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| **Americas**  Bosch Security Systems, Inc.  130 Perinton Parkway  Fairport, New York, 14450,  USA  Phone: + 1 800 289 0096  Fax: +1 585 223 9180  security.sales@us.bosch.com  [www.boschsecurity.us](http://www.boschsecurity.us) | **Europe, Middle East, Africa**  Bosch Security Systems B.V.  P.O. Box 80002  5617 BA Eindhoven,  The Netherlands  Phone: + 31 40 2577 284  Fax: +31 40 2577 330  [emea.securitysystems@bosch.com](mailto:emea.securitysystems@bosch.com)  www.boschsecurity.com | **Asia-Pacific**  Robert Bosch (SEA) Pte Ltd, Security Systems  11 Bishan Street 21  Singapore 573943  Phone: +65 6571 2808  Fax: +65 6571 2699  apr.securitysystems@bosch.com  www.boschsecurity.asia |

**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 FLEXIDOME IP starlight 6000 VR dome 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 IV |
| 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. NIN-63013-A3 FLEXIDOME IP starlight 6000 VR camera 720p, 3 to 9 mm SR lens
        2. NIN-63013-A3S FLEXIDOME IP starlight 6000 VR camera 720p, 3 to 9 mm SR lens, surface mount box
        3. NIN-63023-A3 FLEXIDOME IP starlight 6000 VR camera 1080p, 3 to 9 mm SR lens
        4. NIN-63023-A3S FLEXIDOME IP starlight 6000 VR camera 1080p, 3 to 9 mm SR lens, surface mount box
     2. Performance Requirements
        1. 1/2.8-inch CMOS HD with progressive scan.
        2. Built-in Essential 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. The aesthetic vandal-resistant housing makes the camera suitable for indoor or outdoor installation.
        7. Easy to install with auto zoom/focus SR lens, wizard and pre-configured modes.
        8. Local storage with SD card.
        9. 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:

[Bosch Security Systems, Inc.

130 Perinton Parkway

Fairport, New York, 1450, USA

Phone: + 1 800 289 0096

Fax: + 1 585 223 9180

[security.sales@us.bosch.com](mailto:security.sales@us.bosch.com)

[www.boschsecurity.us](http://www.boschsecurity.us)]

[Bosch Security Systems B.V.

P.O. Box 80002

5617 BA Eindhoven, The Netherlands

Phone: + 31 40 2577 284

Fax: +31 40 2577 330

emea.securitysystems@bosch.com

[www.boschsecurity.com](http://www.boschsecurity.com)]

[Robert Bosch (SEA) Pte Ltd, Security Systems

11 Bishan Street 21

Singapore 573943

Phone: +65 6571 2808

Fax: +65 6571 2699

[apr.securitysystems@bosch.com](mailto:apr.securitysystems@bosch.com)

www.boschsecurity.com]

* + 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. FLEXIDOME IP starlight 6000 VR camera  
     [NIN-63013-A3], [NIN-63013-A3S], [NIN-63023-A3], [NIN-63023-A3S]
     1. General Characteristics:
        1. The camera shall be capable of operating in an indoor or an outdoor environment.
        2. The NIN-63013-A3S and NIN-63023-A3S versions shall include a surface mount box.
        3. The camera shall utilize a 1/2.8-inch CMOS HD image sensor.
        4. The camera shall offer a 3-9 mm automatic varifocal, super resolution lens with an advanced iris design.
        5. The camera shall offer Content-based Imaging Technology (C-BIT).
        6. The camera shall utilize Intelligent Dynamic Noise Reduction (IDNR) technology to reduce the bitrate and storage requirements by removing noise artifacts.
        7. 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.
        8. The camera shall provide a CVBS (PAL/NTSC), 1 Vpp, BNC, 75 Ohm analog output that allows hybrid video output.
        9. The camera shall be capable of operating as an indoor/outdoor camera within a temperature range of -30°C to 55°C (-22°F to 131°F).
        10. The camera shall be rated to IP66 (NEMA Type 4X) standard against water and dust ingress.
        11. The camera shall support AutoMDIX.
        12. The camera shall conform to the ONVIF Profile S specification.
        13. The camera shall provide nine configurable user modes that provide optimized settings for distinct applications.
        14. The camera shall offer Essential Video Analytics.
        15. The camera shall provide eight independent, fully programmable privacy mask areas.
        16. The camera shall provide an on-screen display to simplify the camera/lens back focus and network configuration settings.
        17. 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.
        18. 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 utilize a 1/2.8-inch CMOS HD image sensor.
        2. The NIN-63023 camera shall produce a resolution of 1920 x 1080 pixels (HD 1080p) at 60 fps with a 16:9 aspect ratio.
        3. The NIN-63023 camera 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.
     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. 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 1.
        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 vandal resistant HD camera shall be rated to IK10 impact protection (the equivalent of 55 kg (120 lbs)).
        2. The vandal resistant HD 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** | |
| --- | --- |
| Measured according to IEC 62676 Part 5 (1/25, F1.2) | |
| Color | 0.0104 lx |
| Mono | 0.0039 lx |

