June 2016

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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 starlight 7000 HD box 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** |  |
| --- | --- |
| Emission | EN 55032:2012 /AC2013 class B  EN 50121-4:2006 /AC:2008  FCC: 47CFR15, class B (2015-10-1) |
| Immunity | EN 50130-4:2011 /A12014 (PoE, +12VDC)\*  EN 50121-4:2006 /AC:2008 |
| Environmental | EN 50130-5:2011 Class II |
| Safety | EN 62368-1:2014/AC:2015  EN 60950-1:2006 /A11:2009 /A1:2010 /A12:2011 /A2:2013  UL 62368-1, Ed. 2, Dec 1st, 2014  UL 60950-1, Ed. 2, October 14, 2014  CAN/CSA-C22.2 No. 62368-1  CAN/CSA-C22.2 No. 60950-1 |
| HD | SMPTE 296M-2001 (Resolution: 1280x720)  SMPTE 274M-2008 (Resolution: 1920x1080) |
| Color representation | ITU-R BT.709-6 |
| ONVIF conformance | EN 50132-5-2:2011/AC:2012  EN 62676-2-3:2014 |

\* 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. 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-73013-BA DINION IP starlight 7000 HD camera 720p
        2. NBN-73023-BA DINION IP starlight 7000 HD camera 1080p
     2. Performance Requirements
        1. 1/2.8-inch CMOS HD with progressive scan.
        2. Built-in Intelligent Video Analytics to trigger relevant alerts and quickly retrieve data.
        3. Starlight sensitivity enables the camera to work with a minimum of ambient light.
        4. Extended Dynamic Range mode to see details in bright and dark areas simultaneously.
        5. Intelligent Dynamic Noise Reduction reduces bandwidth and storage requirements by up to 50%.
        6. Easy to install with auto zoom/focus SR lens, wizard and pre-configured modes.
        7. Local storage with SD card.
        8. 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 starlight 7000 HD camera  
     [NBN-73013-BA], [NBN-73023-BA]
     1. General Characteristics:
        1. The camera shall utilize a 1/2.8-inch CMOS HD image sensor.
        2. The camera shall offer Content-based Imaging Technology (C-BIT).
        3. The camera shall utilize Intelligent Dynamic Noise Reduction (IDNR) technology to reduce the bitrate and storage requirements by removing noise artifacts.
        4. 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.
        5. The camera shall provide a CVBS (PAL/NTSC), 1 Vpp, SMB, 75 Ohm analog output that allows hybrid video output.
        6. The camera shall support AutoMDIX.
        7. The camera shall conform to the ONVIF Profile S specification.
        8. The camera shall provide nine configurable user modes that provide optimized settings for distinct applications.
        9. The camera shall offer Intelligent Video Analysis.
        10. The camera shall provide eight independent, fully programmable privacy mask areas.
        11. The camera shall provide an on-screen display to simplify the camera/lens back focus and network configuration settings.
        12. The camera shall provide enhanced night viewing through the increase of IR sensitivity by automatically switching a motorized IR filter from color to monochrome operation in low-light or IR illuminated applications. Allow the IR filter to be switched manually via the alarm input, preprogrammed in a camera mode or profile.
        13. 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.
        14. The NBN-73023-BA camera shall offer 1080 HD resolution.
        15. The NBN-73013-BA camera shall offer 720 HD resolution.
        16. The camera shall accept power via Power-over-Ethernet (IEEE 802.3af compliant).
        17. The camera shall provide intelligent Auto Exposure (IAE) to improve visibility of high contrast scenes (dark objects against a light background and the reverse).
        18. The camera shall be easy to install.
        19. 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 utilize a 1/2.8-inch CMOS HD image sensor.
        2. The camera (1080p version only) shall produce a resolution of 1920 x 1080 pixels (HD 1080p) at 60 fps with a 16:9 aspect ratio.
        3. The camera (1080p version only)shall produce a resolution of 1280 x 960 pixels (HD 960p) at 60 fps with a 4:3 aspect ratio.
        4. The camera shall produce a resolution of 1280 x 720 pixels (HD 720p) at 60 fps with a 16:9 aspect ratio.
        5. The camera shall produce a resolution of 704x 480 pixels (D1) at 60 fps with a 4:3 aspect ratio.
        6. The camera shall offer intelligent Dynamic Noise Reduction to reduce bandwidth and storage requirements by optimizing the detail-to-bandwidth ratio via temporal and spatial noise filtering.
        7. The camera shall offer several regions of interest to zoom into a specific area of the full image.
        8. The camera shall allow regions of interest to be sent in separate streams so it is possible to view both an overview and a detail at the same time.
     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 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 Profile S standard.
     4. 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. 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 an 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 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 the capability on alarm to display up to a 31 character, programmable alarm message.
        2. 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 be capable of processing and analyzing video within the camera itself, with no extra hardware required.
        3. The camera shall be capable of detecting and sending alarms for abnormal events.
        4. The camera shall allow users to set up to 10 separate profiles and switch profiles based on a day/night or holiday schedules.
        5. The camera shall offer Intelligent Video Analytics that uses an Intelligent tracker to follow objects within the defined regions of interest.
     5. Electrical
        1. The camera shall accept 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 3.
        3. The camera shall consume typically 200 mA (PoE).
     6. 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 Video Security Client, or via third-party software.
        2. The camera shall be accessible from the Bosch Security System mobile app.
     7. Environmental
        1. The camera shall operate in -20°C to +50°C (-4°F to +122°F) temperature range
        2. The camera shall work with Power over Ethernet IEEE 802.3af (802.3at Type 1).
     8. Technical Specifications

