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**Product Guide Specification**

Specifier Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) 3-Part Format, based on *MasterFormat 2004* and *The Project Resource Manual—CSI Manual of Practice. The Manufacturer is responsible for technical accuracy.*

The section must be carefully reviewed and edited by the Architect or Engineer to meet the requirements of the project and local building code. Words and sentences within brackets [ ] are choices to include or exclude a particular item or statement. Coordinate this section with other specification sections and the Drawings. Delete all “Specifier Notes” after editing this section.

**SECTION 28 23 29**

**VIDEO SURVEILLANCE REMOTE DEVICES AND SENSORS**

**Bosch DINION IP 5000 MP camera**

1. **– GENERAL**
   1. SUMMARY
      1. Section Includes
         1. Video Surveillance Remote Devices.
      2. Related Sections
         1. Section [28 23 13 – Video Surveillance Control and Management Systems].
         2. Section [28 23 16 – Video Surveillance Monitoring and Supervisory Interfaces].
         3. Section [28 23 19 – Digital Video Recorders and Analog Recording Devices].
         4. Section [28 23 23 – Video Surveillance Systems Infrastructure].

\*\*\*\*\*\*\*\*\*\*Specifier’s note: Include those standards referenced elsewhere in this SECTION.

* 1. REFERENCES

|  |  |
| --- | --- |
| **Standards** |  |
|  | EN 60950-1 |
|  | UL 60950-1 |
|  | CAN/CSA-C22.2 NO. 60950-1-07 |
|  | EN 50130-4 |
|  | EN 50130-5 Class II |
|  | FCC Part15 Subpart B, Class B |
|  | EMC directive 2004/108/EC |
|  | EN 55022 class B |
|  | EN 55024 |
|  | C-tick AS/NZS CISPR 22 (equal to CISPR 22) |
|  | ICES-003 Class B |
|  | VCCI J55022 V2/V3 |
|  | EN 50121-4 |
| **ONVIF conformance** | EN 50132-5-2; IEC 62676-2-3 |
| **Product certifications** | CE, FCC, UL, cUL, C-tick, CB, VCCI |

* 1. DEFINITIONS
     1. Sensitivity: refers to the minimum level of light the sensor needs to generate an acceptable video picture, and is measured in lux.
     2. Day/Night (infrared sensitive): The camera has normal color operation in situations where there is sufficient illumination (day conditions), but when there is little light available (night conditions) the sensitivity is increased.
     3. iDNR (intelligent Dynamic Noise Reduction): The Intelligent Dynamic Noise Reduction applies temporal noise filtering when no motion is detected. The filtering reduces the noise in the image and this makes the encoder step more effective.
  2. SYSTEM DESCRIPTION
     1. Video Surveillance Remote Devices
        1. NBN-50051 DINION IP 5000 MP camera
     2. Performance Requirements
        1. 1/3-inch CMOS HD with progressive scan.
        2. High resolution 5MP.
        3. High sensitivity in color and monochrome modes.
        4. Local storage with SD card.
        5. Quad-streaming IP video.
        6. Intelligent noise reduction reduces bandwidth and storage requirements by up to 30%.
        7. ONVIF conformant.
  3. SUBMITTALS
     1. Submit under provisions of Section [01 33 00].
     2. Product Data:
        1. Manufacturer’s data, user and installation manuals for all equipment and software programs including computer equipment and other equipment required for complete video management system.
     3. Shop Drawings; include
        1. System device locations on architectural floor plans.
        2. Full Schematic of system, including wiring information for all devices.
     4. Closeout Submittals
        1. User manual.
        2. Parts list.
        3. System device locations on architectural floor plans.
        4. Wiring and connection diagram.
        5. Maintenance requirements.
  4. QUALITY ASSURANCE
     1. Manufacturer:
        1. Minimum of [10] years experience in manufacture and design Video Surveillance Devices.
        2. Manufacturer’s quality system: Registered to ISO 9001 Quality Standard.
     2. Video Surveillance System
        1. Listed by [UL] [EN] [FCC] specifically for the required loads. Provide evidence of compliance upon request.
     3. Installer:
        1. Minimum of [5] years experience installing Video Surveillance Systems.
  5. DELIVERY, STORAGE AND HANDLING
     1. Comply with requirements of Section [01 60 00].
     2. Deliver materials in manufacture’s original, unopened, undamaged containers; and unharmed original identification labels.
     3. Protect store materials from environmental and temperature conditions following manufacturer’s instructions.
     4. Handle and operate products and systems according to manufacturer’s instructions.
     5. Bosch provides off-the-shelf availability for our top selling products and same-day or 24-hour shipping.
  6. WARRANTY
     1. Provide manufacturer’s warranty covering [3] years for replacement and repair of defective equipment.
  7. MAINTENANCE
     1. Make ordering of new equipment for expansions, replacements, and spare parts available to dealers and end users.
     2. Provide factory direct technical support from 8:00 a.m. to 8:00 p.m. via phone and e-mail.

