full screen.
				6. option to add an analog monitor and associate it with a particular switcher.
				7. Option to save a digital correction in the video input page.
				8. Switcher: Add, edit, and delete analog video switchers.
				9. Keyboard: Add, edit, and delete keyboard controllers.
				10. User Management (Users and Roles): Add, edit, and delete roles and associate to predefined privileges.
				11. Add, edit, and delete users and associate users with roles.
				12. Associate permissions with salvo selection and tool bar buttons.
				13. Administrators of the System: Have ability to force logout users from workstation clients.

If more than one instance of a client is running in a workstation, an Administrator should be allowed to force log out the user from all client instances of a workstation.

Sites: Add, edit, and delete a site.

Workstations: Add, edit, and delete a workstations.

Event Groups: Add, edit, and delete event groups. Support of bulk event association to enable/disable and adjust events for recorders and inputs in bulk.

Partitions: Add, edit, and delete partitions.

Sequences: Add, edit, and delete scan sequences.

Intercept Key: Add, edit, and delete intercept keys from UltraKey keyboards to change the key function to a new and desired function.

System Macro Configuration: Add, edit, delete, and restore macros.

* + - * 1. Execute button to trigger and test selected written macros.
				2. Port Configuration: Add, edit, and delete keyboard controllers and analog video switchers to the ports available on the controller.
			1. Viewer: Capabilities.
			2. Launch multiple times on the same workstation. A minimum of 4 times to display 4 viewers on 4 separate monitors per workstation.
			3. MainVideo Viewing Screen: Capable of showing 1x1, 2x2, 3x3, 4x4, 5x5, 6x6 v1x5, 2x8, and 1x12 salvos of live or recorded video. The Viewer application is to be capable of a full screen mode where only the video salvo is displayed.
			4. Each Viewer: May be associated to a specific monitor on a workstation and be assigned a unique output number that is selectable from the viewer device tree, an UltraKey controller, or from a system macro.
			5. Saving current salvos as Views and allowing users to select the saved views by dragging and dropping into the viewer, using an UltraKey controller or a system macro.
			6. Selecting particular cameras or salvos by using the mouse to drag them onto the main video viewing screen.
				1. An undo/redo option for camera drag/drop and salvo selection from the viewer and UltraKey controller.
				2. Switching analog cameras to analog or digital monitors so the system will recognize to switch to the analog matrix switch or to pull the videos from an encoder.
				3. Choosing Salvos unique to the current operator or Shared Salvos while saving a salvo.
				4. Allow duplicate salvo names to be set by different users and in different locations.
				5. Dragging any monitor defined in the system onto a video panel and taking control of that monitor.
				6. Send commands to controllers to switch a particular analog camera onto the analog monitor through a drag and drop operation.
				7. Configure and run scan sequences.
				8. Independently adjusting the contrast, brightness, and saturation settings for each camera.
				9. Support analog and digital PTZs through the GUI or the keyboard.
				10. Innovative "One-Click" or "Mouse Drag" 3D PTZ control experience that does away with legacy PTZ controls of continuous clicking.
				11. Intelligence events from cameras can be viewed at the alarm panel and trigger event recording on MAXPRO NVRs for further investigation.
				12. 360 degree de-warping: "Spreads" the distorted fisheye image into natural panoramic and/or multiple tile views.
				13. View and focus on zones of interest on live and recorded video.
				14. Export user selected images or video clips. Digital signatures are to be attached to every exported clip.
				15. Clip Creation Facility: Permit multi-camera clip generation.
				16. Story clips: Allow selecting multiple cameras at different times to create a single clip to play the cameras back in order. Support saving salvo information in a story clip.
				17. SalvoClips: Provide an instant clip export button to create an instant clip while maintaining the salvo information. Supports pre-determined pre- and post-times that are user-configurable in the preferences.
				18. ClipPreview Window: Supports play back of individual cameras prior to commencing clip creation.
				19. Capable of manually setting the clip duration in the clip creation window for each camera.
				20. Capable of playing back the exported video clips. Each video channel that is being recorded by the recording system shall be overlaid with text and a time stamp that is customizable by the user.
				21. Allows the user to initiate recording through the GUI or controller.
				22. Capable of complete alarm management for the alarms coming from recorders or switchers.
				23. Quick and responsive alarm actions can be initiated from the preview pane options.
				24. Application launch pad launches other applications from within the Viewer.
				25. Control of operator messaging, allowing operators to communicate with each other. Operators can exchange text, images, and annotated video sources. Operators can hand over a video source to another operator using messaging.
				26. Ability to set up surrounding camera views. Support for setting presets in surrounding cameras.
				27. Option to perform various operations through the context menu on a particular video (live/recorded/sequence). These operations include Full screen, point, and drag, enable square select, maintain aspect ratio, toggle text, digital PTZ, add bookmark, send message, start recording, stop recording, mark in, mark out, save image, save image as, and show surrounding cameras.
				28. Ability to manage the timeline control of the recording device, which provides camera recording statistics. Timeline control shall have the following features: Mark in/out (with looping facility), bookmark (including for all playing cameras or all selected cameras or removing all bookmarks), snapshot, time slider, time search, time jump, and play controls. Timeline control shall also include dedicated buttons for step reverse and step forward and keyboard shortcuts for playback operations.
				29. Support for bookmark searches based on cameras, time duration, and comments.
				30. Controllable by a keyboard controller connected to the VMS server/controller with the following major features: selecting salvos, ending monitor commands, switching operations, and PTZ control operations.
				31. Preference configuration including fps of unselected panels, rendered type, preview pane, and text display format.
				32. Support for smooth reverse playback at 2x (Recorder Dependent)
				33. Capable of displaying analytics annotations (Recorder/Camera Dependent)
			7. The Search Facility: Includes searches based on date and time.
			8. Reports Facility: Includes event history reports and audit log reports.
			9. Remote Monitor Facility: Allows operators to control a remote monitor connected to another workstation and perform review capabilities so that the local operator and remote viewer can simultaneously watch the same video.
			10. Analytics Tab: Empowers visualizing the scanned and recognized objects by various analytics algorithms across different cameras. This tab empowers the operators to visualize the people and vehicles appearances in a chronological order along with the properties for e.g., blacklisted, whitelisted. Analytics tab increases situational awareness by showing the history trail of appearances of a vehicle or a person, validation through an instant recording playback through simple drag and drop of these events. Crowd detection is another empowering analytic based on parameters set in the NVR for defining what constitutes as crowd and then providing proactive alarms when these specifications are reached.
		1. Intelligent Command Console:
			1. A map-based user interface designed to improve situational awareness.
			2. Incident Workflow: To help standardize response and information recording for incidents and critical activities; Health Dashboard for displaying health status of devices at various levels; Device Management for upgrading connected device firmware and changing passwords; Safety Compliance Dashboard to display the healthy safety metrics of a building such as number of social distancing violations, mask compliance violations and Recording Availability Dashboard for an active 24-hour view of cameras being recorded and confirming the number of days of historical activity for compliance.
			3. Alarms: Support displaying active and acknowledged alarms reported on the devices accessible to the logged in user.
			4. Allow search and sorting based on alarm fields.
			5. Maps; The Primary Graphical User Interface(GUI):
			6. A high-resolution map with deep zoom capability allows easy navigation of the facility to find issues or to review areas of interest.
				1. Large-scale individual maps are to be linked with simple navigation to seamlessly access maps at national, local and site levels with building details and individual internal floorplans.
				2. Navigation on the maps is to be simple and intuitive. Pinch-to-zoom and drag-to-pan and operable with a mouse control.
				3. Configure image-based maps (.jpg, .png, .bmp)
				4. Configure online GIS maps and should leverage OpenStreet maps.
				5. Import maps directly from CAD files.
				6. ToAid Navigation Between Maps and Support the Users Identifying Issues:
				7. There are links at each level to lower-level maps.

For Example: When viewing a map of a building there would be links to each floor within the building.

Camera Smart Objects: Represented on maps by active ' smart objects.

* + - * 1. These objects represent system cameras, support live video streaming, playback, and PTZ operations.
				2. Uncluttered interface with immediate visibility of key equipment and information.
				3. Configure map to show a small selection of key smart objects when zoomed out, disclosing additional objects progressively as users zoom into specific map areas.
				4. During facility monitoring this enables the cameras or doors status to be monitored continuously while the user can zoom into particular areas when additional information is required.
				5. For Faster Operator Response Time: Upon selecting an active alarm, the system displays the highlighted device's location on a map. The system also displays alarm history and related live or recorded video all in one screen.
			1. Incident Workflow:
			2. Workflow Initiation System: Contains standard operating procedures (SOPs) that are presented to the operator as a set of steps when a workflow is initiated.
				1. Workflows:

Initiated automatically as a result of alarms.

Initiated manually by the operator (for example for crowd trouble).

Workflows initiated manually: Operator is presented with a list of available SOPs through a display of user-friendly icons which makes selection quick and simple.

When creating an incident, the operator can add location and device name which is based on Hierarchy Builder information and provides full depiction and documentation regarding the event.

Workflow Execution:

* + - * 1. Operators can take ownership of the workflow by pressing the ' Respond' button which enables the workflow buttons and allows the operator to check off each step when completed.

When operators mark a step as completed, the operator's name (system log-in) and the time and date of the step being completed is recorded. Only the responding operator can check-off SOP steps at any one time.

* + - * 1. Operators release SOP control by navigating away from the display, and letting another operator take control.

Logged-on operators may add comments to the SOP header or to individual steps, facilitating team working and collaboration on the workflow while maintaining control and responsibility.

Comments and other actions are time-stamped and named for full traceability. The operator name, time, and date of a comment's entry is recorded.

* + - 1. Evidence Attachments:
			2. Creating Incidents: Allows users to attach evidence, i.e. documents and pictures.
			3. Users with access to incidents can review the attached evidence.
			4. Generates detailed incident reports which includes details of the incident attachments.
			5. The system is to periodically securely store attachments and purge the evidence attachments to free up diskspace.
			6. System Health Integrated Dashboards: Feature an efficient and effective means of visualizing system device health.
			7. Dashboard allows viewing status of system components such as recorders and vital health metrics such as CPU usage, memory usage, available disk storage.
			8. Recording timeline overview provides deep analysis into storage availability of Honeywell MAXPRO NVR and Honeywell Pro-Watch NVR.
			9. Health dashboard allows accessing status of individual cameras and allows to search by name and filter by various parameters.
			10. Device Management Console: Allow users to execute maintenance activities by knowing the current state vs recommended state.
			11. Camera Management: Allow system administrators to maintain a firmware inventory, view current firmware version vs installed version and initiate upgrade simultaneously for all or selected cameras.
			12. Comply with password management policies for peripheral devices; allow the camera password simultaneously for all or selected cameras.
			13. Safety Compliance Dashboard:
			14. Envisages the compliance violation issues and adherence levels of a facility with respect to safety compliance protocols set by customer's organization.
			15. Contemplates the overall safety levels of a building by graphically displaying occupancy levels with a drill down option to view details of each metric for e.g. detected compliance issues such as social distancing violations or non-observance of mask guidelines.
			16. Video Salvo Views:
			17. The system allows configuring video salvos to be used in intelligent command. Support salvo layouts include but not limited to 1x2, 2x2, 3x3.
			18. Display live and playback, controlling PTZ in the web client.
			19. Intelligent Command web client should support modern web browser like Chrome, Edge, Mozilla Firefox, and Safari to view cameras configured with codecs H.264 and H.265
		1. Mobile App:
			1. VMS and Intelligent Command: Support mobile app for Android and iOS platforms.
			2. Mobile App: View live and recorded videos, control PTZ, and respond to alarms.
			3. Communication Between the Server and Mobile Apps: Encrypted for video and non-video data/
	1. VMS INTEGRATIONS
		1. Recorders:
			1. Support integration with digital and network video recorders (DVRs/NVRs).
			2. Ability to access and manage necessary functions of the recording devices through the VMS client interface, such as live video, recorded video, camera configuration, PTZ control and other associated functions.
			3. System Supports the Following Recording Devices:
			4. Honeywell MAXPRO NVR.
			5. Honeywell Pro-Watch NVR.
			6. Honeywell ADPRO iFT Series NVR and Gateway.
			7. Honeywell Performance Series NVR.
			8. Honeywell 35 Series NVR.
			9. 3rd Party recorder integrations such as Avigilon NVR.
		2. Analog Video Switchers:
			1. Support matrix switcher integration including camera call up, monitor switching, video command support and PTZ support.
			2. Video Subsystem: Is to be the controller device for video cameras, monitors, and VCRs, and will associate camera inputs with monitor outputs.
			3. Allow users to program video monitors and cameras to execute commands upon recognition of an alarm or any other condition within the system.
			4. Add, edit, delete, and partition video subsystems.
			5. System Supports the Following Analog Video Switchers:
			6. Honeywell VideoBloX Series.
			7. Ultrak MAXPRO-1000.
			8. Pelco 9600 Series.
			9. American Dynamics.
			10. Vicon.
			11. Burle.
			12. Video Analytics:
			13. Honeywell Active Alert.
			14. IntrusionTrace and LoiterTrace of ADPRO NVR.
			15. Intrusion, Loiter, Line Cross, Face Detection, Object Left, Object Removed, Smart Motion, Tamper, License Plate Recognition with Honeywell 70 Series IP cameras with MAXPRO NVR.
			16. Allgovision analytics.
			17. Idemia analytics.
			18. Ipsotek analytics.
			19. Mask Detection, Social Distance, and Crowd Detection with MAXPRO NVR.
			20. Data Management Utility: Honeywell Integrated Data Manager.
			21. IP Surveillance Control Keyboards: Honeywell HJK7000 UltraKey Plus.
			22. Electronic Access Control Systems: Honeywell Pro-Watch Release 3.8 or later.
		3. System Hardware:
			1. VMS Server: Operate with no performance degradation using the following minimum hardware and operating system configuration:
			2. Processor:
				1. Up to 5 Client Server: Single Intel Quad Core Xeon E3 1225V3 3.2 GHz S1150.

