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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 dynamic 7000 HD Camera Kit**

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 | |
| Emission | EN55022 Class B  FCC Part 15, class B |
| Immunity | EN50130-4 (PoE, +12 VDC, 24 VAC)\*  EN50121-4 |
| Safety | EN60950-1  UL60950-1 (2nd edition)  CAN/CSA-C 22.2 No. 60950-1 |
| HD (Resolution: 1280x720) | 274M-2008 |
| HD (Resolution: 1920x1080) | 296M-2001 |
| Color representation | ITU-R BT.709 |
| Vibration | Camera with lens as per IEC60068-2-6 (5 m/s2, operational) |
| ONVIF conformance | EN 50132-5-2; IEC 62676-2-3 |

\* Chapters 7 and 8 (mains voltage supply requirement) are not applicable to the camera. However, if the system in which this camera is used needs to comply with this standard, then any power supplies used must comply with this standard.

* 1. SYSTEM DESCRIPTION
     1. Video Surveillance Remote Devices
        1. NKN-71027 DINION IP dynamic 7000 HD camera kit
     2. Performance Requirements
        1. Stylish and sturdy housing (IP66; NEMA 4x)
        2. High Dynamic Range to see details in bright and dark areas simultaneously (106 dB with IAE)
        3. Intelligent noise reduction reduces bandwidth and storage requirements by up to 30%
        4. Auto back focus for fast installation
        5. Content-based scene analysis optimizes the image processing
        6. Hybrid operation for easy migration from analog to IP systems
  2. 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.
  3. 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 IP Surveillance System.
  4. 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. WARRANTY
     1. Provide manufacturer’s warranty covering [3] years for replacement and repair of defective equipment.
  6. MAINTENANCE
     1. Make ordering of new equipment for expansions, replacements, and spare parts available to dealers and end users (up to 5 years after the EOL announcement).
     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 dynamic 7000 HD

[NKN-71027-BA]

* + 1. General Characteristics:
       1. The product specified shall be a prepackaged camera and lens built into a housing designed for indoor/outdoor operation.
       2. The camera housing shall be constructed of an aluminum casing, neoprene gaskets, UV-resistant polymer end caps, and all stainless steel hardware. The viewing window shall be 3 mm (0.12 in.) thick glass.
       3. The housing kit shall be equipped with a heater, blower, and sunshield to protect against environmental extremes.
       4. A compatible feed-through wall mount shall be provided by the manufacturer to support a maximum load of 20 lbs (9 kg). The mount shall have a swivel head that rotates 360º and tilts 180º. To ensure neatness of installation, the mount shall be designed to allow feed through wiring.
       5. The kit shall meet IP66 and NEMA-4X enclosure protection standards.
       6. The prepackaged camera shall be a true day/night camera with a mechanical filter for truly outstanding nighttime performance. The filter can be switched remotely, or automatically via a light level sensor or contact input.
       7. The camera shall offer Content-based Imaging Technology (CBIT).
       8. The camera shall utilize Intelligent Dynamic Noise Reduction (IDNR) technology to reduce the bitrate and storage requirements by removing noise artifacts.
       9. The camera shall offer 1080 HD resolution.
       10. The camera shall accept power via Power-over-Ethernet (IEEE 802.3af compliant).
       11. The camera shall offer latest generation Intelligent Video Analysis (IVA).
       12. The camera shall provide four independent, fully programmable privacy mask areas.
       13. The camera shall provide an on-screen display to simplify the camera/lens back focus and network configuration settings.
       14. 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.
       15. The camera shall provide intelligent Auto Exposure (IAE) to improve visibility of high contrast scenes (dark objects against a light background and the reverse).
       16. The camera kit shall be easy to install.
       17. The camera shall have six configurable user modes with the best settings for a variety of applications.
       18. The camera shall allow users to set up to 10 separate recording profiles based on day/night or holiday schedules.
    2. Image processing and compression
       1. The camera shall offer a 1/3-inch CMOS image sensor.
       2. The camera shall offer 3MP sensor pixels.
       3. The camera shall offer the following minimum sensitivity:
          1. Color: 0.25 lx
          2. Mono: 0.08 lx
       4. The camera shall use intelligent Dynamic Noise Reduction (IDNR) to actively analyze the contents of a scene and reduce noise artifacts accordingly.
       5. The low-noise image and efficient H.264 compression technology shall provide clear images while reducing bandwidth and storage by up to 30% compared to other H.264 cameras.
       6. The camera shall provide the most usable image possible by cleverly optimizing the detail-to-bandwidth ratio.
       7. The camera shall use C-BIT to improve image quality in all lighting conditions.
    3. 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 30 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.
    4. Video Motion 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 offer Intelligent Video Analysis (IVA) that uses an Intelligent tracker to follow objects within the defined regions of interest.
    5. Surveillance Software
       1. The camera shall be accessible from a web browser, and using the Bosch Video software.
       2. The camera shall be accessible from the Bosch Security System iPad App. The App shall allow complete camera control and shall display images over low bandwidth connections.
    6. 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.]
    7. Image Posting

1. The camera shall offer periodic JPEG image posting to an FTP server or a Dropbox account.
2. The camera shall offer best face detection and JPEG best face image posting to an FTP server or to a Dropbox account.
   * 1. 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.
     2. 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 a microSD card slot that uses standard; off-the-shelf microSD (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).
     3. Electrical
        1. The housing shall accept 24 VAC.
        2. The camera shall accept either 12 VDC, 24 VAC, or Power over Ethernet (IEEE 802.3af compliant).
        3. The kit shall consume 45 W (max.).
     4. Pre-wired
        1. The kits shall be available with the following wiring options:
           1. Pre-wired with a power and Ethernet cable fed through the foot of the housing [NKN-71027-BA3-20N, NKN-71027-BA4-20N]   
              The 3-conductor power cable shall be terminated with flying leads.
           2. **No** wiring [NKN-71027-BA3-10N, NKN-71027-BA4-10N] but with cable installation components supplied.
     5. Lens
        1. The pre-packaged cameras shall be available with a choice of factory installed super resolution megapixel lens:
           1. 9-40 mm IR-corrected varifocal lens [NKN-71027-BA4-10N, NKN-71027-BA4-20N]
           2. 3.8-13 mm varifocal lens [NKN-71027-BA3-10N, NKN-71027-BA3-20N]
     6. Audio
        1. The camera shall offer one (1) line in jack connector and one (1) line out jack connector.
        2. The camera shall offer two-way, full/half duplex audio communication.
        3. The camera shall offer G.711, AAC and L16 audio compression (live and recording).
     7. Environmental
        1. The housing kit shall operate in -40°C to +50°C (-40°F to +122°F) temperature range, and can be stored in -40°C to +70°C (-40°F to +158°F) range.
     8. Technical Specifications:

| Mechanical | |
| --- | --- |
| Dimensions (H x W x L)  - closed and including sunshield | 126.5 x 171.3 x 480 mm (5 x 6.7 x 18.9 in.) |
| Weight (including camera and lens) | 3.9 kg (8.6 lbs) |
| Construction | Aluminum casing, neoprene gaskets, all stainless steel hardware, 3.3 mm (1/8 in.) thick glass window |
| Color | Gray |
| Locking clasps (3x) | Tamper-resistant screws provided |
| Camera mounting | Removable camera/lens tray, mounted with two screws |
| Max camera + lens size (H x W x L) | 91 x 81 x 262 mm (3.6 x 3.2 x 10.3 in) |
| Mounting | 2 x pair of tapped holes (1/4-20 thread)  inner pair: 50.8 mm (2.0 in) center spread  outer pair: 73.7 mm (2.9 in) center spread |
| Rear fittings (-20N models) | 1x cable diameter: 3.5 to 8.0 mm (0.14 to 0.32 in)  2x cable diameter: 5.8 to 10 mm (0.23 to 0.39 in) |
| Rear connectors (-10N models) | 1x M20: 3.5 to 8.0 mm (0.14 to 0.32 in)  1x 4-pin (power)  1x BNC (hybrid analog video) |
| Bottom fittings (-20N models) | 2x cable diameter: 4.5 to 7.9 mm (0.18 to 0.31 in) |

| Power | |
| --- | --- |
| Power input | 24 VAC |
| Consumption | 45 W |
| Fuse | 4 A |

| Environmental | |
| --- | --- |
| Operating Temperature | -40°C to +50°C (-40°F to 122°F) |
| Storage Temperature | -40°C to +70°C (-40°F to +158°F) |
| Operating Humidity | 20% to 93% RH |
| Storage Humidity | up to 98% RH |
| Enclosure protection | IP66, NEMA 4X |

| Camera power | |
| --- | --- |
| Power Supply | 24 VAC 50/60 Hz  12 VDC  Power-over-Ethernet 48 VDC nominal |
| Current Consumption | 500 mA (12 VDC)  450 mA (24 VAC)  175 mA (PoE 48 VDC) |
| Power Consumption | 6 W (12 VDC)  10.8 W (24 VAC)  8.4 W (PoE 48 VDC) |
| PoE | IEEE 802.3af (802.3at Type 1) |

| Camera sensor | |
| --- | --- |
| Type | 1/3‑inch CMOS |
| Pixels | 2048 x 1536 (3MP) |

| Video performance | |
| --- | --- |
| Sensitivity – (3200K, reflectivity 89%, F1.2, 30IRE) | |
| Color | 0.25 lx (0.025 fc) |
| Mono | 0.08 lx (0.008 fc) |
| Dynamic range | 90 dB High Dynamic Range (HDR)  106 dB HDR (with IAE) |