1. **– PRODUCTS**
   1. MANUFACTURERS
      1. Acceptable Manufacturer:

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* + 1. Substitutions: [Not permitted.] [Under provisions of Division 1.]
       1. [All proposed substitutions must be approved by the Architect or Engineer professional.]
       2. [Proposed substitutions must provide a line-by-line compliance documentation.]

\*\*\*\*\*\*\*\*\*\*Specifier’s note: Select Camera System Series based on project requirement.

* 1. DINION IP 5000 MP   
     [NBN-50051]
     1. General Characteristics:
        1. The camera shall offer Content-based Imaging Technology (C-BIT).
        2. The camera shall utilize Intelligent Dynamic Noise Reduction (iDNR) technology to reduce the bitrate and storage requirements by removing noise artifacts.
        3. The camera shall provide direct network connection using H.264 and JPEG compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
        4. The camera shall work with Power over Ethernet IEEE 802.3af (802.3at type 1) for indoor applications with a compliant power supply source.
        5. The camera shall support AutoMDIX.
        6. The camera shall conform to the ONVIF Profile S specification.
        7. A user shall be able to view video on a PC using a Web browser, with the Bosch Video Management System or Bosch Video Client.
        8. The camera shall provide MOTION+ video motion detection analysis system that provides basic video content analysis.
        9. The camera shall provide six configurable scene modes that provide optimized settings for distinct applications.
        10. The camera shall provide four independent, fully programmable privacy mask areas.
        11. The camera shall utilize pixel-by-pixel analysis to automatically compensate for bright areas of a high contrast scene (Back light) without having to define a window or area.
     2. Image processing and compression
        1. The camera shall use a 1/3-inch CMOS image sensor.
        2. The camera shall offer a video resolution of 5MP @12 fps.
        3. The camera shall offer 2592 x 1944 sensor pixels.
        4. The V3 version of the camera shall be fitted with a varifocal 3.3 to 12 mm, F1.4 lens with a view angle of 82° (H) x 60° (V).
        5. The camera shall have a dynamic range of 81 dB.
        6. The camera shall offer a minimum sensitivity of 0.35 lx in color and 0.05 lx in mono.
        7. The camera automatic electronic shutter shall offer a shutter speed of 1/12 to 1/15000.
        8. The camera shall be capable of capturing and storing images using the following compression standards:
           1. H.264 MP (Main Profile)
           2. M-JPEG
     3. Audio
        1. The camera shall offer G.711, AAC and L16 audio compression (live and recording).
        2. Signal-to-Noise Ratio: >50 dB
        3. The camera shall offer two-way, full duplex audio communication.
     4. Network Video
        1. The camera shall provide direct network connection.
        2. The camera shall allow full camera control and configuration capabilities over the network.
        3. The camera shall be capable of capturing and storing images using the following compression standards:
           1. H.264 MP (Main Profile)
           2. M-JPEG
        4. The camera shall deliver video, at rates up to 12 images per second, over a 10/100 Base-T, auto-sensing, half/full duplex, RJ45 Ethernet connection.
        5. The camera shall comply with the IEEE 802.3af Power over Ethernet standard.
        6. The camera shall conform to the ONVIF standard.
     5. Image Posting

1. The camera shall offer periodic JPEG image posting to an FTP server or a Dropbox account.
   * 1. Access Security
        1. The camera shall offer three levels of password protection.
        2. The camera shall support 802.1x authentication using a RADIUS (Remote Authentication Dial In User Service) server.
        3. The camera shall store a SSL certificate for use with HTTPS.
        4. The camera shall be capable of being independently AES encrypted with 128-bit keys.
     2. Recording and Storage Management
        1. The camera shall support iSCSI devices to allow video stream to be recorded directly to an iSCSI RAID array.
        2. The camera shall support iSCSI storage targets to enable the camera to function as a conventional DVR.
        3. The camera shall have an SD card slot that uses standard, off-the-shelf SD (SDHC and SDXC) cards for local storage (up to 2 TB).
        4. The local storage feature shall be capable of storage for Automatic Network Replenishment (ANR).
        5. Local Recording: Continuous recording, ring recording, alarm/events/schedule recording.
     3. Alarm Handling Features:
        1. The camera shall provide an alarm input that may be triggered by either a normally opened or normally closed contact.
        2. The camera shall provide the capability on alarm to display up to a 31 character, programmable alarm message.
        3. The camera shall provide a relay output that may be selected for normally opened or normally closed operation. The relay can be activated from an external alarm input to the camera, manual activation from the browser, upon video motion detection, an alarm task script or video loss.
        4. The camera shall provide email alarm messaging with optional JPEG posting.
     4. Embedded Video Content Analysis
        1. The camera shall be VCA enabled.
        2. The camera shall offer MOTION+ video motion analysis that uses an algorithm based on pixel change.
        3. The camera MOTION+ feature shall include object size filtering and tamper-detection capabilities.
     5. Video Analysis
        1. The camera shall be capable of processing and analyzing video within the camera itself, with no extra hardware required.
        2. The camera shall be capable of detecting and sending alarms for abnormal events.
        3. The camera shall allow users to set up to 10 separate profiles and switch profiles based on a day/night or holiday schedules.
     6. Electrical
        1. The camera shall accept either +12 VDC or Power over Ethernet (48 VDC nominal).
        2. The camera shall conform to the IEEE 802.3af (802.3at Type 1) compliant Power over Ethernet network. Power level: Class 1.
        3. The camera shall consume typically 3.6 W.
     7. Surveillance Software
        1. The camera shall be accessible from a web browser, with the Bosch Video Management System, with the free-of-charge Bosch Video Client, or via third-party software.
        2. The camera shall be accessible from the Bosch Security System mobile app.
     8. Environmental
        + 1. The camera shall operate in a -30°C to +50°C (-22°F to 122°F) temperature range.
     9. Technical Specifications

| Power | |
| --- | --- |
| Power Supply | 12 VDC  Power-over-Ethernet 48 VDC nominal |
| Current Consumption | 300 mA (12 VDC)  75 mA (PoE 48 VDC) |
| Power Consumption | 3.6 W |
| PoE | IEEE 802.3af (802.3at Type 1)  Power level: Class 1 |

| Sensor | |
| --- | --- |
| Type | 1/3‑inch CMOS |
| Total sensor pixels | 2592 x 1944 |

| Videoperformance | |
| --- | --- |
| Sensitivity – (3200K, reflectivity 89%, F1.4, 30IRE) | |
| * Color | 0.35 lx |
| * Mono | 0.05 lx |
| Dynamic range | 81 dB Wide Dynamic Range (WDR) |

| Video streaming | |
| --- | --- |
| Video compression | H.264 (MP); M- JPEG |
| Streaming | Multiple configurable streams in H.264 and M-JPEG, configurable frame rate and bandwidth. |
| Overall IP Delay | Min. 300 ms, Max. 850 ms |
| GOP structure | IP |
| Encoding interval | 1 to 12 fps |

| Video resolution | |
| --- | --- |
| 5MP (4:3) | 2592 x 1944 |
| 1.5MP (4:3) | 1440 x 1080 |
| 0.8MP (4:3) | 1024 x 768 |
| VGA | 640 x 480 |
| QVGA | 320 x 240 |

| Video functions | |
| --- | --- |
| Day/Night | Color, Monochrome, Auto |
| Adjustable picture settings | Contrast, Saturation, Brightness |
| White Balance | 3 automatic modes, manual mode and measure |
| Shutter | Automatic Electronic Shutter;  Fixed shutter selectable;  Default shutter |
| Backlight compensation | On/off |
| Noise reduction | Intelligent Dynamic Noise Reduction (iDNR) with separate temporal and spatial adjustments |
| Contrast enhancement | On/off |
| Sharpness | Sharpness enhancement level selectable |
| Privacy Masking | Four independent areas, fully programmable |
| Video Analysis | Motion+ |
| Other functions | Image mirror, Image flip, Pixel counter, Video watermarking, Display stamping, User modes |

| Audio streaming | |
| --- | --- |
| Audio Streaming | Full duplex / half duplex |
| Signal-to-noise ratio | > 50 dB |
| Audio compression | AAC-LC, G.711, L16 (live and recording) |