System Memory (RAM): 8 GB.

* + - * 1. Up to 10 Client Server: Single Intel Quad Core Xeon E-2134 3.5GHz.

System Memory (RAM): 16 GB.

* + - * 1. Up to 25 Client Server: Dual Intel 8 Core Xeon Silver 4110 2.1 GHz.

System Memory (RAM): 32 GB.

Optical Drive: DVD+/-RW.

Hard Disk Drives: Two separate hard drives or two sets of RAID arrays.

* + - * 1. Disk/RAID set 1 utilizing 7200 SATA or 10K-15K RPM SCSI 146 GB.

If fault tolerance is required: RAID set is RAID 1 or 10.

* + - * 1. Disk/RAID set 2 utilizing 7200 SATA or 10K-15K RPM SCSI 146 GB.

If fault tolerance is required: RAID set is RAID 10 or 0 plus 1.

Network Interface Card (NIC): Dual or compatible pair of NICs, 1 Gbps.

Human Interface: 102-key keyboard and a mouse pointing device.

Graphics Adapter: 32-bit color or higher.

* + - * 1. Video Resolution: 1280 x 1024 pixels, 65K colors non-interlaced.
				2. Operating System: Original software CDs and startup installation diskettes for:
				3. Windows Server 2008 R2 Standard SP1 64-bit
				4. Windows Server 2012 Standard 64-bit
				5. Windows Server 2016 R2.
				6. Microsoft SQL Express 2008 R2.
				7. SQL Express 2012.
				8. Windows Media Player Version 12.
				9. For installations where the system is integrated with Honeywell IP Engine recording software with more than 500 cameras.
				10. Install a separate IP Engine database server. The server specification is to be determined based on end-user deployment requirements.
				11. NOTE TO SPECIFIER: Workstation configuration can use either a two (2) or four (4) monitor setup. Delete the workstation configuration that is not required.
			1. VMS Dual or Quad Monitor Workstation:
			2. To operate with no performance degradation using the following minimum hardware and operating system configuration for a two monitor or four monitor setup:
				1. Processor: Intel Corei7-8700, 3.2 GHzor equivalent newer generation Intel Core Processors for client systems.
				2. System Memory (RAM): 16 GB.
				3. Optical Drive: DVD-RW.
				4. Hard Disk Drives:

Single disk.

RAID 7200 SATA 250 GB.

10K to 15K SCSI 250 GB; RAID 0 or 0+1.

* + - * 1. Network Interface Card (NIC): 1 Gbps.
				2. Human Interface: 102-key keyboard and a mouse pointing device.
				3. Graphics Adapter Setup:
				4. Four Monitor: Integrated Intel UHD graphics 630 and NVIDIA Quadro P620.
				5. Two Monitor: Integrated Intel UHD graphics 630.
				6. Operating System:

Windows 7 Professional.

Windows 10 Enterprise.

64-bit Windows Media Player Version 12.

* + 1. Warranty: Manufacturer's standard one year warranty for the video surveillance system.
	1. NETWORK VIDEO RECORDERS
	2. NOTE TO SPECIFIER: Delete if MAXPRO NVRS are not required.
		1. MAXPRO Network Video Recorders (NVR): Simultaneous recording, remote viewing and search, and system management for 128 IP cameras including high-definition formats based on specific models.
			1. Multiple NVRs: May be deployed for system expansion using a distributed architecture and integrated with multi-site software or enterprise video management system.
			2. NVR Server: Contains recording engine, database of all network-connected cameras and encoders, integrated components, and their configurations.
			3. Provided as a combined hardware and software device.
			4. Workstation Software; NVR Client: Renders video and act as a main human/machine interface.
		2. NVR Operational Requirements: MAXPRO NVR PE.
			1. A user-friendly graphical user interface (GUI) to configure cameras, create recording schedules, perform video surveillance and recording operations, and view various reports.
			2. Configure to store and view images captured by up to 128 cameras depending on model listed below:
			3. Professional Edition (PE) NVR: Major capabilities.
				1. Record and monitor up to 128 IP channels at

3840 fps at 4CIF/VGA

3840 fps at 720p HD

3840 fps at 1080p (4 Mbps bitrate) HD.

* + - * 1. Network Bandwidth / Throughput supported per NVR:

Incoming: 530 Mbps. Outgoing: 270 Mbps. Total: 800 Mbps.

Archival support of 25 channels at 4 Mbps bitrate each.

100 Mbps total archival throughput per MAXPRO NVR PE)/

Outgoing archival storage throughput of 275 Mbps.

Multi-stream with maximum 256 streams per MAXPRO NVR PE.

Configure one stream for continuous recording per camera.

Configure one stream for live video/motion based recording per camera.

* + - * 1. One-Way Audio for specific IP cameras, with live, playback, and clip export on NVR desktop client for 128 IP channels.
				2. Live viewing of 64 IP cameras on one remote workstation with two monitors set up at CIF resolution.

For 4CIF and HD resolution: Benchmark number of live streams based on client hardware configuration deployed.

Cost-effective enhanced HD video rendering on remote desktop clients with support for monitoring of 23 1080p HD cameras in real time (30 fps)/690 fps 1080p HD with no-time lapse using the GPU capabilities of in-built processor graphics with Intel Core Processors for client systems.

Up to 4 1080p HD at 30 fps/120 fps on local client.

Standard Edition NVR SE: Major capabilities:

* + - * 1. Record and monitor 64 IP channels at:

1920 fps at 4CIF/VGA

1920 fps at 720p HD

1280 fps at 1080p (4 Mbps bitrate) HD.

* + - * 1. Network bandwidth/throughput supported per NVR:

Incoming: 160 Mbps. Outgoing: 280 Mbps. Total: 440 Mbps.

* + - * 1. Archival Support: 16 channels at 4 Mbps bitrate each

Total Archival Throughput: 64 Mbps capacity per NVR.

Outgoing Archival Storage: 200 Mbps throughput.

* + - * 1. Multi-Stream Support: 128 streams per NVR.

Configure one preferred stream for continuous recording.

Configure one preferred stream for live video/motion based recording per camera.

One-Way Audio, for specific IP cameras, with live, playback and clip export on NVR desktop client for 64 IP channels.

* + - * 1. Live Viewing: 64 IP cameras on a single remote workstation with two monitors set up at CIF resolution.

For 4CIF and HD resolution, the number of live streams needs to be benchmarked based on client hardware configuration deployed.

Enhanced HD video rendering on remote desktop clients with monitoring support for monitoring 23 1080p HD cameras in real time (30 fps)/690 fps 1080p HD with no-time lapse using the GPU capabilities of in-built processor graphics with Intel Core Processors for client systems.

Four, 1080p HD at 20 fps/80 fps on local client.

Xpress Edition, NVR XE. Major capabilities:

* + - * 1. Record and monitor 16 IP channels at:

480 fps at 4CIF/VGA.

480 fps at 720p HD.

480 fps at 1080p (4 Mbps bitrate) HD.

Network bandwidth/throughput supported per NVR:

Incoming: 80 Mbps. Outgoing: 240 Mbps. Total: 320 Mbps.

Archival support of 16 channels at 4 Mbps bitrate each. 64 Mbps total archival throughput capacity per NVR.

Outgoing archival storage throughput of 200 Mbps.

Multi-stream support with 128 streams per NVR.

Configure one stream for continuous recording per camera.

Configure one stream for live video/motion-based recording per camera.

One-Way Audio, for specific IP cameras, with live, playback and clip export on NVR desktop client for up to 8 or 16 IP channels.

* + - * 1. Live Viewing: 16 IP cameras on a single remote workstation with two monitors set up at CIF resolution.

For 4CIF and HD resolution, the number of live streams needs to be benchmarked based on client hardware configuration deployed.

Enhanced HD video rendering on remote desktop clients with support for monitoring 23 1080p HD cameras in real time (30 fps)/690 fps 1080p HD with no-time lapse using the GPU capabilities of in-built processor graphics with Intel Core Processors for client systems.

On Local Client: Up to 4 1080p HD at 30 fps/120 fps.