| **Power** | |
| --- | --- |
| Input voltage | Power-over-Ethernet (48 VDC nominal) and/or  +12 VDC ±10% (auxiliary) |
| PoE IEEE standard | 802.3af (802.3at Type 1)  Power level: Class 3 |
| Power Consumption | 7.2 W max. |
| Current draw (PoE) | 200 mA max. |
| Current draw (12 VDC) | 600 mA max. |

| **Sensor (1080p version)** | |
| --- | --- |
| Sensor type | 1/2.8‑inch CMOS |
| Effective pixels | 1920 (H) x 1080 (V); 2MP (approx.) |

| **Sensor (720p version)** | |
| --- | --- |
| Sensor type | 1/2.8‑inch CMOS |
| Effective pixels | 1280 (H) x 720 (V) |

| **Sensitivity – HDR mode** | |
| --- | --- |
| (3100K, reflectivity 89%, 1/25, F1.2, 30IRE) | |
| Color | 0.038 lx |
| Mono | 0.013 lx |

| **Sensitivity – Starlight mode** | |
| --- | --- |
| (3100K, reflectivity 89%, 1/25, F1.2, 30IRE) | |
| Color | 0.0069 lx |
| Mono | 0.0008 lx |

| **Dynamic range – HDR mode** | |
| --- | --- |
| High Dynamic | 120 dB WDR |
| Measured according to IEC 62676 Part 5 | 110 dB WDR |

| **Dynamic range – Starlight mode** | |
| --- | --- |
| Measured according to IEC 62676 Part 5 | 94 dB WDR (94+16 dB with intelligent AE) |

| **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) |
| Camera processing latency | <55 ms (1080p60) |
| GOP structure | IP, IBP, IBBP |
| Encoding interval | 1 to 50 [60] fps |

| **Video resolution (H x V)** | |
| --- | --- |
| 1080p HD | 1920 x 1080 (1080p version only) |
| Upright mode 1080p | 1080 x 1920 (1080p version only) |
| 1.3 MP (4:3) | 1280 x 960 (1080p version only) |
| Upright mode 1.3 MP | 960 x 1280 (1080p version only) |
| 720p HD | 1280 x 720 |
| Upright mode 720p | 720 x 1280 |
| 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 |