| **Sensitivity – HDR mode** | |
| --- | --- |
| Outdated measurement method (3100K, reflectivity 89%, 1/25, F1.2, 30IRE) | |
| Color | 0.044 lx |
| Mono | 0.015 lx |

| **Sensitivity – Starlight mode** | |
| --- | --- |
| Outdated measurement method (3100K, reflectivity 89%, 1/25, F1.2, 30IRE) | |
| Color | 0.0075 lx |
| Mono | 0.0011 lx |

| **Dynamic range – HDR mode** | |
| --- | --- |
| High Dynamic | 120 dB WDR |
| Measured according to IEC 62676 Part 5 | 108 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 |

| **Video functions - color** | |
| --- | --- |
| Adjustable picture settings | Contrast, Saturation, Brightness |
| White Balance | 2500 to 10000K, 4 automatic modes (Basic, Standard, Sodium vapor, Dominant color), Manual mode and Hold mode |

| **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 | Essential Video Analytics |
| 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 |
| Object filters | Duration  Size  Aspect ratio  Speed  Direction  Color  Object classes (4) |
| Tracking modes | Standard (2D) tracking  3D tracking  3D people 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, BNC, 75 Ohm (surge protected) |
| Audio signal line in | 10 kOhm typical;, 1 Vrms max |
| Audio signal line out | 1 Vrms; 1.5 kOhm typical |
| Alarm input (x2) activation voltage | +5 VDC to +40 VDC  (+3.3 VDC with DC-coupled 22 kOhm pull-up resistor) |
| Alarm output voltage | 30 VAC or +40 VDC  Maximum 0.5 A continuous, 10VA |

| **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 | 3 to 9 mm Automatic Varifocal (AVF) SR lens (IR corrected) |
| Lens mount | Board mounted |
| Adjustment | Motorized zoom/focus |
| Iris control | Automatic iris control |
| Viewing angle (3 to 9 mm) | Wide: 117º x 59º (H x V)  Tele: 37º x 21º (H x V ) |

| **Mechanical** | |
| --- | --- |
| Dimensions (D x H) | 158 x 124 mm (6.22 x 4.89 in) |
| Weight | 0.85 kg (1.87 lb)  1.28 kg (2.82 lb) with SMB |
| Mounting | Flush mount or surface mount |
| Color | White (RAL9010) trim ring with black inner liner |
| Adjustment range | 360º pan, 90º tilt, ±90º twist |
| Dome bubble | Polycarbonate, clear with UV blocking anti-scratch coating |
| Trim ring | Aluminum |

| **Environmental** | |
| --- | --- |
| Operating temperature | -30 ºC to +50 ºC (-22 ºF to +122 ºF) for continuous operation;  -34 ºC to +74 ºC (-30 ºF to +165 ºF) according to NEMA TS 2-2003 (R2008), para 2.1.5.1 using fig. 2.1 test profile |
| Cold start temperature | -20 ºC (-4 ºF) |
| Storage temperature | -50 ºC to +70 ºC (-58 ºF to +158 ºF) |
| Operating humidity | 5% to 93% relative humidity |
| Storage humidity | Up to 98% relative humidity |
| Impact protection | IK10 |
| Water/dust protection | IP 66 and NEMA Type 4X (with appropriate installation standards) |

* 1. ACCESSORIES
     1. Mounts
        1. VDA-WMT-DOME Wall pendant mount bracket for FlexiDome cameras
        2. VDA-CMT-PTZDOME Corner 270° mount adapter for use with the appropriate bracket for FlexiDome cameras
        3. VDA-CMT-DOME Corner 90° mount bracket for FlexiDome cameras
        4. VDA-PMT-DOME Pendant pipe mount bracket for FlexiDome cameras
        5. LTC 9213/01 Pole Mount Adapter
        6. VDA-PLEN-DOME In-ceiling back can installation kit
        7. VDA-455SMB-IP Surface Mount Box for FlexiDome VR
        8. VGA-IC-SP In-ceiling support kit
     2. Components
        1. VDA-455TBL Tinted Bubble
        2. VDA-455CBL Clear Bubble
        3. NPD-5001-POE Midspan PoE injector 1-port
        4. NPD-5004-POE Midspan PoE injector 4-ports
        5. S1460 Service/Monitor Cable
     3. Video over IP Accessories
        1. VJT-XTC XF Video Transcoder
     4. Dummy cameras
        1. NIN-DMY FLEXIDOME VR family dummy camera

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