* + 1. NVR Major Capabilities:
			1. Audio Configuration: To be set for individual cameras. Select direction of audio stream flow: Only audio-in, only audio-out or both (PE model).
			2. Powerful investigation and video archive search tools from remote client.
			3. Native Device Integrations: Support the following.
			4. Camera Features: 4K resolution, H.265 video compression codec, 3D PTZ control, 360 degree camera support, and intelligence events.
			5. Honeywell 30 Series and 60 Series cameras' new features:
				1. H.265 smart video compression codec.
				2. Encrypted video stream with TLS 1.2.
			6. Manage Motion Detection-Based Recording: Pre- and post-event recording based on camera-based motion detection or server based motion detection events (SMART VMD) and "advanced" search on recordings from remote client.
			7. SMART VMD: Not recommended when more than 64 cameras are connected to the NVR.
			8. Preview and Calendar Search: Search for videos and events based on user-selected date and time from remote client.
			9. SMART Motion Search: Fast efficient forensic search and investigation for objects/motion on recorded video using Honeywell SMART motion detection Analytics algorithms on the client PC without impacting the NVR Server load.
			10. Simultaneous Use of Multiple Video Compressions: Include MJPEG, MPEG-4, H.265 and H.264.
			11. Languages: French, German, Russian, Italian, Spanish, Dutch, Arabic and English.
			12. Email on alarm.
			13. Instant clip creation from snapshot.
			14. Dynamic IP Camera Discovery: Automatically discover compatible cameras connected to NVR.
			15. Multi-level user access rights for viewing.
			16. Manages access to the recorder functions.
			17. Manage continuous, scheduled, manual, event-based, and alarm-based recording features.
			18. Advanced Security Features: With encryption support for communication between desktop client to NVR and secure https login for Web Client and mobile apps.
			19. Support for web clients and mobile apps.
			20. Capable of person anonymization for GDPR compliance.
			21. Capable of displaying analytics annotations (Camera Dependent).
		2. Mode for User Login: NVR to have two modes of user login:
			1. Windows Authentication: Uses Windows logged-in username.
			2. User DB Authentication: Uses preconfigured username and password.
		3. Workstation (NVR Client) is to provide the following operator options:
			1. Configuration: Operators, with Administrator privileges, has the option to configure the NVR. Live update of configurations is supported.
			2. Possible Configurations:
			3. System Configuration: Configure the system level settings.
			4. Camera Configuration: Add/edit/delete IP cameras and encoders.
			5. Schedule Based Recordings: Configure for NVR connected cameras.
			6. Input and Output: Configure camera input and output.
			7. Sequences: Group a fixed number of cameras to view video.
			8. User Management (Users and Roles): Add, edit, or delete users.
			9. Clip Deletion Settings: Provide ability to automatically utilize more storage on event-initiated recording.
			10. Independent deletion setting for continuous recording and for event recording.
			11. Surrounding Cameras: Grant users ability to view a single camera surrounded by the cameras programmed as the "Surrounding Cameras."
			12. 3D Positioning: User are to be able to view a specific object in the live video in a 3-dimensional view.
			13. Profile Cameras: Multi-zoom views on HD video.
				1. Create virtual cameras by digitally zooming into the field of view.
		4. Configurations for cameras connected to NVR: Usera are to be able to configure the following parameters for each camera connected to the NVR.
			1. Camera Name.
			2. IP Address.
			3. Camera Type.
			4. Fixed/PTZ.
			5. Continuous Recording: All cameras added shall be defaulted to "24/7" recording with the option to select other recording modes.
			6. Event Based Recording: "None" by default, with the option to select motion-based recording.
			7. Username: Display and enable setting the username for a camera.
			8. Password: Enable setting the password for a camera.
			9. Camera Advanced Settings: Enable configuration of Video Format, Compression Format, Resolution, Compression, Video Frame Rate, GOP, Record Quality Settings, Clip Deletion Settings, Launching Web View of camera for Advanced Setup, Motion detection zones configuration for Server based motion detection, Video Archival Settings, Multi-Stream Settings, and Video Preview.
			10. Enable configuration of RTSP URL for cameras or encoders added with camera type - Generic RTSP.
			11. Supported Video Recording Options:
			12. Scheduled Based Recording: Schedule recordings for each individual camera for times in the future. By default, NVR is pre-loaded with the following four schedules: 24x7, Weekday, Daytime, and Nighttime, which cannot be edited.
				1. A maximum of 50 schedules can be created in the NVR.
				2. User Based Recording: Users are to be able to configure user activated settings for recording moments of interest while viewing live video from a camera.
				3. After Configuring User Activated Settings: Operators can start recording video when needed. Video is recorded for the time period specified in the System settings for user activated recording.
				4. User Based Recording Time Duration: Selectable, ranging from 30 seconds to 5 minutes.
				5. EventBased Recording: Possible on SMART Video Motion Detection and alarm triggers.
				6. Must be capable of managing motion detection-based recording with pre-event and post event recording based on camera and Server-based motion detection events.
				7. The server-based SMART VMD analytics must be object-based and not traditional pixel-based, reducing false alarms due to changing light conditions, video noise, rain or other false alarm triggers that occur using pixel-based (traditional) VMD.
			13. Supports efficient camera configuration and modifications by setting the below properties in bulk.
			14. Video stream configurations.
			15. Device type.
			16. Device environment.
			17. Recording retention details.
			18. Server side VMD (Video Motion Detection) settings.
		5. NVR Viewer: Minimum capabilities.
			1. Main Video Viewing Screen: 1, 4, 9, 16, and other customized split salvos of live or recorded video.
			2. Presets: Customizable to user preferences.
			3. Saving current salvo as a View and letting the user drag this view later.
			4. Configuring and running scan sequences.
			5. Adjust the contrast, brightness, and saturation settings for each camera independently.
			6. Export user selected image or video clips in simple .wmv, .asf, .mpvc and .bmp formats. Attach a digital signature for authentication of exported clips in .wmv format.
			7. Capable of playing back video clips exported.
			8. Each video channel being recorded by recording system is to be overlaid with text and a time stamp customizable by the user.
			9. MAXPRO Video Container (.mpvc) Format Support: Only playable in MAXPRO desktop clients and standalone Clip Player.
			10. Quicker exports of raw video.
			11. Support for estimating clip size and splitting into multiple clips to ensure clip storage media matches.
			12. Clip player with exported clip for easier review of video evidence and efficient investigation.
			13. Clip Player: Portable standard secure player for archived and exported clips (\*.mpvc), 360 camera de-warping and 2x2 Salvo support.
				1. Smooth playback with 256x review speed.
				2. No software is needed to run on a Windows PC, with the option to include the clip player with the exported clip.
			14. Allow user to initiate recording through the GUI or a controller.
			15. Complete alarm management for the alarms coming from the NVR.
			16. Facility of surrounding camera view.
			17. Perform various operations through context menu on a particular video; live, recorded, and sequence.
			18. Operations: Full screen, point and drag, maintain aspect ratio, toggle text, digital PTZ, add bookmark, start recording, stop recording, mark in, mark out, save image, save image as, show surrounding cameras.
			19. Manage timeline control of recording device, which provides camera recording statistics.
			20. Timeline Control Features: Mark input, with looping facility, bookmark, snapshot, time slider, time jump, and play controls.
			21. Preference Configuration: Frame rate of unselected panels, rendered type, preview pane, text display format.
			22. Search Facility: Search for recorded video and events based on date and time.
			23. Reports Facility: Include event history report and audit log report.
		6. NVR Integrations:
			1. NVR is to be Compatible with the Following:
			2. Interoperability standards:
				1. Physical Security Interoperability Alliance (PSIA).
				2. Open Network Video Interface Forum Profile S (ONVIF Profile S).
				3. Real Time Streaming Protocol (RTSP).
				4. IP cameras from the following manufacturers. Contact Honeywell for a complete list of manufacturers and models.
				5. AXIS Communications.
				6. Sony.
				7. Panasonic.
				8. Bosch.
				9. Samsung.
				10. Vivotek.
				11. Pelco.
				12. Encoders. Contact Honeywell for a complete list of manufacturers and models.
				13. AXIS Communications.
				14. Sony.
				15. Panasonic.
				16. Bosch.
				17. Samsung.
				18. Vivotek.
				19. degree Camera solutions. Contact Honeywell for the complete list of models.
				20. Honeywell 30 Series Fisheye IP Cameras.
				21. Oncam Grandeye.
				22. Immervision Enables - Panomorph Lenses.
				23. AXIS 360 degrees/180.
				24. Arecont 360 degrees/180.
				25. Honeywell HJK7000 UltraKey Plus IP Surveillance Control Keyboard.
				26. MAXPRO Viewer Multi-site Video Management Systems.
				27. MAXPRO VMS Video Management Systems:
				28. Access Control Security System:
				29. Pro-Watch Access Control System through MAXPRO VMS and MAXPRO Viewer.
				30. Honeywell WIN-PAK Access Control System.
			3. Video Analytics: Support the following.
			4. Honeywell Active Alert through MAXPRO VMS
			5. VehicleTrace License Plate Recognition of HBL6GR2-LPR camera managed by MAXPRO VMS
			6. NOTE TO SPECIFIER: Delete if PE NVR is not required.
			7. MAXPRO NVR PE is provided as a single unit with preconfigured hardware and MAXPRO NVR software. MAXPRO NVR software is also available separately for purchase and installation on COTS hardware.
	1. SYSTEM HARDWARE - NVR SERVERS
		1. MAXPRO NVR PE Server:
			1. NVR Server is to operate with no performance degradation using the following minimum hardware and operating system configuration:
			2. 2U 12 bay storage unit with SATA hard drives.
			3. Processor: Intel Xeon Silver 4110, 2.1 GHz.
				1. Memory: GB (32GB for 128 Channel).
				2. Power supply: Dual redundant 750 W.
				3. OS Drives: 2 x 240 GB M.2 solid state drives, RAID 1 support.
				4. Operating system: Windows 10 IoT Enterprise, 64-bit.
				5. Database: Microsoft SQL Server Express 2012.
				6. Storage capacities: 16 to 144 TB raw storage, Video storage redundancy with RAID 5/6 support.
				7. Video Storage Hard Disk Options: 12 field-upgradable 4 TB, 8 TB, 10 TB or 12 TB SATA Hard Disk Drive options.
				8. Optical drive: None.
				9. Network interface: Four 1 Gigabit Ethernet.
				10. RAID card: 6 GB SAS/SATA RAID card, PCI Express x8, supports RAID levels up to 6+0.
				11. Human Interface: 102-key keyboard and a mouse pointing device.
				12. Monitor Output: 2x VGA (1 monitor support).
				13. Rack kit: Rack kit for use with 2U chassis.
			4. NVR Workstation:
			5. Operate with no performance degradation using the following recommended hardware and operating system configuration for rendering up to twenty-three 1080p HD cameras in real time 30 fps/690 fps at 1080p HD with no time-lapse.
			6. Configuration assumes two-monitor setup.
			7. Required for remote clients only.
				1. A local client is on the NVR PE unit for configuration and monitoring.
				2. The performance specifications below are recommended for systems with fixed or PTZ cameras only.
				3. Oncam Grandeye 360 cameras are not supported with GPU rendering and use CPU rendering by default.
				4. On Windows 10 workstations with Intel GPU and any additional graphics cards, at least one monitor should be connected to the motherboard monitor output.
				5. Processor: Intel Core i7-8700, 3.2 GHz or equivalent newer generation Intel Core Processors for client systems.
				6. Graphics Adapter: In-built Processor Graphics (GPU): Intel HD Graphics 530, 4600 or equivalent.
				7. System Memory (RAM): 16 GB.
				8. Optical Drive: DVD-RW.
				9. Hard Disk Drives: Single Disk or RAID 0 or 0+1 10K SATA 80GB or 10K to 15K
				10. SAS 73 GB.
				11. Network Interface Card (NIC): 1 Gbps.
				12. Human Interface: 102-key keyboard and a mouse pointing device.
			8. Operating System:
			9. Microsoft Windows 7 Professional 64-bit SP1.
			10. Windows 8.1 Professional 64-bit.
			11. Windows 10 Professional 64-bit.
			12. Electrical Requirements: NVR is to have the following electrical specifications:
			13. Input Voltage: 110/220 VAC 50/60 Hz
			14. Operating Voltage: 110V/220V Auto Sensing
			15. Power Dissipation:
				1. Average BTU Rating: 880 BTU per hour.
				2. Peak BTU Rating: 2800 BTU per hour.
			16. Environmental and Regulatory Requirements: The NVR is to function in the following environmental conditions:
			17. Operating Temperature: 50 to 95 degrees F (10 to 35 degrees C).
			18. Emissions: FCC part 15B Class A; EN 55022 Class A.
			19. Immunity: EN 50130-4.
			20. Safety: ANSI / UL 60950-1; CAN / CSA C22.2 No. 60950-1; IEC 60950-1.
			21. RoHS: EN 50581.
			22. Warranty: Five years from the manufactured date code under normal use and service for the video surveillance system.
			23. NOTE TO SPECIFIER: Delete if SE NVR is not required.
			24. MAXPRO NVR SE is provided as a single unit with preconfigured hardware and MAXPRO NVR software. MAXPRO NVR software is also available separately for purchase and installation on COTS hardware.
		2. MAXPRO NVR SE Server:
			1. NVR Server is to operate with no performance degradation using the following minimum hardware and operating system configuration.
			2. 2U 6 bay storage unit with SATA hard drives.
			3. Processor: Intel Core i7-9700, up to 4.90 GHz, Intel HD Graphics 630.
			4. Memory: 16 GB.
			5. Power supply: Single 400 W.
			6. OS Drive: 250 GB M.2 SSD.
			7. Operating system: Windows 10 IOT.
			8. Database: Microsoft SQL Server Express 2019.
			9. Storage capacities: 4 TB to 60 TB with 6 bays.
			10. Video Storage Hard Disk Options: 6 field-upgradable 4 TB, 8 TB, 12 TB, or 16 TB SATA Hard Disk Drive options.
			11. Optical drive: DVD-RW.
			12. Network interface: Two 1 Gigabit Ethernet included.
			13. Human Interface: 102-key keyboard and a mouse pointing device.
			14. Monitor Output: Dual monitor support: HDMI, VGA, DVI-D, Display Port.
			15. RackHit: Rack kit for use with 2U chassis.
			16. NVR Workstation:
			17. Is to operate with no performance degradation using the following recommended hardware and operating system configuration for rendering up to twenty-three 1080p HD cameras in real time 30 fps / 690 fps at 1080p HD with no time-lapse.
			18. Configuration assumes two-monitor setup.
			19. Required for remote clients only.
				1. A local client is available on the NVR SE unit for configuration and monitoring.
				2. The performance specifications below are recommended for systems with fixed or PTZ cameras only.
				3. Windows 10 workstations with Intel GPU and any additional graphics cards, at least one monitor should be connected to the motherboard monitor output.
				4. Processor: Intel Core i7-8700, 3.2 GHz or equivalent newer generation Intel Core Processors for client systems.
				5. Graphics Adapter: In-built Processor Graphics (GPU): Intel HD Graphics 530, 4600 or equivalent.
				6. System Memory (RAM): 16 GB.
				7. Optical Drive: DVD-RW.
				8. Hard Disk Drives: Single Disk or RAID 0 or 0+1 10K SATA 80GB or 10K to 15K SAS 73 GB.
				9. Network Interface Card (NIC): 1 Gbps.
				10. Human Interface: 102-key keyboard and a mouse pointing device.
				11. Operating System:
				12. Microsoft Windows 7 Professional 64-bit SP1.
				13. Windows 8.1 Professional 64-bit.
				14. Windows 10 Professional 64-bit.
			20. Electrical Requirements: NVR is to have the following electrical specifications:
			21. Input Voltage: 110-240 VAC 50/60 Hz.
			22. Power Dissipation:
				1. Average BTU Rating: 569 BTU per hour.
				2. Peak BTU Rating: 1370 BTU per hour.
			23. Environmental and Regulatory Requirements: The NVR is to function in the following environmental conditions:
			24. Operating Temperature: 40 to 104 degrees F (5 to 40 degrees C)
			25. Emissions: FCC part 15B Class B.
			26. Safety: ANSI / Nemko (UL 62368-1 2nd Edition; CAN / CSA C22.2 No. 62368-1-14 (R2019)).
			27. Warranty: Thirty six months from system delivery date under normal use and service.
			28. NOTE TO SPECIFIER: Delete if XE NVR is not required.
			29. MAXPRO NVR XE is provided as a single unit with preconfigured hardware and MAXPRO NVR software. MAXPRO NVR software is also available separately for purchase and installation on COTS hardware.
		3. MAXPRO NVR XE Server:
			1. Server is to operate with no performance degradation using the following minimum hardware and operating system configuration:
			2. Desktop unit with internal SATA hard drives.
			3. Processor: Intel Core i5-9500 up to 4.40Ghz, Intel HD Graphics 630.
			4. Memory: 8 GB.
			5. Power supply: Single 300 W.
			6. OS Drive: 250 GB M.2 SSD.
			7. Operating system: Windows 10 IOT, 64-bit.
			8. Database: Microsoft SQL Server Express 2019.
			9. Storage capacities: 4 TB, 8 TB, 12 TB, 16TB, or 20 TB.
			10. Video Storage Hard Disk Options: Internal fixed 2TB, 4 TB, 8 TB, 12 TB or 16 TB SATA Hard Disk Drive options.
			11. Optical drive: DVD-RW.
			12. Network interface: Two 1 Gigabit Ethernet included.
			13. Human Interface: 102-key keyboard and a mouse pointing device.
			14. Monitor Output: HDMI, Display Port, DVI-D, or VGA.
			15. NVR Workstation:
			16. Operate with no performance degradation using the following recommended hardware and operating system configuration for rendering up to twenty-three 1080p HD cameras in real time; 30 fps / 690 fps at 1080p HD with no time-lapse.
			17. Configuration assumes two-monitor setup.
			18. Required for remote clients only.
				1. A local client is available on the NVR XE unit for configuration and monitoring. The performance specifications below are recommended for systems with fixed or PTZ cameras only.