| **Camera installation** | |
| --- | --- |
| Application variant (1080p version) | Starlight mode (default) / HDR - extended dynamic mode / 1.3 MP starlight mode / 1.3 MP extended dynamic mode |
| Application variant (720p version) | Starlight mode (default) / HDR - extended dynamic mode |
| Base frame rate | 25/30/50/60 fps (PAL/NTSC for analog output) |
| Mirror image | On / Off |
| Flip image | On / Off |
| Rotate | 0° / 90° / 180° / 270° |
| Camera LED | Enable/disable |
| Analog output | Off, 4:3 letterbox, 4:3 crop, 16:9 |
| Positioning | Coordinates / Mounting height |
| Lens wizard | Autofocus, remote zoom |

| **Video functions - color** | |
| --- | --- |
| Adjustable picture settings | Contrast, Saturation, Brightness |
| White Balance | Four automatic modes, manual mode and measure |

| **Video functions - ALC** | |
| --- | --- |
| ALC level | Adjustable |
| Saturation | Adjustable from peak to average |
| Shutter | Automatic Electronic Shutter (AES);  Fixed shutter (1/25[30] to 1/15000) selectable;  Default shutter |
| Day/Night | Auto (adjustable switch points), Color, Monochrome |

| **Video functions - enhance** | |
| --- | --- |
| Sharpness | Sharpness enhancement level selectable |
| Backlight compensation | On/off |
| Contrast enhancement | On/off |
| Noise reduction | Intelligent Dynamic Noise Reduction with separate temporal and spatial adjustments |
| Intelligent defog | Intelligent Defog automatically adjusts parameters for best picture in foggy or misty scenes (switchable) |

| **Video content analysis** | |
| --- | --- |
| Analysis type | Intelligent Video Analytics (IVA) |
| Configurations | Silent VCA / Profile1/2 / Scheduled / Event triggered |
| Alarm rules (combinable) | Any object  Object in field  Line crossing  Enter / leave field  Loitering  Follow route  Idle / removed object  Counting  Occupancy  Crowd density estimation  Condition change  Similarity search  Flow / counter flow |
| Object filters | Duration  Size  Aspect ratio  Speed  Direction  Color  Object classes (4) |
| Tracking modes | Standard (2D) tracking  3D tracking  3D people tracking  Ship tracking  Museum mode |
| Calibration / Geolocation | Automatic based on gyro / accelerometer data and camera height |
| Tamper detection | Maskable |
| Detection | Audio; Face |

| **Additional functions** | |
| --- | --- |
| Scene modes | Nine default modes, Scheduler |
| Privacy Masking | Eight independent areas, fully programmable |
| Video authentication | Off / Watermark / MD5 / SHA-1 / SHA-256 |
| Display stamping | Name; Logo; Time; Alarm message |
| Pixel counter | Selectable area |
| Camera rotation | Automatic detection with manual override (90°) |

| **Local storage** | |
| --- | --- |
| Internal RAM | 60 s pre-alarm recording |
| Memory card slot | Supports up to 32 GB microSDHC / 2 TB microSDXC card. (A memory card of Class 6 or higher is recommended for HD recording) |
| Recording | Continuous recording, ring recording. alarm/events/schedule recording |

| **Input/output** | |
| --- | --- |
| Analog video out | CVBS (PAL/NTSC), 1 Vpp, SMB, 75 Ohm (surge protected) |
| Audio connectors | 3.5 mm stereo jack (x2) |
| Audio line in | 12 kOhm typical, 1 Vrms max |
| Audio line out | 1 Vrms at 1.5 kOhm typical, |
| Alarm input connectors | Clamp (x2 non-isolated closing contact) |
| Alarm input activation voltage | +5 VDC to +40 VDC  (+3.3 VDC with DC-coupled 22 kOhm pull-up resistor) |
| Alarm output connector | Clamp |
| Alarm output voltage | 30 VAC or +40 VDC  Maximum 0.5 A continuous, 10VA |
| Data port | RS‑232/422/485 |