| Video streaming | |
| --- | --- |
| Video compression | H.264 (MP); M-JPEG |
| Streaming | Multiple configurable streams in H.264 and M-JPEG, configurable frame rate and bandwidth.  Regions of Interest (ROI) |
| Overall IP Delay | Min. 120 ms, Max. 240 ms |
| GOP structure | IP, IBP, IBBP |
| Encoding interval | 1 to 30 (25) ips |
| Resolutions (H x V) | |
| 1080p HD | 1920 x 1080 |
| 960p HD 4:3 (cropped) | 1280 x 960 |
| 720p HD | 1280 x 720 |
| Upright 9:16 (cropped) | 400 x 720 |
| D1 4:3 (cropped) | 704 x 480 |
| 480p SD | Encoding: 704 x 480;  Displayed: 854 x 480 |
| 432p SD | 768 x 432 |
| 288p SD | 512 x 288 |
| 240p SD | Encoding: 352 x 240;  Displayed: 432 x 240 |
| 144p SD | 256 x 144 |

| Video functions | |
| --- | --- |
| Day/Night | Color, Mono, Auto |
| Adjustable picture settings | Contrast, Saturation, Brightness |
| White Balance | 4 automatic modes, manual mode and measure |
| Shutter | Automatic Electronic Shutter (AES)  Fixed (1/30 [1/25] to 1/15000) selectable  Default shutter |
| High dynamic range | On/off |
| Backlight compensation | Off / On |
| Contrast enhancement | On/off |
| Noise reduction | Intelligent Dynamic Noise Reduction(IDNR)with separate temporal and spatial adjustments |
| Sharpness | Sharpness enhancement level selectable |
| Intelligent defog | Intelligent Defogautomatically adjusts parameters for best picture in foggy or misty scenes (switchable) |
| Privacy Masking | Four independent areas, fully programmable |
| Video Motion Analysis | Intelligent Video Analysis |
| Other functions | Image mirror, Image flip, Pixel counter, Video watermarking, Display stamping, Scene 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) |

| Local storage camera | |
| --- | --- |
| 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 | IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, Telnet, ARP, DHCP, NTP (SNTP), SNMP (V1, MIB-II), 802.1x, DNS, DNSv6, DDNS (DynDNS.org, selfHOST.de, no-ip.com), SMTP, iSCSI, UPnP (SSDP), DiffServ (QoS), LLDP, SOAP, Dropbox, CHAP, digest authentication |
| 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 |

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

| Input/output camera | |
| --- | --- |
| Analog video out | CVBS (PAL/NTSC), 1 Vpp, SMB, 75 Ohm (surge protected) |
| Analog video aspect ratio | 4:3 letterbox, 4:3 cropped, or 16:9 mode |
| Audio | 1 x mono line in, 1 x mono line out |
| connector | 3.5 mm stereo jack |
| signal line in | 12 kOhm typical, 1 Vrms max |
| signal line out | 1 Vrms at 1.5 kOhm typical, |
| Alarm | 2 inputs |
| connector | Clamp (non-isolated closing contact) |
| activation voltage | +5 VDC to +40 VDC  (+3.3 VDC with DC-coupled 22 kOhm pull-up resistor) |
| Relay | 1 output |
| connector | Clamp |
| voltage | 30 VAC or +40 VDC  Maximum 0.5 A continuous, 10VA |
| Data port | RS‑232/422/485 |

| Optical | |
| --- | --- |
| Lens mount | CS mount (C-mount with adapter ring) |
| Lens connector | Standard 4-pin DC-iris connector |
| Focus control | Motorized back-focus adjustment |
| Lens Controls | Wizard from web page or camera button |
| Iris control | Automatic iris control |

| Lens LVF-5003N-S3813 | |
| --- | --- |
| Focal length | 3.8 – 13 mm |
| Iris range | F1.4 to F8 |
| Min object distance | 0.3 m (1 ft) |
| 1/3-inch sensor 16:9  Angle of view (HxV) | 79 x 43° Wide  23 x 13° Tele |
| Focus control | manual |
| Zoom control | manual |
| IR corrected | IR performance (not with IR illuminator) |

| Lens LVF-5005C-S0940 | |
| --- | --- |
| Focal length | 9 – 40 mm |
| Iris range | F1.5 to F8 |
| Min object distance | 2.5 m (9.2 ft) |
| 1/3-inch sensor 16:9  Angle of view (HxV) | 33 x 17° Wide  7.7 x 4.4° Tele |
| Focus control | manual |
| Zoom control | manual |
| IR corrected | yes |

| Mount LTC 9215/00 | |
| --- | --- |
| Length | 300 mm (12 in) |
| Maximum Load | 9 kg (20 lb) |
| Mounting Head | Adjustable 360° pan, 180° tilt |
| Finish | Light gray |
| Approx. Weight | 0.4 kg (0.9 lb) |
| Mounting | 2 x tapped holes  Thread: 1/4-20  73.7 mm (2.9 in) center spread |

* 1. ACCESSORIES
     1. Monitor cables
        1. NBN-MCSMB-03M analog cable

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