On Windows 10 workstations with Intel GPU and any additional graphics cards, at least one monitor should be connected to the motherboard monitor output.

Processor: Intel Core i7-8700, 3.2 GHz or equivalent newer generation Intel Core Processors for client systems.

Graphics Adapter: In-built Processor Graphics (GPU): Intel HD Graphics 530, 4600 or equivalent.

System Memory (RAM): 8 GB.

Optical Drive: DVD-RW.

Hard Disk Drives: Single Disk or RAID 0 or 0+1 10K SATA 80 GB or 10K to 15K SAS 73 GB.

Network Interface Card (NIC): 1 Gbps.

Human Interface: 102-key keyboard and a mouse pointing device.

Operating System: Microsoft Windows 7 Professional 64-bit SP1, Windows 8.1 Professional 64-bit, or Windows 10 Professional 64-bit.

* + - 1. Electrical Requirements: NVR is to have the following electrical specifications:
			2. Input Voltage: 115-230 VAC 50/60 Hz.
			3. Power Dissipation:
				1. Average BTU Rating: 320 BTU per hour.
				2. Peak BTU Rating: 1030 BTU per hour.
			4. Environmental and Regulatory Requirements: The NVR is to function in the following environmental conditions:
			5. Operating Temperature: 40 to 104 degrees F (5 to 40 degrees C)
			6. Emissions: FCC part 15B Class A; EN55022:2010.
			7. Safety: ANSI / Nemko (UL 62368-1 2nd Edition; CAN / CSA C22.2 No. 62368-1-14 (R2019)).
			8. Warranty: Thirty six months from system delivery date under normal use and service.
			9. NOTE TO SPECIFIER: Delete if 35 Series recorders are not required.
	1. SYSTEM DESCRIPTION - NVRS
		1. Series 35 Network Video Recorders: Honeywell, NDAA Compliant, Embedded Network Video Recorders in 4 Channel, 8 Channel, 16 and 32 Channel varieties featuring storage ranging from 0 TB to 40 TB. Secure, stream encryption via TLS 1.2, ONVIF S compliance, and H.265/H.264 Compression. C Suffix: MAXPRO Cloud Ready.
			1. Operational Requirements: User-friendly graphical user interface (GUI) to configure cameras, create recording schedules, perform video surveillance and recording operations, and view various reports.
			2. Configured to store and view images captured by 16 cameras.
			3. Record and monitor 16 IP channels with 1 to 30 fps per stream.
			4. Network bandwidth/throughput supported per NVR:
				1. HN350401xx/HN350802xx: 64 Mb.
				2. HN351602xx: 128 Mb.
				3. Support 4 channels at 1080p H.265/H.264 decoding.
				4. Live viewing of 16 channels simultaneously with synchronized real-time playback on the monitor.
				5. Investigation and video archive search tools from local or remote client.
				6. Manage motion detection-based recording, with pre-event and post-event recording based on IP camera-based motion detection events and "advanced" search on recordings from local or remote client.
				7. Preview and Calendar Search: For videos and events based on user-selected date and time from local or remote client.
				8. Simultaneous use of multiple video compressions including H.265, H.264.
				9. Internationalization: Languages Supported; English, Traditional Chinese, Japanese, German, Spanish, Italian, Polish, Portuguese, Russian, Slovakia, Arabic, Czech, Danish, Dutch, Finnish, French, Hebrew, Hungarian, Indonesian, Thai, Turkish, and Vietnamese.
				10. Email on alarm.
				11. Dynamic IP Camera Discovery: Automatically discover compatible cameras connected to the NVR.
				12. Multi-level user access rights for viewing and manages access to the recorder functions.
				13. Manage continuous, scheduled, manual, event-based, and alarm-based recording features.
				14. Support for web client and mobile apps.

Workstation (NVR Client): Operator optio

* + - * 1. Configuration: Operator (with Administrator privileges) can configure the NVR.
				2. Live update of configurations.
				3. Possible Configurations:

System Configuration: Options to configure system level settings.

Camera Configuration: Options to add /delete IP cameras and modify camera settings.

Schedules: Options to configure schedule-based recording for cameras connected to the NVR.

Sequences: Options to group a fixed number of cameras to view video.

* + - * 1. User Management (Users, Groups and Roles): Option to add/edit/delete users and/or groups.
				2. Configurations for Cameras Connected to the NVR:
				3. Camera Configuration: Users must be able to configure the following parameters for each camera connected to the NVR.

Camera Name.

IP Address.

Camera Type.

Continuous Recording: All cameras added are to be defaulted to "24/7" recording with the option to select other recording modes.

Event Based Recording: "None" by default, with the option to select motion-based recording.

User Name: Display and enable setting the user name for a camera.

Password: Enable setting password for a camera.

Camera Advanced Settings: Enable configuration of Resolution, Video Frame Rate, and Video Bit Rate.

* + - * 1. Supported Video Recording Options:

Schedule-Based Recording: Support ability to schedule recordings for each individual camera for times in the future.

User-Based Recording: User is to be able to configure user-activated settings for recording moments of interest while viewing live video from a camera.

After configuring the user activated settings, the operator can start recording video when needed.

The video is recorded for the time period specified in the System settings for user activated recording.

Event-Based Recording: Possible on Video Motion Detection and alarms triggered.

Viewer Minimum Capabilities:

* + - * 1. Main Video Viewing Screen: Show 1-, 4-, 8-, 9-, 16- split salvos of live or recorded video. Standard presets are customizable to user preferences.
				2. Configuring and running scan sequences.
				3. Setting IP camera resolution and frame rate
				4. Exporting user-selected image or video clips. A digital signature is attached to every exported clip.
				5. Play back exported video clips. Each video channel being recorded by the recording system is to be overlaid with text and a time stamp that is customizable by the user.
				6. Allow user to initiate recording through the GUI or a controller.
				7. Complete alarm management for alarms coming from the 35 Series NVR.
				8. Playback control includes play/pause, stop, rewind, fast play, slow play, frame-by-frame playback, full screen, and back up.
				9. Search Facility: Includes search for recorded video and events based on date and time.
			1. 35 Series PLUS NVR: Configured to store and view images captured by 32 cameras.
			2. Record and monitor 16 IP channels with 1 to 30 fps per stream.
			3. Network bandwidth/throughput supported per NVR:
				1. HN350802xxC: 80 Mb.
				2. HN35160xxxC: 160 Mb.
				3. HN353204xx/HN35320400N: 320 Mb.
				4. HN350802xxC: Support 8 channels at 1080p; H.265/H.264 decoding.
				5. HN35160xxxC/HN353204xx/HN35320400N: Support of 9 channels at 1080p; H.265/H.264 decoding.
				6. Live viewing of 32 channels or real-time playback of 16 channels.
				7. Investigation and video archive search tools from local or remote client.
				8. Manage motion detection-based recording, with pre-event and post-event recording based on IP camera-based motion detection events and "advanced" search on recordings from local or remote client.
				9. Preview and Calendar Search permitting search for videos and events based on user-selected date and time from local or remote client.
				10. Simultaneous use of multiple video compressions including H.265, H.264.
				11. Internationalization Languages Supported: English, Traditional Chinese, Japanese, German, Spanish, Italian, Polish, Portuguese, Russian, Slovakia, Arabic, Czech, Danish, Dutch, Finnish, French, Hebrew, Hungarian, Indonesian, Thai, Turkish, Vietnamese.
				12. Email on alarm.
				13. Dynamic IP Camera Discovery: automatically discover all compatible cameras connected to the NVR.
				14. Multi-level user access rights for viewing and manages access to recorder functions.
				15. Manage continuous, scheduled, manual, event-based, and alarm-based recording features.
				16. Support web client and mobile apps.
				17. Workstation (NVR Client) Operator Options:
				18. Configuration: The operator (with Administrator privileges) may configure the NVR. Live update of configurations is supported.
				19. Possible Configurations:

System Configuration: Options to configure the system level settings.

Camera Configuration: Options to add /delete IP cameras and modify the camera settings.

Schedules: Options to configure schedule-based recording for cameras connected to the NVR.

Sequences: Options to group a fixed number of cameras to view video.