| **Audio streaming** | |
| --- | --- |
| Standard | G.711, 8 kHz sampling rate  L16, 16 kHz sampling rate  AAC-LC, 48 kbps at 16 kHz sampling rate  AAC-LC, 80 kbps at 16 kHz sampling rate |
| Signal-to-Noise Ratio | >50 dB |
| Audio Streaming | Full-duplex / half duplex |

| **Software** | |
| --- | --- |
| Unit discovery | IP Helper |
| Unit configuration | Via web browser or Configuration Manager |
| Firmware update | Remotely programmable |
| Software viewing | Web browser;  Video Security Client;  Video Security App;  Bosch Video Management System;  Bosch Video Client;  or third party software |
| Latest firmware and software | <http://downloadstore.boschsecurity.com/> |

| **Network** | |
| --- | --- |
| Protocols | IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, Telnet, ARP, DHCP, APIPA (Auto-IP, link local address), 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 1.2, SSL, DES, 3DES |
| Ethernet | 10/100 Base-T, auto-sensing, half/full duplex |
| Connectivity | Auto-MDIX |
| Interoperability | ONVIF Profile S; ONVIF Profile G ; ONVIF Profile Q  GB/T 28181 |

| **Optical** | |
| --- | --- |
| Lens mount | CS mount (C-mount with adapter ring) |
| Lens connector | Standard 4-pin DC-iris connector |
| Lens Types | Manual and DC-Iris auto-detect with override  DC-iris drive: max. 50 mA continuous |
| Lens Controls | Wizard from web page or camera button |

| **Mechanical** | |
| --- | --- |
| Dimensions (W x H x L) | 78 x 66 x140 mm (3.07 x 2.6 x 5.52 inch) without lens |
| Weight | 690 g (1.52 lb) without lens |
| Color | RAL 9007 Metallic Titanium |
| Tripod Mount | Bottom (isolated) and top 1/4-inch 20 UNC |

| **Environmental** | |
| --- | --- |
| Operating Temperature | -20°C to +50°C (-4°F to 122°F) |
| Storage Temperature | -30°C to +70°C (-22°F to +158°F) |
| Operating Humidity | 20% to 93% RH |
| Storage Humidity | up to 98% RH |

* 1. ACCESSORIES
     1. Lens
        1. LVF-5005C-S0940 Varifocal SR Megapixel Lens
        2. LVF-5003N-S3813 Varifocal SR Megapixel Lens
        3. LVF-5005C-S1803 Varifocal SR Megapixel Lens
        4. LVF-5005C-S4109 Varifocal SR Megapixel Lens
        5. LVF-5005N-S1250 Varifocal Megapixel Lens
        6. S1374 Adapter
     2. Power supplies
        1. UPA-1220-60 power supply
        2. UPA-1220-50 power supply
        3. NPD-5001-POE Midspan PoE injector 1-port
        4. NPD-5004-POE Midspan PoE injector 4-ports
     3. Mounts
        1. TC9210U Indoor Camera Mount
        2. LTC 9215/00 Mount
        3. LTC 9215/00S Mount
        4. LTC 9219/01 Feed-through J-Mount
        5. LTC 9210/01 Column Mount
        6. LTC 9213/01 Pole Mount Adapter
     4. Housings
        1. UHO‑HBGS‑51 Outdoor Housing
        2. UHO‑HBGS‑61 Outdoor Housing
        3. UHO‑HBGS‑11 Outdoor Housing
        4. UHO PoE Outdoor Camera Housing
     5. Transcoder
        1. VJT-XTCXF VIDEOJET Video Transcoder
     6. Monitor cables
        1. NBN-MCSMB-03M Monitor/DVR Cable SMB 0.3M
        2. NBN-MCSMB-30M Monitor/DVR Cable SMB 3.0M

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