| Optical | |
| --- | --- |
| Lens mount | CS mount (C-mount with adapter ring) |
| Lens connector | Standard 4-pin DC-iris connector |
| Focus control | Manual adjustment |
| Iris control | Automatic iris control |
| Lens type (V3 version) | Varifocal 3.3 to 12 mm, DC Iris F1.4 – 360, IR corrected |
| Viewing angle (wide 3.3 mm) | 82º x 60º (H x V) |
| Viewing angle (tele 12 mm) | 25º x 19º (H x V ) |

| Input/output | |
| --- | --- |
| Analog Video out | CVBS, 1 Vpp, 2.5 mm jack, 75 Ohm  Selectable standard |
| Audio | Built-in microphone, 1 x mono line in, 1 x mono line out |
| * connectors | 3.5 mm mono jack |
| * signal line in | 0.707 Vrms , 20 kOhm typical |
| * signal line out | 0.707 Vrms, 10 kOhm typical, |
| Alarm input | 1 input |
| * activation | Short to activate |
| Alarm output | 1 output |
| * voltage | 24 VAC or +30 VDC max.  Load current 1 A max. |

| Local storage | |
| --- | --- |
| Internal RAM | 10 s pre-alarm recording |
| Memory card slot | Supports up to 32 GB SDHC / 2 TB SDXC card. (An SD card of Class 6 or higher is recommended for HD recording) |
| Recording | Continuous recording, ring recording. alarm/events/schedule recording |

| Network | |
| --- | --- |
| Protocols | Protocolsnode:1170936022767881071078 |
| Encryption | TLS 1.0, SSL, DES, 3DES, AES (optional) |
| Ethernet | 10/100 Base-T, auto-sensing, half/full duplex |
| Connectivity | ONVIF Profile S, Auto-MDIX, GB/T 28181 |

| Software | |
| --- | --- |
| Unit Configuration | Via web browser or Configuration Manager |
| Firmware update | Remotely programmable |
| Software viewer | Web browser, Bosch Video Client, or third party software |

| Mechanical | |
| --- | --- |
| Dimensions (H x W x D) | 55 x 64 x 111 mm (2.17 x 2.52 x 4.37 in) without lens |
| Dimensions (H x W x D) | 55 x 64 x 146 mm (3.07 x 2.6 x 5.75 in) with lens |
| Weight | 550 g (1.21 lb) without lens  590 g (1.30 lb) with lens |
| Color | RAL 9017 Traffic black |
| Tripod Mount | Bottom and top 1/4-inch 20 UNC |

| Environmental | |
| --- | --- |
| Operating Temperature | -30 ºC to +50 ºC (-22 ºF to +122 ºF) |
| Storage Temperature | -40 ºC to +70 ºC (-40 ºF to +158 ºF) |
| Humidity | 0% to 90% relative humidity (non condensing) |

* 1. ACCESSORIES
     1. Lenses
        1. LVF-5005C-S0940 Varifocal SR Megapixel Lens
        2. LVF-5005C-S1803 Varifocal SR Megapixel Lens
     2. Illuminators
        1. EX12LED-3BD-8M Infrared Illuminator
        2. EX12LED-3BD-8W Infrared Illuminator
        3. EX12LED-3BD-9M Infrared Illuminator
        4. EX12LED-3BD-9W Infrared Illuminator
     3. Software Options
        1. MVC-FENC-AES BVIP AES 128 bit Encryption License

1. **– EXECUTION**
   1. EXAMINATION
      1. Examine areas to receive devices and notify adverse conditions affecting installation or subsequent operation.
      2. Do not begin installation until unacceptable conditions are corrected.
   2. PREPARATION
      1. Protect devices from damage during construction.
   3. INSTALLATION
      1. Install devices in accordance with manufacturer’s instruction at locations indicated on the floor drawings plans.
      2. Ensure selected location is secure and offers protection from accidental damage.
      3. Location must provide reasonable temperature and humidity conditions, free from sources of electrical and electromagnetic interference.
   4. FIELD QUALITY CONTROL
      1. Test snugness of mounting screws of all installed equipment.
      2. Test proper operation of all video system devices.
      3. Determine and report all problems to the manufacturer’s customer service department.
   5. ADJUSTING
      1. Make proper adjustment to video system devices for correct operation in accordance with manufacturer’s instructions.
      2. Make any adjustment of camera settings to comply with specific customer’s need.
   6. DEMONSTRATION
      1. Demonstrate at final inspection that video management system and devices function properly.

END OF SECTION