* + - * 1. User Management (Users, Groups and Roles): Provide option to add/edit/delete users and/or groups.
				2. Configurations for Cameras Connected to the NVR:
				3. Camera Configuration: User to be able to configure the following parameters for each camera connected to the NVR.

Camera Name.

IP Address.

Camera Type.

Continuous Recording: Cameras added are defaulted to "24/7" recording with option to select other recording modes.

Event Based Recording: "None" by default, with option to select motion-based recording.

User Name: Display and enable setting user name for a camera.

Password: Enable setting password for a camera.

Camera Advanced Settings: Enable configuration of Resolution, Video Frame Rate, and Video Bit Rate.

* + - * 1. Supported Video Recording Options:

Schedule-Based Recording: Support ability to schedule recordings for each individual camera for times in the future.

User-Based Recording: User is to be able to configure user-activated settings for recording moments of interest while viewing live video from a camera.

After configuring the user activated settings, the operator can start recording video when needed.

The video is recorded for the time period specified in the System settings for user activated recording.

Event-Based Recording: Possible on Video Motion Detection and alarms triggered.

Viewer Minimum Capabilities:

* + - * 1. Main Video Viewing Screen: Show 1-, 4-, 8-, 9-, 16-, 32-, 64- split salvos of live or recorded video. Standard presets are customizable to user preferences.
				2. Configuring and running scan sequences.
				3. Capability to play back exported video clips. Each video channel that is being recorded by the recording system is to be overlaid with text and a time stamp that is customizable by the user.
				4. Allow user to initiate recording through the GUI or a controller.
				5. Complete alarm management for alarms coming from the 35 Series NVR.
				6. Playback control includes play/pause, stop, rewind, fast play, slow play, frame-by-frame playback, full screen, and back up.
				7. Search Facility: Includes search for recorded video and events based on date and time.
				8. Series Integrations: Compatible with the following interoperability standards:

Open Network Video Interface Forum (ONVIF).

Real Time Streaming Protocol (RTSP).

* + - * 1. Fully compatible with the 35 Series cameras.
				2. NOTE TO SPECIFIER: Some development may be required in specific user cases to support some of ONVIF protocols in the field as they mature over time.
			1. System Hardware: The 35 Series NVR has the following specifications:
			2. Processor: ARM processor.
			3. Internal HDD:
				1. Internal x1 (3.5 inch): HN350401xx / HN35040100N / HN35080100N.
				2. Internal x2 (3.5 inch): HN350802xx / HN351602xx / HN35160200N / HN35080200C / HN35080202C / HN35080204C / HN35080208C / HN35080210C / HN35080216C / HN35160200C / HN35160204C / HN35160208C / HN35160210C / HN35160216C / HN35160220C.
				3. Internal x4 (3.5 inch): HN35160400C / HN35160404C / HN35160408C / HN35160410C / HN35160416C / HN35160420C / HN35320400 / HN35320404 / HN35320408 / HN35320410 / HN35320416 / HN35320420 / HN35320400N.
				4. Operating System: Embedded LINUX
				5. Storage Capacities: 4 HDDs expandable up to 40 TB (10 TB per drive)
				6. Video Storage Hard Disk Options: Internal fixed up to 10 TB SATA Hard Disk Drive options.
				7. Inputs and Outputs:
				8. Alarm Input:

HN350401xx / HN35040100N / HN35080100N: 4.

HN350802xxC / HN35160xxxC / HN353204xx: 6.

HN350802xx / HN351602xx / HN35160200N: 8.

HN35320400N: 16.

* + - * 1. Alarm Out:

HN350401xx / HN350802xx / HN35040100N / HN35080100N / HN35160200N / HN351602xx / HN350802xxC / HN35160xxxC / HN353204xx: 2.

HN35320400N: 4.

Network Interface:

* + - * 1. HN350401xx: 10 / 100Mbps Ethernet (RJ-45) x 1.
				2. HN35040100N / HN35080100N: 10 / 100Mbps Ethernet (RJ-45) x 2.
				3. HN350802xx / HN351602xx: 10 / 100 / 1000Mbps Ethernet (RJ-45) x 1.
				4. HN350802xxC / HN35160xxxC / HN353204xx / HN35160200N / HN35320400N: 10 / 100 / 1000Mbps Ethernet (RJ-45) x 2.
				5. Monitor Output:
				6. HDMI x 1 (4K Max), VGA x1 (1080P): HN350401xx / HN350802xx / HN351602xx / HN350802xxC / HN351602xxC / HN35040100N / HN35080100N / HN35160200N.
				7. HDMI x 2 (only HDMI1 support 4k), VGA x1 (1080P): HN351604xxC / HN353204xx.
				8. Unit Dimensions:
				9. HN350401xx / HN35040100N / HN35080100N: (10.04 x 9.34 x 1.78 inch (255.0 x 237.3 x 45.3 mm).
				10. HN350802xx / HN350802xxC / HN351602xx / HN351602xxC / HN35160200N: 14.65 x 12.33 x 1.83 inch (372.0 x 313.3 x 46.5 mm)
				11. HN351604xxC / HN353204xx / HN35320400N: 17.32 x 14.81 x 2.76 inch (440.0 x 376.2 x 70.0 mm).
				12. Unit Weight; Without HDD:
				13. HN350401xx: 2.20 lbs (1 kg) without HDD.
				14. HN350802xx / HN35160200N: 5.84 lbs (2.65 kg) without HDD.
				15. HN35040100N / HN35080100N: 1.76 lbs (0.8 kg) without HDD.
				16. HN35320400N: 9.92 lbs (4.5 kg) without HDD.
				17. HN351602xx / HN351602xxC: 605 lbs (2.75 kg) without HDD.
				18. HN350802xxC: 4.63 lbs (2.1 kg) without HDD.
				19. HN351604xxC / HN353204xx: 10.25 lbs (4.65 kg) without HDD.
			1. Electrical Requirements: The 35 Series NVR has the following electrical specifications:
			2. Power Supply: 100-240V AC, 50 / 60 Hz.
			3. Power Consumption:
				1. HN350401xx:

Max. 65 W; 15W without HDD.

Total PoE power consumption Max. 45W, 30 W for a single port.

* + - * 1. HN350802xx / HN351602xx / HN350802xxC / HN351602xxC:

Max. 180 W; 15W without HDD.

Total PoE power consumption Max. 130 W, 30 W for a single port.

* + - * 1. HN351604xxC / HN353204xx:

Max. 300 W; 15W without HDD.

Total PoE power consumption Max. 140 W, 30 W for a single port.

* + - * 1. HN35040100N / HN35080100N:

Max. 18 W.

5W without HDD.

* + - * 1. HN35160200N:

Max. 24 W.

5W without HDD.

* + - * 1. HN35320400N:

Max. 200 W.

15W without HDD.

* + - 1. Environmental and Regulatory Requirements: The 35 Series NVR is to function in the following environmental conditions:
			2. Operating Temperatures: 14 to 131 degrees F (-10 to 55 degrees C).
			3. StorageTemperatures: -40 to 140 degrees F (-40 to 60 degrees C).
			4. Relative Humidity: Less than 90 percent RH.
			5. Emissions: FCC Part 15, CE (EN 55032, EN 61000-3-2, EN 61000-3-3, EN 61000-6-4), ICES-003, Comply with UKCA and RCM.
			6. Immunity: CE(EN 50130-4, EN 55024, EN 55035) Comply with UKCA and RCM.
			7. Safety: UL LISTED TO UL/CSA 62368-1, CE(EN 62368-1), Comply with UKCA and RCM.
			8. RoHS: CE(EN 63000), UAE(Cabinet Decree No.10 of 2017).
			9. Warranty: Five years from the manufactured date code under normal use and service.
			10. NOTE TO SPECIFIER: Delete if 70 Series cameras are not required.
	1. SYSTEMS DESCRIPTION - CAMERAS
		1. 70 AI Series Cameras: Advanced artificial intelligence and smart video analytics capabilities, enables object categorization to improve situational awareness while reducing nuisance alarms.
			1. Exceptional cybersecurity, license plate recognition, facial recognition; bullet and dome models, and excellent image quality even in low light. For Enterprise and Mission-Critical applications.
			2. Camera Type: 8MP Outdoor Dome.
			3. Camera Type: 8MP Outdoor Bullet.
			4. Camera Type: 5MP In-Ceiling PTZ
			5. Operational Requirements: 8MP Network TDN WDR IR Outdoor Dome / Bullet Camera systems must meet or exceed the following camera specifications:
			6. Image Sensor: 1/1.8 inches.
			7. Total Pixels: 3840 x 2160 (8 MP).
			8. Minimum Illumination:
				1. HC70W48R2: Color: 0.04 Lux at F1.5, B/W: 0Lux at F1.5 (IR on)
				2. HC70WB8R2: Color: 0.04 Lux at F1.5, B/W: 0Lux at F1.5 (IR on)
				3. WDR Range: dB.
				4. Backlight Compensation: HLC/WDR.
				5. Day/Night: Auto/Day/Night/Synchronize with digital input/Schedule.
				6. Gain Control: 0-100 percent.
				7. Noise Reduction: 3D DNR.
				8. Privacy Masking: Off / On (8 Areas).
				9. Electronic Shutter Speed:
				10. Manual: 1/2 to 1/10,000 seconds.
				11. Shutter-Priority: 1/120 to 1 / 10,000 seconds.
				12. Video Standard: NTSC / PAL.
				13. White Balance: Auto/Fixed Current/Manual.
				14. Signal-to-Noise Ratio: Greater than dB.
				15. Lens:
				16. HC70W48R2: Remote Focus, 3.6 to 11 mm, MFZ, P-IRIS, F1.5 to F2.8.
				17. HC70WB8R2: Remote Focus, 3.6 to 11 mm, MFZ, P-IRIS, F1.5 to F2.8.
				18. Angle of View:
				19. HC70W48R2: H: 105 to 49 degrees, V: 58 to 28 degrees.
				20. HC70WB8R2: H: 108 to 50 degrees, V: 60 to 28 degrees.
				21. Communication: ONVIF Profile S/G/T support.
			9. Operational Requirements: 5MP Network TDN WDR Outdoor Speed Dome Camera system is to meet or exceed the following camera specifications:
			10. Image Sensor: IMX335, 1/2.8 inch CMOS.
				1. Total Pixels: 2,5 x 1,944 (5 MP).
				2. Minimum Illumination: HC70WZ5I30: Color: 0.04 Lux at F1.4; B/W: 0 Lux at F1.4 (IR on).
				3. WDR Range: 30 dB.
				4. Backlight Compensation: WDR/BLC/HLC.
				5. Day/Night: Auto (ICR) / Color / BW.
				6. Noise Reduction: 3D DNR.
				7. Privacy Masking: Off / On (24 Areas).
				8. Electronic Shutter Speed: 1/1 to 1/32000.
				9. Video Standard: NTSC/PAL.
				10. White Balance: Auto/Fixed Current/Manual.
				11. Signal-to-Noise Ratio: Greater than dB.
				12. Lens: HC70WZ5I30: 30x Optical Zoom, Auto Focus, 5.2 to 148.4 mm, DC-IRIS, F1.3 to F4.8.
				13. Angle of View (H x: HC70WZ5I30: H: 55 to 2.64 degrees. V: 42 to 1.98 degrees.
				14. Communication: ONVIF Profile S/G/T support.
			11. Mechanical Requirements:
			12. 8MP Network TDN WDR IR Outdoor Camera system shall have the following mechanical specifications:
				1. Dome Camera:

Unit Dimensions: HC70WZ5I30: 5.8 x 5.8 x 4.9 inches (222.0 x 267.5 x 124.07 mm).

Dome Diameter: 5.8 inches (147.89 mm).

Product Weight: 2.38 lbs (1.08 kg).

Body Material: Metal (die casting aluminum with power coating).

* + - * 1. Bullet Camera:

Unit Dimensions: 4.1 x 4.1 x 10.5 inches (105 x 105 x 267.4 mm).

Product Weight: 1.75 kg (3.86 lbs).

Body Material: Metal (die casting aluminum with power coating).

5MP Network TDN WDR Outdoor Speed Dome Camera system shall meet or exceed the following camera specifications:

* + - * 1. Unit Dimension HC70WZ5I30: 8.74 x 10.53 inches (222 x 267.5 mm).
				2. Dome Diameter: 6.0 inches (151.3 mm).
				3. Product Weight: 8.38 lbs (3.8 kg)
				4. Body Material: Polycarbonate/Metal (die casting aluminum with powder coating).
			1. Electrical Requirements:
			2. 8MP Network TDN WDR IR Outdoor Camera system shall have the following electrical specifications:
				1. Power Supply: 24VAC (50/60Hz), Heat On: PoE (IEEE 802.3af, Class 3).
				2. Outdoor Dome Camera Power Consumption: 13.5 W.
				3. Bullet Camera Power Consumption: 25 W.
				4. 5MP Network TDN WDR Outdoor Speed Dome Camera, HC70WZ5I30, shall have the following electrical specifications:
				5. Power Supply: 48 VDC / 24 VAC (50/60Hz), POE+.
				6. Power Consumption: 25 W.
			3. Environmental and Regulatory Requirements:
			4. 8MP Network TDN WDR IR Outdoor Dome/Bullet Camera system shall be designed to meet the following environmental conditions and regulatory:
				1. Operating Temperature:

Starting: -40 to 140 degrees F (-40 to 60 degrees C) (802.3at PoE class4).

Working: -40 to 140 degrees F (-40 to 60 degrees C) (802.3at PoE class4)

* + - * 1. Relative Humidity: Less than 90 percent, non-condensing.
				2. Emissions: FCC PART 15, CE (EN 55032).
				3. Immunity: CE (EN 50130-4).
				4. Safety: UL LISTED TO UL/CSA 62368-1, CE (EN 62368-1), UL/CSA 60950-22, CE (EN 60950-22).
				5. RoHS: CE (EN 50581), EAC (TR EAEU 037/2016), UAE (Cabinet Decree No.10 of 2017).
				6. 5MP Network TDN WDR Outdoor Speed Dome Camera system shall be designed to meet the following environmental conditions and regulatory:
				7. Operating Temperature: HC70WZ5I30: 14 to 122 degrees F (-10 to 50 degrees C)
				8. Relative Humidity: 10 to 90 percent.
				9. Emissions: CE (EN 55032, EN 61000-3-2, EN 61000-3-3, EN 61000-6-4), FCC PART 15B, IECS-003, Comply with RCM and UKCA
				10. Immunity: CE (EN 50130-4, EN 55035), Comply with RCM and UKCA.
				11. Safety: UL LISTED TO UL/CSA 62368-1, CE (EN 62368-1, EN 60950-22), Comply with RCM and UKCA.
				12. RoHS: CE (EN ICE 63000), UAE (Cabinet Decree No.10 of 2017).
			1. Warranty: Five years from manufactured date code under normal use and service for the video surveillance system.
			2. NOTE TO SPECIFIER: Delete if 60 Series cameras are not required.
		1. 60 Series IP cameras suited for a wide range of indoor or outdoor applications.
			1. 4MP or 5MP dome or bullet cameras or 2MP or 5MP speed dome (PTZ) models.
			2. Exceptional picture clarity, advanced video analytics built-in, secure data transmission and easy installation.
			3. Excellent fit for Enterprise Critical Infrastructure applications.
			4. Operational Requirements:
			5. 4MP Network TDN WDR IR Camera system meets or exceeds the following specifications:
				1. Image Sensor: 1/2.8 inch CMOS.
				2. Total Pixels: 2560 x 1440 (4 MP).
				3. Minimum Illumination: 0.04 Lux at F1.4, B/W: 0Lux at F1.4(IR on).
				4. WDR Range: 120 dB.
				5. Backlight Compensation: HLC/WDR.
				6. Day/Night: Auto/Day/Night/Synchronize with digital input/Schedule.
				7. Gain Control: 0 to 100 percent.
				8. Noise Reduction: 3D DNR.
				9. Privacy Masking: Off / On (5 Areas).
				10. Electronic Shutter Speed: 1/30 to 1/32000.
				11. Video Standard: NTSC/PAL.
				12. White Balance: Auto/Fixed Current/Manual.
				13. Signal-to-Noise Ratio: 60 dB.
				14. Lens: 2.7 to 13.5 mm, MFZ, P-IRIS, F1.4 to F2.8.
				15. Angle of View: H: 100 to 30 degrees. V: 53 to 17 degrees.
				16. Communication: ONVIF Profile S/G support.
				17. 5MP Network TDN WDR IR Camera system meets or exceeds the following specifications:
				18. Image Sensor: 1/2.8 inches CMOS.
				19. Total Pixels: 2560 x 1920 (5 MP).
				20. Minimum Illumination HC60Wx5R2:

Color: 0.04 Lux at F1.4. B/W: 0Lux at F1.4(IR on).

* + - * 1. Minimum Illumination HC60Wx5R4:

Color: 0.04 Lux at F1.6, B/W: 0Lux at F1.6(IR on).

* + - * 1. WDR Range: 120 dB.
				2. Backlight Compensation: HLC/WDR.
				3. Day/Night: Auto/Day/Night/Schedule.
				4. Gain Control: 0 to 100 percent.
				5. Noise Reduction: 3D DNR.
				6. Privacy Masking: Off / On (5 Areas).
				7. Electronic Shutter Speed: 1/32000 to 1/30.
				8. Video Standard: NTSC/PAL.
				9. White Balance: Auto/Fixed Current/Manual.
				10. Signal-to-Noise Ratio: 60 dB.
				11. Lens: HC60Wx5R2: 2.7 to 13.5 mm, MFZ, P-IRIS, F1.4 to F2.8.
				12. Lens: HC60Wx5R4: 7 to 22 mm, MFZ, P-IRIS, F 1.6 to F2.9.
				13. Lens: HC60WB5R5: Remote Focus, 5 to 50 mm, MFZ, DC-IRIS, F1.9 to F2.1.
				14. Angle of View HC60Wx5R2: H: 100 to30 degrees. V: 72 to 23 degrees.
				15. Angle of View HC60Wx5R4: H: 39 to 16 degrees. V: 29 to 12 degrees.
				16. Angle of View HC60WB5R5: H: 45 to 7 degrees. V: 33 to 5 degrees.
				17. Communication: ONVIF Profile S/G support.
				18. MP/5MP Network TDN WDR Outdoor Speed Dome Camera system meets or exceeds the following specifications:
				19. Image Sensor: 1/2.8 inch CMOS.
				20. Total Pixels HC60WZ2R40: 1920 x 1080 px.
				21. Total Pixels HC60WZ5R30: 2560 x 1920 px.
				22. Minimum Illumination HC60WZ2R40:

Color: 0.07 lux at F1.6 1/30 sec. BW: 0 lux at F1.6 (IR on).

* + - * 1. Minimum Illumination HC60WZ5R30:

Color: 0.04 lux at F1.4 1/30 sec. BW: 0 lux at F1.4 (IR on).

* + - * 1. WDR range: 120 dB.
				2. Backlight Compensation: WDR, BLC, HLC.
				3. Day/Night: Auto/Day/Night/Synchronize with digital input/Schedule.
				4. Gain Control: 0 to 100 percent.
				5. Noise Reduction: 3D DNR.
				6. Privacy Masking: Off / On (24 Areas).
				7. Electronic Shutter Speed: 1/1 to 1/100000
				8. Video Standard: NTSC/PAL
				9. White Balance: Auto/Fixed Current/Manual.
				10. Signal-to-Noise Ratio: Greater than 50 dB.
				11. Lens HC60WZ2R40: 40x Optical Zoom, Auto Focus, 4.25 to 170 mm, DC-IRIS, F1.6 to F4.95.
				12. Lens HC60WZ5R30: 30x Optical Zoom, Auto Focus, 4.94 to 148.24 mm, DC-IRIS, F1.3 to F4.8.
				13. Angle of View HC60WZ2R40:

H: 65.7 to 1.88 degrees. V: 39.4 to 1.09 degrees

* + - * 1. Angle of View HC60WZ5R30: H: 54 to 2 degrees, V:42 to 1.5 degrees.
				2. Communication: ONVIF Profile S/G support.
				3. RS485 interface: Pelco D protocol.
			1. Mechanical Requirements:
				1. /5MP Network Indoor Dome Camera system meets the following mechanical specifications:
				2. Unit Dimensions: 4.96 x 4.96 x 4.8 inches (126 x 126 x 122 mm).
				3. Dome Diameter: 3.58 inches (91 mm).
				4. Product Weight: 3.86 lbs (1.75 kg).
				5. Material: Metal; die casting aluminum with liquid painting.
				6. /5MP Network Outdoor Dome Camera system meets the following mechanical specifications:
				7. Unit Dimensions: 6.26 x 6.26 x 4.66 inches (159 x 159 x 118.3 mm).
				8. Product Weight: 2.49 lbs (1.13 kg)
				9. Package Weight: 4.03 lbs (1.83 kg)
				10. Material: Metal; die cast aluminum with power coating.
				11. Color: RAL 120-1, Lyric White.
				12. /5MP Network Outdoor Bullet Camera system meets the following mechanical specifications:
				13. Unit Dimensions: 4.12 x 4.12 x 10.93 inches (104.6 x 104.6 x 277.5 mm).
				14. Product Weight: 3.86 lbs (1.75 kg).
				15. Package Weight: 3.92 lbs (1.78 kg).
				16. Material: Metal; die cast aluminum with power coating.
				17. Color: RAL 120-1, Lyric White.
				18. MP/5MP Network TDN WDR Outdoor Speed Dome Camera system meets the following mechanical specifications:
				19. Unit Dimensions(Dia x L): 9.6 x 17.9 inches (243.92 x 455.28 mm)
				20. Product Weight: 15.32 lbs (6.95 kg).
				21. Package Weight:19.29 lbs (8.75 kg).
				22. Body Material: Aluminum and plastic.
			2. Electrical Requirements:
			3. 4MP Network Camera system meets the following electrical specifications:
				1. Input Voltage: 12 VDC / 24 VAC (50/60Hz), PoE (IEEE 802.3af, Class 0).
				2. Power Consumption: 12.95 W.
				3. 5MP Network TDN WDR IR Camera system meets the following electrical specifications:
				4. Power Supply: 12 VDC / 24 VAC (50/60Hz).

Heat On: PoE (IEEE 802.3at, Class 4).

Heat Off: PoE (IEEE 802.3at, Class 3).

* + - * 1. Power Consumption: 25.5 W.
				2. MP/5MP Network TDN WDR Outdoor Speed Dome Camera system meets the following electrical specifications:
				3. Input Voltage: 24 VAC, 3 A, 50-60 Hz.
				4. Input Voltage: PoE 42.5-57 V.
				5. Power Consumption: MAX 51 W.
			1. Environmental and Regulatory Requirements:
				1. /5MP Network WDR IR Indoor Dome Camera system meet the following environmental conditions and regulatory:
				2. Starting Temperature (IR Off): 32 to 140 degrees F (0 to 60 degrees C).
				3. Working Temperature (IR Off): -10 to 60 degrees C (14 to 140 degrees F).
				4. Relative Humidity: Less than 90 percent, non-condensing.
				5. Ingress Protection: IP52.
				6. Impact Resistance: IK10 (bubble only).
				7. Emissions: FCC Part 15, CE (EN 55032).
				8. Immunity: EN 50130-4.
				9. Safety: UL Listed to UL/CSA 62368-1, CE (EN 62368-1).
				10. RoHS: CE (EN 50581), EAC (TR EAEU 037/2016), UAE (Cabinet Decree No.10 of 2017).
				11. 4MP Network WDR IR Outdoor Dome and Bullet Camera systems meet the following environmental conditions and regulatory:
				12. Starting Temperature (IR Off): 14 to 140 degrees F (-10 to 60 degrees C).
				13. Working Temperature (IR Off): -22 to 140 degrees F (-30 to 60 degrees C).
				14. Relative Humidity: Less than 90 percent, non-condensing.
				15. Ingress Protection: IP66/IP67.
				16. Impact Resistance: IK10.
				17. Emissions: FCC Part 15, CE (EN 55032).
				18. Immunity: EN 50130-4.
				19. Safety: UL Listed to UL/CSA 62368-1, CE (EN 62368-1), UL/CSA 60950-22, CE (EN 60950-22).
				20. RoHS: CE (EN 50581), EAC (TR EAEU 037/2016), UAE (Cabinet Decree No.10 of 2017).
				21. MP Network TDN WDR IR Outdoor Dome Camera system s meet the following environmental conditions and regulatory:
				22. Starting Temperature: -40 to 140 degrees F (-40 to 60 degrees C).
				23. Working Temperature: -22 to 140 degrees F (-30 to 60 degrees C) (802.3 at PoE class4).
				24. Relative Humidity: Less than 90 percent, non-condensing.
				25. Ingress Protection: IP66/IP67.
				26. Impact Resistance: IK10.
				27. Emissions: FCC Part 15, CE (EN 55032).
				28. Immunity: EN 50130-4.
				29. Safety: UL Listed to UL / CSA 62368-1, CE (EN 62368-1), UL/CSA 60950-22, CE (EN 60950-22).
				30. RoHS: CE (EN 50581), EAC (TR EAEU 037/2016), UAE (Cabinet Decree No.10 of 2017).
				31. 5MP Network TDN WDR IR Outdoor Bullet Camera system meet the following environmental conditions and regulatory:
				32. Starting Temperature: -40 to 140 degrees F (-40 to 60 degrees C) (802.3at PoE class4).
				33. Working Temperature: -40 to 140 degrees F (-40 to 60 degrees C) (802.3 at PoE class4).
				34. Relative Humidity: Less than 90 percent, non-condensing.
				35. Emissions: FCC Part 15, CE (EN 55032).
				36. Immunity: EN 50130-4.
				37. Safety: UL Listed to UL / CSA 62368-1, CE (EN 62368-1), UL/CSA 60950-22, CE (EN 60950-22).
				38. RoHS: CE (EN 50581), EAC (TR EAEU 037/2016), UAE (Cabinet Decree No.10 of 2017).
				39. MP/5MP Network TDN WDR Outdoor Speed Dome Camera system meet the following environmental conditions and regulatory:
				40. Starting Temperature: -40 to 140 degrees F (-40 to 60 degrees C).
				41. Working Temperature: -40 to 140 degrees F (-40 to 60 degrees C) (IR OFF).
				42. Emissions: FCC Part 15, CE (EN 55032).
				43. Immunity: EN 50130-4.
				44. Safety: UL Listed to UL/CSA 62368-1, CE (EN 62368-1), UL/CSA 60950-22, CE (EN 60950-22).
				45. RoHS: CE (EN 50581), UAE (Cabinet Decree No.10 of 2017).
			2. Warranty: Five years from the manufactured date code under normal use and service for the video surveillance system.
			3. NOTE TO SPECIFIER: Delete if 35 Series cameras are not required.
		1. Honeywell, NDAA Compliant, IP Cameras from 1080P up to 4K resolutions across 5 form factors including: PTZ, Micro Dome, Rugged Dome, Ball, and Bullet.
			1. Camera Features:
				1. Fixed Lens: mm. Dome, Ball, and Bullet cameras.
				2. MFZ Lens: to 12 mm.
				3. PTZ Lens: to 125 mm / 5 to 159 mm.
				4. ONVIF S, G, T compliance, stream encryption.

\*\* NOTE TO SPECIFIER \*\* the following applies to PTZ, 5 MP and 8 MP models.

* + - * 1. Built-in AI-based video analytics.
			1. Operational Requirements:
				1. MP/5MP TDN WDR IR PTZ Camera system meets or exceeds the following camera specifications:
				2. Image Sensor: 1/2.8 inches CMOS.
				3. Total Pixels HC35WZ2R25: 1920 x 1080.
				4. Total Pixels HC35WZ5R30: 2592 x 1944.
				5. Minimum Illumination:

Color: 0.005 lux at F1.6 1/30 sec.

BW: 0 lux at F1.6 (IR on).

* + - * 1. WDR range: 120 dB.
				2. IR Distance: Up to 150 m.
				3. Backlight Compensation: WDR, BLC, and HLC.
				4. Day/Night: Auto, Day. And Night Timing.
				5. Gain Control: 0 to 100 percent.
				6. Noise Reduction: 2D and 3D DNR.
				7. Privacy Masking: Off / On (5 Areas).
				8. Electronic Shutter Speed: 1/1 to 1/30000 seconds.
				9. Video Standard: NTSC and PAL.
				10. White Balance: Auto, Tungsten, Daylight, Manual.
				11. Signal-to-Noise Ratio: Greater than 50 dB.
				12. Lens: HC35WZ2R25: 25x Optical Zoom, 16x Digital Zoom, Auto Focus, 5-125 mm, P iris, F1.6-F3.67.
				13. Lens: HC35WZ5R30: 30x Optical Zoom, 16x Digital Zoom, Auto Focus, 5.3-159 m, P iris, F1.6-F4.3.
				14. Angle of View: HC35WZ2R25.

H: 57.02 to 3.36 degrees. V: 33.14 to 1.91 degrees.

* + - * 1. Angle of View: HC35WZ5R30.

H: 56.62 to 2.48 degrees. V: 42.76 to 1.91 degrees.

* + - * 1. Communication: ONVIF Profile S/G/T support.
				2. WDR 5 MP IR Micro Dome Camera system meets or exceeds the following camera specifications:
				3. Image Sensor: 1/2.8 inches 5 Megapixel progressive scan CMOS.
				4. Total Pixels: 2592x1944 (5 MP),
				5. Minimum Illumination:

0.007 Lux/F2.0 (Color, 30 IRE).

IR On: 0 Lux/F2.0.

* + - * 1. WDR, ensuring glare-free images. WDR range: 120 dB.
				2. IR Distance: Up to 30 m.
				3. Backlight Compensation: WDR, BLC, HLC, Defog.
				4. Day/Night: Auto (ICR) / Color / BW.
				5. Gain Control: 0 to 100 percent.
				6. Noise Reduction: 2D/3D DNR.
				7. Privacy Masking: Off / On (4 Areas).
				8. Electronic Shutter Speed: 1/8 to 1/32,000.
				9. Video Standard: NTSC/PAL.
				10. Audio Interface: HC35W25R3:

One built-in microphone One audio line in. One audio line out.

* + - * 1. Audio Compression: G711A / G711U.
				2. White Balance: Auto/Tungsten/ Fluorescent/ Daylight/Shadow/Manual.
				3. Signal-to-Noise Ratio: More than 50 dB.
				4. Lens: 2.8 mm, F2.0, fixed lens.
				5. Angle of View: H: 88 degrees, V: 65 degrees.
				6. Communication: ONVIF Profile S/G/T support.
				7. WDR 3/5/8 MP IR MFZ Camera system meets or exceeds the following camera specifications:
				8. Image Sensor:

HC35Wx3R2: 1/2.7 inch 5 Megapixel progressive scan CMOS; Limited to 3M for use.

HC35Wx5R2: 1/2.8 inch 5 Megapixel progressive scan CMOS.

HC35Wx8R2: 1/2.8 inch 8 Megapixel progressive scan CMOS.

* + - * 1. Total Pixels:

HC35Wx3R2: 2304x1296; 3 MP.

HC35Wx5R2: 2592x1944; 5 MP.

HC35Wx8R2: 3840x2160; 8 MP.

* + - * 1. Minimum Illumination:

HC35Wx3R2: 0.005 Lux/F1.6 (Color,30IRE), 0 Lux/F1.6 (IR ON).

HC35Wx5R2: 0.005 Lux/F1.6 (Color,30IRE), 0 Lux/F1.6 (IR ON).

HC35Wx8R2: 0.007 Lux/F1.6 (Color,30IRE), 0 Lux/F1.6 (IR ON).

* + - * 1. WDR, ensuring glare-free images. WDR Range: 120dB.
				2. IR Distance:

HC35W4xR2: up to 50 m.

HC35WExR2: up to 50 m.

HC35WBxR2: up to 60 m.

\*\* NOTE TO SPECIFIER \*\* HC35W43R2 doesn't support defog.

* + - * 1. Backlight Compensation: WDR, BLC, HLC, Defog.
				2. Day/Night: Auto (ICR) / Color / BW.
				3. Gain Control: 0 to 100 percent.
				4. Noise Reduction: 2D/3D DNR.
				5. Privacy Masking: Off / On (4 Areas).
				6. Electronic Shutter Speed: 1/8 to 1/32,000.
				7. Video Standard: NTSC/PAL.
				8. Audio Interface: HC35Wx3R2: not supported.
				9. Audio Interface: HC35Wx5R2/HC35Wx8R2: 1 line in, 1 line out.
				10. Audio Compression: G711A/G711U (HC35W43R2 not supported).
				11. White Balance: Auto/Tungsten/ Fluorescent/ Daylight/Shadow/Manual.
				12. Signal-to-Noise Ratio: More than 50 dB.
				13. Lens: 2.7 to 13.5mm, DC-Iris, F1.6-F3.3, MFZ Lens.
				14. Angle of View: HC35W43R2: H: 88 to 24 degrees V: 48 to 14 degrees.
				15. Angle of View: HC35W45R2: H: 96 to 26 degrees. V: 69-20 degrees.
				16. Angle of View: HC35W48R2: H: 105 to -32 degrees. V: 55-18 degrees.
				17. Angle of View: HC35WE3R2: H: 81 to 24 degrees. V: 44-14 degrees.
				18. Angle of View: HC35WE5R2: H: 87 to 25 degrees. V: 63-19 degrees.
				19. Angle of View: HC35WE8R2: H: 98 to 31 degrees. V: 51-17 degrees.
				20. Angle of View: HC35WB3R2: H: 81 to 24 degrees. V: 44-14 degrees.
				21. Angle of View: HC35WB5R2: H: 88 to 26 degrees. V: 65-20 degrees.
				22. Angle of View: HC35WB8R2: H: 98 to 31 degrees. V: 51-17 degrees.
				23. Communication: ONVIF Profile S/G/T support.
				24. WDR 3/5/8 MP IR Fixed Camera system shall meets or exceeds the following camera specifications:
				25. Image Sensor:

HC35WB3R3: 1/2.7 inch 5 Megapixel progressive scan CMOS (Limited to 3M for use).

HC35WB5R3: 1/2.8 inch 5 Megapixel progressive scan CMOS.

HC35WB8R3: 1/2.8 inch 8 Megapixel progressive scan CMOS.

* + - * 1. Total Pixels:

HC35WB3R3: 2304x1296 (3 MP).

HC35WB5R3: 2592x1944 (5 MP).

HC35WB8R3: 3840x2160 (8 MP).

* + - * 1. Minimum Illumination:

HC35WB3R3: 0.005 Lux/F1.6 (Color,30IRE), 0 Lux/F1.6 (IR ON).

HC35WB5R3: 0.007 Lux/F2.0 (Color,30IRE), 0 Lux/F2.0 (IR ON).

HC35WB8R3: 0.009 Lux/F2.0 (Color,30IRE), 0 Lux/F2.0 (IR ON).

* + - * 1. WDR, ensuring glare-free images. WDR Range: 120 dB.
				2. IR Distance:

HC35WExR3: Up to 40 m.

HC35WB3R3/HC35WB8R3: Up to 40 m.

HC35WB5R3: Up to 50 m.

\*\* NOTE TO SPECIFIER \*\* HC35Wx3R3 doesn't support defog.

* + - * 1. Backlight Compensation: WDR, BLC, HLC, Defog.
				2. Day/Night: Auto (ICR) / Color / BW.
				3. Gain Control: 0 to 100 percent.
				4. Noise Reduction: 2D/3D DNR.
				5. Privacy Masking: Off / On (4 Areas).
				6. Electronic Shutter Speed: 1/8 to 1/32,000.
				7. Video Standard: NTSC/PAL.
				8. HC35Wx3R3: not supported.
				9. Audio Interface: HC35Wx5R3/ HC35Wx8R3: 1 line in, 1 line out.
				10. Audio Compression: G711A/G711U (HC35WB3R3 not supported).
				11. White Balance: Auto/Tungsten/ Fluorescent/ Daylight/Shadow/Manual.
				12. Signal-to-Noise Ratio: More than 50 dB.
				13. Lens: 2.8mm Fixed Iris F1.6, Fixed Lens.
				14. Angle of View HC35WB3R3: H:88 degrees. V:47 degrees.
				15. Angle of View HC35WB5R3: H:88 degrees. V:65 degrees.
				16. Angle of View HC35WB8R3: H:97 degrees. V:52 degrees.
				17. Communication: ONVIF Profile S/G/T support.
			1. Mechanical Requirements:
			2. 2MP/5MP TDN WDR IR PTZ Dome Camera system meets the following mechanical specifications:
				1. Unit Dimensions (Dia x H): 6.82 x 11.52 inches (173.2 x 292.6 mm).
				2. Product Weight: Approx. 7.71 lbs (3.5 kg).
				3. Material: Die-cast aluminum housing.
				4. WDR 5 MP IR Micro Dome Camera system meets the following mechanical specifications:
				5. Unit Dimensions: 4.13 x 4.13 x 2.49 inches (104.9 x 104.9 x 63.3 mm).
				6. Dome Diameter: 2.22 inches (56.4 mm).
				7. Product Weight: Approx. 1.21 lbs (0.55 kg).
				8. Material: Die-cast aluminum housing.
				9. WDR 3/5/8 MP IR MFZ Dome Camera system meets the following mechanical specifications:
				10. Unit Dimensions (Dia x H): 5.12 x 4.42 inches (130.0 x 112.3 mm).
				11. Dome Diameter: 3.78 inches (96.0 mm).
				12. Product Weight: Approx. 1.90 lbs (0.86 kg).
				13. Material: Die-cast aluminum housing.
				14. WDR 3/5/8 MP IR Fixed Dome Camera system meets the following mechanical specifications:
				15. Unit Dimensions (Dia x H): 4.33 x 3.37 inches (110.0 x 85.6 mm).

Dome Diameter: 3.08 inches (78.2 mm).

* + - * 1. Product Weight: Approx. 1.23 lbs (0.56 kg).
				2. Material: Die-cast aluminum housing.
				3. WDR 3/5/8 MP IR MFZ Bullet Camera system meets the following mechanical specifications:
				4. Unit Dimensions (Dia x H): 3.43 x 9.13 inches (87.0 x 232.0 mm).
				5. Product Weight: Approx. 2.03 lbs (0.92 kg).
				6. Material: Die-cast aluminum housing.
				7. WDR 3/5/8 MP IR Fixed Bullet Camera system meets the following mechanical specifications:
				8. Unit Dimensions (Dia x H): 3.43 x 7.77 inches (87.0 x 197.3 mm).
				9. Product Weight: Approx. 1.54 lbs (0.7 kg).
				10. Material: Die-cast aluminum housing.
				11. WDR 3/5/8 MP IR MFZ Ball Camera system meets the following mechanical specifications:
				12. Unit Dimensions (Dia x H): 4.96 x 4.49 inches (126.1 x 114.0 mm).
				13. Product Weight: Approx. 2.16 lbs (0.98 kg).
				14. Material: Die-cast aluminum housing.
				15. WDR 3/5/8 MP IR Fixed Ball Camera system meets the following mechanical specifications:
				16. Unit Dimensions (Dia x H) 4.33 x 3.72 inches (110.0 x 94.4 mm).
				17. Product Weight: Approx. 1.32 lbs (0.6 kg).
				18. Material: Die-cast aluminum housing.
			1. Electrical Requirements:
			2. 2MP/5MP TDN WDR IR PTZ Dome Camera system meets the following electrical specifications:
				1. Input Voltage: 24 VAC, 3 A, 50-60 Hz.
				2. Input Voltage: PoE+(IEEE 802.3at, Class4) 50-57 V.
				3. Power Consumption: MAX 24 W.
				4. WDR 5 MP IR Micro Dome Camera system meets the following electrical specifications:
				5. Input Voltage HC35W25R3: 12 VDC 1A, PoE (IEEE 802.3af) (Class 0).
				6. Power Consumption: MAX 4.2 W.
				7. WDR 3/5/8 MP IR MFZ and Fixed Camera system meets the following electrical specifications:
				8. Input Voltage: 12 VDC 1 A, PoE (IEEE 802.3af) (Class 0).
				9. Power Consumption: HC35WB3R2: MAX 5.5 W.
				10. Power Consumption: HC35WB5R2: MAX 6 W.
				11. Power Consumption: HC35WB8R2: MAX 7.3 W.
				12. Power Consumption: HC35W43R3: MAX 3.6 W.
				13. Power Consumption: HC35W45R3: MAX 4.08 W.
				14. Power Consumption: HC35W48R3: MAX 5.5 W.
				15. Power Consumption: HC35W43R2: MAX 5.5 W.
				16. Power Consumption: HC35W45R2: MAX 6 W.
				17. Power Consumption: HC35W48R2: MAX 6.7 W.
				18. Power Consumption: HC35WE3R2: MAX 5.5 W.
				19. Power Consumption: HC35WE5R2: MAX 6.11 W.
				20. Power Consumption: HC35WE8R2: MAX 6.7 W.
				21. Power Consumption: HC35WE3R3: MAX 5.5 W.
				22. Power Consumption: HC35WE5R3: MAX 5.13 W.
				23. Power Consumption: HC35WE8R3: MAX 6.4 W.
			3. Environmental and Regulatory Requirements:
			4. 2MP/5MP TDN WDR IR PTZ Dome Camera system meets the following environmental conditions and regulatory specifications:
				1. Starting Temperature: -40 to 140 degrees F (-40 to 60 degrees C).
				2. Working Temperature: -40 to 158 degrees F (-40 to 70 degrees C) (IR OFF).
				3. Relative Humidity: Less than 90 percent, non-condensing.
				4. Emissions: FCC PART 15, CE (EN 55032).
				5. Immunity: CE (EN 50130-4), Complies with RCM and UKCA.
				6. Safety: UL LISTED TO UL/CSA 62368-1, CE (EN 62368-1), CE (EN 60950-22), Complies with RCM and UKCA.
				7. RoHS: CE (EN 63000), UAE (Cabinet Decree No.10 of 2017).
				8. WDR 5 MP IR Micro Dome Camera system meets the following environmental conditions and regulatory specifications:
				9. Starting Temperature: -40 to 140 degrees F (-40 to 60 degrees C).
				10. Working Temperature: -40 to 140 degrees F (-40 degreesC to 60 degrees C) (IR OFF).
				11. Relative Humidity: Less than 90 percent, non-condensing.
				12. Emissions: FCC PART 15, CE (EN 55032).
				13. Immunity: CE (EN 50130-4), Complies with RCM and UKCA.
				14. Safety: UL Listed to UL/CSA 62368-1, CE (EN 62368-1), CE (EN 60950-22), Complies with RCM and UKCA.
				15. RoHS: CE (EN 63000), UAE (Cabinet Decree No.10 of 2017).
				16. WDR 3/5/8 MP IR MFZ and Fixed Camera systems meets the following environmental conditions and regulatory specifications:
				17. Starting Temperature: -40 to 140 degrees F (-40 to 60 degrees C).
				18. Working Temperature: -40 to 140 degrees F -40 to 60 degrees C) (IR OFF).
				19. Relative Humidity: Less than 90 percent, non-condensing.
				20. Emissions: FCC PART 15, CE (EN 55032).
				21. Immunity: CE (EN 50130-4), Complies with RCM and UKCA.
				22. Safety: UL Listed to UL/CSA 62368-1, CE (EN 62368-1), CE (EN 60950-22), Complies with RCM and UKCA.
				23. RoHS: CE (EN 63000), UAE (Cabinet Decree No.10 of 2017).
			5. Warranty: Five years from manufactured date code under normal use and service for the video surveillance system.
			6. NOTE TO SPECIFIER: Delete if 30 Series cameras are not required.
		1. 30 Series Cameras: 5MP IP WDR IR Fisheye Camera, camera housing, cabling, and a web based GUI that provides complete control of camera settings and live video access.
			1. Operational Requirements: Meet or exceed the following specifications:
			2. Image Sensor: 1/2.7 inches, 5 Megapixel progressive scan CMOS.
			3. Total Pixels: 2560x1920.
			4. Minimum Illumination: 0.05lux color at F2.25, 0 lux B/W with IRLEDs on at F2.25.
				1. WDR, ensuring glare-free images. WDR range: dB.
				2. Backlight Compensation: HLC/WDR.
				3. Day/Night: Auto/Day/Night/Schedule.
				4. Gain Control: 0-100 percent.
				5. Noise Reduction: 3D DNR.
				6. Privacy Masking: Off / On (5 Areas).
				7. Electronic Shutter Speed: 1/5 to 1/32,000.
				8. Video Standard: NTSC/PAL.
				9. DewarpingMode:
				10. Ceiling Mount: 1O/1P/1R/2P/1O3R/4R/4R PRO/1O8R.
				11. Wall Mount: 1O/1P/1R/1P2R/1O3R/1P3R/4R.
				12. Floor Mount: 1O/1P/1R/2P/1O3R/4R/4R PRO/1O8R.
				13. Audio Interface: 1 built-in microphone.
				14. Audio Compression: G711/G726.
				15. White Balance: Auto/Fixed Current/Manual.
				16. Signal-to-Noise Ratio: More than 55 dB.
				17. 1.16 mm, Fixed, F2.25.
				18. Angle of View: degrees.
				19. Communication: ONVIF Profile S/G support.
			5. Mechanical Requirements:
			6. Fisheye Camera System: 5 MP IP WDR IR, and must meet the following mechanical specifications:
				1. Unit Dimensions:

Diameter x Leth: 6.3 x 2.35 inches (159.95 x 59.7 mm) with mounting plate.

Diameter x Length: 6.3 x 2.02 inches (159.95 x 51.2 mm)

* + - * 1. Product Weight: Approx. 0.82 kg.
				2. Material: Die-casting aluminum housing with coating.
			1. Electrical Requirements:
			2. Fisheye Camera System: 5 MP IP WDR IR, and must meet the following electrical specifications:
				1. Input Voltage: 2Vdc, PoE (IEEE 802.3af) (Class 0).
				2. Power Consumption: 10.8 W maximum.
			3. Environmental and Regulatory Requirements:
				1. Fisheye Camera System: MP IP WDR IR. Meets the following criteria.
				2. Operating Temperature: Minus 22 to 140 degrees F (Minus 30 to 60 degrees C).
				3. Relative Humidity: Less than 90 percent, non-condensing.
				4. Emissions: FCC PART 15B, EN 55032, and EN61000-6-3.
				5. Immunity: EN 50130-4.
				6. Safety: UL 62368-1, EN 62368-1.
				7. RoHS: EN 50581.
			4. Warranty: Five years from manufactured date code under normal use and service for the video surveillance system.
1. EXECUTION
	1. EXAMINATION
		1. Examine site conditions to determine they are acceptable without qualifications. Notify Owner in writing if deficiencies are found. Starting work is evidence that site conditions are acceptable.
	2. PREPARATION
		1. Clean surfaces thoroughly prior to installation.
		2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
	3. INSTALLATION
		1. System, including but not limited to access control, alarm monitoring and reporting, time management, and user identification cards is to be installed in accordance with the manufacturer's installation instructions.
		2. Supervise installation to appraise ongoing progress of other trades and contracts, make allowances for all ongoing work, and coordinate the requirements of the installation of the System.
	4. FIELD TESTING AND CERTIFICATION
		1. Testing: The control, alarm monitoring and reporting, time management, and user identification cards shall be tested in accordance with the following:
		2. Conduct a complete inspection and test of all installed access control and security monitoring equipment. This includes testing and verifying connection to equipment of other divisions such as life safety and elevators.
		3. Provide staff to test all devices and all operational features of the System for witness by the Owner's representative and authorities having jurisdiction as applicable.
		4. Correct deficiencies until satisfactory results are obtained.
		5. Submit written copies of test results.
	5. PROTECTION
		1. Protect installed products until completion of project.
		2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION