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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 FLEXIDOME IP micro 3000i – outdoor camera

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes

1. Video Surveillance Remote Devices.

B. 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.

1.2 REFERENCES

A. EMC – Emissions

1. EN 55032 Electromagnetic compatibility of multimedia equipment - Emission requirements
 2. CFR 47 FCC part 15, Class B Code of Federal Regulations Title 47 – Telecommunication Chapter I - FEDERAL COMMUNICATIONS COMMISSION, Subchapter A – GENERAL, Part 15 - RADIO FREQUENCY DEVICES
 3. AS/NZS CISPR 32 Electromagnetic compatibility of multimedia equipment - Emission requirements
- B. EMC – Immunity
1. EN 50130-4 Alarm systems - Part 4: Electromagnetic compatibility - Product family standard: Immunity requirements for components of fire, intruder, hold up, CCTV, access control and social alarm systems
 2. EN 50121-4 Railway applications - Electromagnetic compatibility - Part 4: Emission and immunity of the signalling and telecommunications apparatus
- C. Environmental
1. EN 50130-5 (Class II) Alarm systems - Part 5: Environmental test methods
 2. EN 60068-2-1 Environmental testing - Part 2-1: Tests - Test A: Cold
 3. EN 60068-2-2 Environmental testing - Part 2-2: Tests - Test B: Dry heat
 4. EN 60068-2-6 Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)
 5. EN 60068-2-18 Environmental testing - Part 2-18: Tests – Test R and guidance: Water
 6. EN 60068-2-27 Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock
 7. EN 60068-2-30 Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)
 8. EN 60068-2-75 Environmental testing - Part 2-75: Tests - Test Eh: Hammer tests
 9. EN 60068-2-78 Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state
- D. Safety
1. EN 60950-1 Information technology equipment - Safety - Part 1: General requirements
 2. UL 60950-1 Information Technology Equipment - Safety - Part 1: General Requirements
 3. CAN/CSA C22.2 No. 60950-1 Information Technology Equipment - Safety - Part 1: General Requirements
- E. Image performance
1. IEC 62676-5 Video surveillance systems for use in security applications - Part 5: Data specifications and image quality performance for camera devices
- F. HD
1. SMPTE 296M-2001 (Resolution: 1280x720) 1280 x 720 Progressive Image Sample Structure – Analogue and Digital Representation and Analogue Interface
 2. SMPTE 274M-2008 (Resolution:1920x1080) 1920 x 1080 Image Sample Structure, Digital Representation and Digital Timing Reference Sequences for Multiple Picture Rates

- G. Color representation
 1. ITU-R BT.709-6 Parameter values for the HDTV standards for production and international programme exchange
- H. ONVIF conformance
 1. EN 50132-5-2 Alarm systems - CCTV surveillance systems for use in security applications - Part 5-2: IP Video Transmission Protocols
 2. EN 62676-2 Video surveillance systems for use in security applications
- I. Impact protection
 1. EN 62262 (IK08) Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)
- J. Environment
 1. EN 50581 (RoHS) Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances
- K. Marks
 1. CE, FCC, cULus, WEEE, RCM, VCCI, CMIM, EAC

1.3 DEFINITIONS

- A. Sensitivity: refers to the minimum level of light the sensor needs to generate an acceptable video picture, and is measured in lux.
- B. 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.

1.4 SYSTEM DESCRIPTION

- A. Video Surveillance Remote Devices
 1. NDE-3502-F02 FLEXIDOME IP micro 3000i 2MP 130° outdoor camera
- B. Performance Requirements
 1. Complete outdoor network video surveillance system inside a microdome camera.
 2. 1080p resolution.
 3. Built-in Essential Video Analytics to trigger relevant alerts and quickly retrieve data.
 4. Intelligent Dynamic Noise Reduction (iDNR) technology.
 5. Intelligent streaming technology for reduced bitrates.
 6. H.264, H.265 and M-JPEG encoding.
 7. 2.3 mm and 2.8 mm fixed surface-mounted lens.
 8. Triple-streaming IP video.
 9. Micro SDHC/SDXC card slot for edge recording up to 2 TB.
 10. ONVIF conformant.
 11. +12 VDC and Power over Ethernet (IEEE 802.3af compliant).

1.5 SUBMITTALS

- A. Submit under provisions of Section [01 33 00].
- B. 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.
- C. Shop Drawings; include
 - 1. System device locations on architectural floor plans.
 - 2. Full Schematic of system, including wiring information for all devices.
- D. Closeout Submittals
 - 1. User manual.
 - 2. Parts list.
 - 3. System device locations on architectural floor plans.
 - 4. Wiring and connection diagram.
 - 5. Maintenance requirements.

1.6 QUALITY ASSURANCE

- A. 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.
- B. Video Surveillance System
 - 1. Listed by cULus.
 - 2. Certified compliant to [FCC] [CE] [UL] product specific requirements. Test methods are in accordance with international standards. Provide evidence of compliance upon request.
- C. Installer:
 - 1. Minimum of [5] years experience installing Video Surveillance Systems.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Comply with requirements of Section [01 60 00].
- B. Deliver materials in manufacturer's original, unopened, undamaged containers; and unharmed original identification labels.
- C. Protect store materials from environmental and temperature conditions following manufacturer's instructions.
- D. Handle and operate products and systems according to manufacturer's instructions.
- E. Bosch provides off-the-shelf availability for our top selling products and same-day or 24-hour shipping.

1.8 WARRANTY

- A. Provide manufacturer's warranty covering [3] years for replacement and repair of defective equipment.

1.9 MAINTENANCE

- A. Make ordering of new equipment for expansions, replacements, and spare parts available to dealers and end users.
- B. Provide factory direct technical support from 8:00 a.m. to 8:00 p.m. via phone and e-mail.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer:
[Bosch Security Systems, Inc.
130 Perinton Parkway
Fairport, New York, 14450, USA
Phone: + 1 800 289 0096
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- B. 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.

2.2 FLEXIDOME IP micro 3000i – outdoor [NDE-3502-F02]

A. General Characteristics:

1. The camera shall be capable of operating in an outdoor environment.
2. The camera shall offer 1080p resolution at 16:9 aspect ratio.
3. The camera shall offer tamper detection and Essential Video Analytics.
4. The camera shall utilize Intelligent Dynamic Noise Reduction (iDNR) technology to reduce the bitrate and storage requirements by removing noise artifacts
5. The camera shall offer Intelligent streaming possibilities.
6. The camera shall provide eight independent, fully programmable privacy mask areas.

B. Imaging Requirements

1. The camera shall offer a 1/2.8-inch CMOS image sensor.
2. The camera shall offer a video resolution of 1080p @30 fps.
3. The camera shall offer 1920 x 1080 sensor pixels.
4. The camera shall be fitted with a surface-mounted fixed 2.3 mm, F2.2 lens with a lens view angle of:
 - a. 132° (Horizontal)
 - b. 77° (Vertical).
5. The camera shall be fitted with a surface-mounted fixed 2.8 mm, F1.6 lens with a lens view angle of:
 - a. 107° (Horizontal)
 - b. 57° (Vertical).
6. The camera shall have a wide dynamic range of 120 dB.
7. The camera shall have high sensitivity in color (0.1 lx) and in monochrome (0.05 lx) on both lenses.
8. The camera automatic electronic shutter shall offer a shutter speed of 1/30 (1/25) to 1/15000.
9. The camera shall be capable of capturing and storing images using the following compression standards:
 - a. H.265 MP
 - b. H.264 MP
 - c. M-JPEG

C. Network Video

1. The camera shall provide direct network connection using H.265, H.264 and M-JPEG compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
2. The camera shall allow full camera control and configuration capabilities over the network.
3. The camera shall deliver video, at rates up to 30 images per second, via TCP/IP over a 10/100 Base-T, half/full-duplex, RJ45 Ethernet connection.
4. The camera shall support TLS1.0/1.2, AES128, AES256 encryption.

5. The camera shall support Auto-MDIX.
 6. The camera shall conform to the ONVIF Profile S, G and T standard.
 7. The camera shall conform to protocols: IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, ARP, DHCP, APIPA (Auto-IP, link local address), NTP (SNTP), SNMP (V1, V3, 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.
- D. Audio
1. The camera shall have audio line out for two-way, full-duplex and half-duplex audio communication with audio compression AAC, G.711, L16 (live and recording).
- E. Control
1. The camera shall be configured via a web browser or PC surveillance software.
- F. Connectors
1. The camera shall have one RJ-45 for Ethernet.
 2. The camera shall have one alarm input with short or DC 5 V activation.
 3. The camera shall have one alarm output (rating maximum 12 VDC / 50 mA).
 4. The camera shall have one audio line out for audio output.
- G. 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 2.
 3. The camera shall consume 10.5 W (max.).
- H. 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 offer a TPM (Trusted Platform Module), which stores all certificates, passwords and encryption data and guards it against unauthorized access.
 4. The camera shall store an SSL certificate for use with HTTPS.
- I. 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 2TB).
 4. The camera shall support industrial SD protocol for integrated health monitoring.
 5. The local storage feature shall be capable of storage for Automatic Network Replenishment (ANR).

6. Local Recording: Continuous recording, ring recording, alarm/events/schedule recording.
- J. 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.
- K. Essential Video Analytics (EVA)
1. The camera shall be EVA enabled.
 2. The camera shall offer embedded Essential Video Analytics that eliminates dedicated PCs and associated software maintenance.
 3. The camera shall be capable of processing and analyzing video within the camera itself, with no extra hardware required.
 4. The camera shall be capable of detecting and sending alarms for abnormal events.
 5. The camera shall allow users to set up to 10 separate profiles and switch profiles based on a day/night or holiday schedules.
 6. The camera shall offer Essential Video Analytics that uses an Intelligent tracker to follow objects within the defined regions of interest.
 7. The camera's Essential Video Analytics shall offer the following rule based alarms and tracking: Line crossing, Enter / leave field, Follow route, Loitering, Idle / removed object, People counting, Crowd density estimation, 3D tracking.
- L. Environmental
1. The camera shall operate in a -30°C to +50°C (-22°F to +122°F) temperature range.
 2. The camera can be stored in a -30°C to +70°C (-22°F to +158°F) temperature range.
 3. The camera can be operated/stored in 5% to 93% relative humidity (non-condensing).
 4. The camera shall offer IK10 impact protection
- M. Mechanical
1. The camera dimensions shall be:
 - a. Diameter 121 mm (4.76 in.)
 - b. Height 69.4 mm (2.7 in.)
 2. The camera weight shall be 456g (1.01 lbs) approx.
 3. The camera shall have 3-axis adjustment (pan/tilt/rotation).
 4. The camera shall be surface mounted.
 5. The camera color is white (RAL9003)

2.3 Accessories

- A. Other
1. NPD-5001-POE Power-over-Ethernet midspan injector for use with PoE enabled cameras; 15.4 W, 1-port
 2. NPD-5004-POE Power-over-Ethernet midspan injector for use with PoE enabled cameras; 15.4 W, 4-ports
 3. UPA-1220-50 Power supply for camera. 110-240 VAC, 50/60 Hz In; 12 VDC, 1 A Out; regulated. Input connector: 2-prong, European Europlug standard (4 mm / 19 mm).

4. UPA-1220-60 Power supply for camera. 100-240 VAC, 50/60 Hz In; 12 VDC, 1 A Out; regulated. Input connector: 2-prong, North American standard (non-polarized).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive devices and notify adverse conditions affecting installation or subsequent operation.
- B. Do not begin installation until unacceptable conditions are corrected.

3.2 PREPARATION

- A. Protect devices from damage during construction.

3.3 INSTALLATION

- A. Install devices in accordance with manufacturer's instruction at locations indicated on the floor drawings plans.
- B. Ensure selected location is secure and offers protection from accidental damage.
- C. Location must provide reasonable temperature and humidity conditions, free from sources of electrical and electromagnetic interference.

3.4 FIELD QUALITY CONTROL

- A. Test snugness of mounting screws of all installed equipment.
- B. Test proper operation of all video system devices.
- C. Determine and report all problems to the manufacturer's customer service department.

3.5 ADJUSTING

- A. Make proper adjustment to video system devices for correct operation in accordance with manufacturer's instructions.
- B. Make any adjustment of camera settings to comply with specific customer's need.

3.6 DEMONSTRATION

- A. Demonstrate at final inspection that video management system and devices function properly.

END OF SECTION

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SECTION 28 23 29
VIDEO SURVEILLANCE REMOTE DEVICES AND SENSORS
Bosch FLEXIDOME IP micro 3000i – outdoor camera

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes

1. Video Surveillance Remote Devices.

B. 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.

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- D. Safety
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- E. Image performance
1. IEC 62676-5 Video surveillance systems for use in security applications - Part 5: Data specifications and image quality performance for camera devices
- F. HD
1. SMPTE 296M-2001 (Resolution: 1280x720) 1280 x 720 Progressive Image Sample Structure – Analogue and Digital Representation and Analogue Interface
 2. SMPTE 274M-2008 (Resolution:1920x1080) 1920 x 1080 Image Sample Structure, Digital Representation and Digital Timing Reference Sequences for Multiple Picture Rates

- G. Color representation
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- H. ONVIF conformance
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- J. Environment
 1. EN 50581 (RoHS) Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances
- K. Marks
 1. CE, FCC, cULus, WEEE, RCM, VCCI, CMIM, EAC

1.3 DEFINITIONS

- A. Sensitivity: refers to the minimum level of light the sensor needs to generate an acceptable video picture, and is measured in lux.
- B. 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.

1.4 SYSTEM DESCRIPTION

- A. Video Surveillance Remote Devices
 1. NDE-3502-F02 FLEXIDOME IP micro 3000i 2MP 130° outdoor camera
- B. Performance Requirements
 1. Complete outdoor network video surveillance system inside a microdome camera.
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 3. Built-in Essential Video Analytics to trigger relevant alerts and quickly retrieve data.
 4. Intelligent Dynamic Noise Reduction (iDNR) technology.
 5. Intelligent streaming technology for reduced bitrates.
 6. H.264, H.265 and M-JPEG encoding.
 7. 2.3 mm and 2.8 mm fixed surface-mounted lens.
 8. Triple-streaming IP video.
 9. Micro SDHC/SDXC card slot for edge recording up to 2 TB.
 10. ONVIF conformant.
 11. +12 VDC and Power over Ethernet (IEEE 802.3af compliant).

1.5 SUBMITTALS

- A. Submit under provisions of Section [01 33 00].
- B. 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.
- C. Shop Drawings; include
 - 1. System device locations on architectural floor plans.
 - 2. Full Schematic of system, including wiring information for all devices.
- D. Closeout Submittals
 - 1. User manual.
 - 2. Parts list.
 - 3. System device locations on architectural floor plans.
 - 4. Wiring and connection diagram.
 - 5. Maintenance requirements.

1.6 QUALITY ASSURANCE

- A. 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.
- B. Video Surveillance System
 - 1. Listed by cULus.
 - 2. Certified compliant to [FCC] [CE] [UL] product specific requirements. Test methods are in accordance with international standards. Provide evidence of compliance upon request.
- C. Installer:
 - 1. Minimum of [5] years experience installing Video Surveillance Systems.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Comply with requirements of Section [01 60 00].
- B. Deliver materials in manufacturer's original, unopened, undamaged containers; and unharmed original identification labels.
- C. Protect store materials from environmental and temperature conditions following manufacturer's instructions.
- D. Handle and operate products and systems according to manufacturer's instructions.
- E. Bosch provides off-the-shelf availability for our top selling products and same-day or 24-hour shipping.

1.8 WARRANTY

- A. Provide manufacturer's warranty covering [3] years for replacement and repair of defective equipment.

1.9 MAINTENANCE

- A. Make ordering of new equipment for expansions, replacements, and spare parts available to dealers and end users.
- B. Provide factory direct technical support from 8:00 a.m. to 8:00 p.m. via phone and e-mail.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer:
[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
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- B. 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.

2.2 FLEXIDOME IP micro 3000i – outdoor [NDE-3502-F02]

A. General Characteristics:

1. The camera shall be capable of operating in an outdoor environment.
2. The camera shall offer 1080p resolution at 16:9 aspect ratio.
3. The camera shall offer tamper detection and Essential Video Analytics.
4. The camera shall utilize Intelligent Dynamic Noise Reduction (iDNR) technology to reduce the bitrate and storage requirements by removing noise artifacts
5. The camera shall offer Intelligent streaming possibilities.
6. The camera shall provide eight independent, fully programmable privacy mask areas.

B. Imaging Requirements

1. The camera shall offer a 1/2.8-inch CMOS image sensor.
2. The camera shall offer a video resolution of 1080p @30 fps.
3. The camera shall offer 1920 x 1080 sensor pixels.
4. The camera shall be fitted with a surface-mounted fixed 2.3 mm, F2.2 lens with a lens view angle of:
 - a. 132° (Horizontal)
 - b. 77° (Vertical).
5. The camera shall be fitted with a surface-mounted fixed 2.8 mm, F1.6 lens with a lens view angle of:
 - a. 107° (Horizontal)
 - b. 57° (Vertical).
6. The camera shall have a wide dynamic range of 120 dB.
7. The camera shall have high sensitivity in color (0.1 lx) and in monochrome (0.05 lx) on both lenses.
8. The camera automatic electronic shutter shall offer a shutter speed of 1/30 (1/25) to 1/15000.
9. The camera shall be capable of capturing and storing images using the following compression standards:
 - a. H.265 MP
 - b. H.264 MP
 - c. M-JPEG

C. Network Video

1. The camera shall provide direct network connection using H.265, H.264 and M-JPEG compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
2. The camera shall allow full camera control and configuration capabilities over the network.
3. The camera shall deliver video, at rates up to 30 images per second, via TCP/IP over a 10/100 Base-T, half/full-duplex, RJ45 Ethernet connection.
4. The camera shall support TLS1.0/1.2, AES128, AES256 encryption.

5. The camera shall support Auto-MDIX.
 6. The camera shall conform to the ONVIF Profile S, G and T standard.
 7. The camera shall conform to protocols: IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, ARP, DHCP, APIPA (Auto-IP, link local address), NTP (SNTP), SNMP (V1, V3, 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.
- D. Audio
1. The camera shall have audio line out for two-way, full-duplex and half-duplex audio communication with audio compression AAC, G.711, L16 (live and recording).
- E. Control
1. The camera shall be configured via a web browser or PC surveillance software.
- F. Connectors
1. The camera shall have one RJ-45 for Ethernet.
 2. The camera shall have one alarm input with short or DC 5 V activation.
 3. The camera shall have one alarm output (rating maximum 12 VDC / 50 mA).
 4. The camera shall have one audio line out for audio output.
- G. 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 2.
 3. The camera shall consume 10.5 W (max.).
- H. 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 offer a TPM (Trusted Platform Module), which stores all certificates, passwords and encryption data and guards it against unauthorized access.
 4. The camera shall store an SSL certificate for use with HTTPS.
- I. 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 2TB).
 4. The camera shall support industrial SD protocol for integrated health monitoring.
 5. The local storage feature shall be capable of storage for Automatic Network Replenishment (ANR).

6. Local Recording: Continuous recording, ring recording, alarm/events/schedule recording.
- J. 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.
- K. Essential Video Analytics (EVA)
1. The camera shall be EVA enabled.
 2. The camera shall offer embedded Essential Video Analytics that eliminates dedicated PCs and associated software maintenance.
 3. The camera shall be capable of processing and analyzing video within the camera itself, with no extra hardware required.
 4. The camera shall be capable of detecting and sending alarms for abnormal events.
 5. The camera shall allow users to set up to 10 separate profiles and switch profiles based on a day/night or holiday schedules.
 6. The camera shall offer Essential Video Analytics that uses an Intelligent tracker to follow objects within the defined regions of interest.
 7. The camera's Essential Video Analytics shall offer the following rule based alarms and tracking: Line crossing, Enter / leave field, Follow route, Loitering, Idle / removed object, People counting, Crowd density estimation, 3D tracking.
- L. Environmental
1. The camera shall operate in a -30°C to +50°C (-22°F to +122°F) temperature range.
 2. The camera can be stored in a -30°C to +70°C (-22°F to +158°F) temperature range.
 3. The camera can be operated/stored in 5% to 93% relative humidity (non-condensing).
 4. The camera shall offer IK10 impact protection
- M. Mechanical
1. The camera dimensions shall be:
 - a. Diameter 121 mm (4.76 in.)
 - b. Height 69.4 mm (2.7 in.)
 2. The camera weight shall be 456g (1.01 lbs) approx.
 3. The camera shall have 3-axis adjustment (pan/tilt/rotation).
 4. The camera shall be surface mounted.
 5. The camera color is white (RAL9003)

2.3 Accessories

- A. Other
1. NPD-5001-POE Power-over-Ethernet midspan injector for use with PoE enabled cameras; 15.4 W, 1-port
 2. NPD-5004-POE Power-over-Ethernet midspan injector for use with PoE enabled cameras; 15.4 W, 4-ports
 3. UPA-1220-50 Power supply for camera. 110-240 VAC, 50/60 Hz In; 12 VDC, 1 A Out; regulated. Input connector: 2-prong, European Europlug standard (4 mm / 19 mm).

4. UPA-1220-60 Power supply for camera. 100-240 VAC, 50/60 Hz In; 12 VDC, 1 A Out; regulated. Input connector: 2-prong, North American standard (non-polarized).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive devices and notify adverse conditions affecting installation or subsequent operation.
- B. Do not begin installation until unacceptable conditions are corrected.

3.2 PREPARATION

- A. Protect devices from damage during construction.

3.3 INSTALLATION

- A. Install devices in accordance with manufacturer's instruction at locations indicated on the floor drawings plans.
- B. Ensure selected location is secure and offers protection from accidental damage.
- C. Location must provide reasonable temperature and humidity conditions, free from sources of electrical and electromagnetic interference.

3.4 FIELD QUALITY CONTROL

- A. Test snugness of mounting screws of all installed equipment.
- B. Test proper operation of all video system devices.
- C. Determine and report all problems to the manufacturer's customer service department.

3.5 ADJUSTING

- A. Make proper adjustment to video system devices for correct operation in accordance with manufacturer's instructions.
- B. Make any adjustment of camera settings to comply with specific customer's need.

3.6 DEMONSTRATION

- A. Demonstrate at final inspection that video management system and devices function properly.

END OF SECTION

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Asia-Pacific

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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 micro 3000i – outdoor camera

PART 4 – GENERAL

4.1 SUMMARY

A. Section Includes

1. Video Surveillance Remote Devices.

B. 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.

4.2 REFERENCES

A. EMC – Emissions

1. EN 55032 Electromagnetic compatibility of multimedia equipment - Emission requirements
 2. CFR 47 FCC part 15, Class B Code of Federal Regulations Title 47 – Telecommunication Chapter I - FEDERAL COMMUNICATIONS COMMISSION, Subchapter A – GENERAL, Part 15 - RADIO FREQUENCY DEVICES
 3. AS/NZS CISPR 32 Electromagnetic compatibility of multimedia equipment - Emission requirements
- B. EMC – Immunity
1. EN 50130-4 Alarm systems - Part 4: Electromagnetic compatibility - Product family standard: Immunity requirements for components of fire, intruder, hold up, CCTV, access control and social alarm systems
 2. EN 50121-4 Railway applications - Electromagnetic compatibility - Part 4: Emission and immunity of the signalling and telecommunications apparatus
- C. Environmental
1. EN 50130-5 (Class II) Alarm systems - Part 5: Environmental test methods
 2. EN 60068-2-1 Environmental testing - Part 2-1: Tests - Test A: Cold
 3. EN 60068-2-2 Environmental testing - Part 2-2: Tests - Test B: Dry heat
 4. EN 60068-2-6 Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)
 5. EN 60068-2-18 Environmental testing - Part 2-18: Tests – Test R and guidance: Water
 6. EN 60068-2-27 Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock
 7. EN 60068-2-30 Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)
 8. EN 60068-2-75 Environmental testing - Part 2-75: Tests - Test Eh: Hammer tests
 9. EN 60068-2-78 Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state
- D. Safety
1. EN 60950-1 Information technology equipment - Safety - Part 1: General requirements
 2. UL 60950-1 Information Technology Equipment - Safety - Part 1: General Requirements
 3. CAN/CSA C22.2 No. 60950-1 Information Technology Equipment - Safety - Part 1: General Requirements
- E. Image performance
1. IEC 62676-5 Video surveillance systems for use in security applications - Part 5: Data specifications and image quality performance for camera devices
- F. HD
1. SMPTE 296M-2001 (Resolution: 1280x720) 1280 x 720 Progressive Image Sample Structure – Analogue and Digital Representation and Analogue Interface
 2. SMPTE 274M-2008 (Resolution:1920x1080) 1920 x 1080 Image Sample Structure, Digital Representation and Digital Timing Reference Sequences for Multiple Picture Rates

- G. Color representation
 - 1. ITU-R BT.709-6 Parameter values for the HDTV standards for production and international programme exchange
- H. ONVIF conformance
 - 1. EN 50132-5-2 Alarm systems - CCTV surveillance systems for use in security applications - Part 5-2: IP Video Transmission Protocols
 - 2. EN 62676-2 Video surveillance systems for use in security applications
- I. Impact protection
 - 1. EN 62262 (IK08) Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)
- J. Environment
 - 1. EN 50581 (RoHS) Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances
- K. Marks
 - 1. CE, FCC, cULus, WEEE, RCM, VCCI, CMIM, EAC

4.3 DEFINITIONS

- A. Sensitivity: refers to the minimum level of light the sensor needs to generate an acceptable video picture, and is measured in lux.
- B. 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.

4.4 SYSTEM DESCRIPTION

- A. Video Surveillance Remote Devices
 - 1. NDE-3503-F02 FLEXIDOME IP micro 3000i 5MP 130° outdoor camera
- B. Performance Requirements
 - 1. Complete outdoor network video surveillance system inside a microdome camera.
 - 2. 1080p resolution.
 - 3. Built-in Essential Video Analytics to trigger relevant alerts and quickly retrieve data.
 - 4. Intelligent Dynamic Noise Reduction (iDNR) technology.
 - 5. Intelligent streaming technology for reduced bitrates.
 - 6. H.264, H.265 and M-JPEG encoding.
 - 7. 2.3 mm and 2.8 mm fixed surface-mounted lens.
 - 8. Triple-streaming IP video.
 - 9. Micro SDHC/SDXC card slot for edge recording up to 2 TB.
 - 10. ONVIF conformant.
 - 11. +12 VDC and Power over Ethernet (IEEE 802.3af compliant).

4.5 SUBMITTALS

- A. Submit under provisions of Section [01 33 00].
- B. 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.
- C. Shop Drawings; include
 - 1. System device locations on architectural floor plans.
 - 2. Full Schematic of system, including wiring information for all devices.
- D. Closeout Submittals
 - 1. User manual.
 - 2. Parts list.
 - 3. System device locations on architectural floor plans.
 - 4. Wiring and connection diagram.
 - 5. Maintenance requirements.

4.6 QUALITY ASSURANCE

- A. 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.
- B. Video Surveillance System
 - 1. Listed by cULus.
 - 2. Certified compliant to [FCC] [CE] [UL] product specific requirements. Test methods are in accordance with international standards. Provide evidence of compliance upon request.
- C. Installer:
 - 1. Minimum of [5] years experience installing Video Surveillance Systems.

4.7 DELIVERY, STORAGE AND HANDLING

- A. Comply with requirements of Section [01 60 00].
- B. Deliver materials in manufacturer's original, unopened, undamaged containers; and unharmed original identification labels.
- C. Protect store materials from environmental and temperature conditions following manufacturer's instructions.
- D. Handle and operate products and systems according to manufacturer's instructions.
- E. Bosch provides off-the-shelf availability for our top selling products and same-day or 24-hour shipping.

4.8 WARRANTY

- A. Provide manufacturer's warranty covering [3] years for replacement and repair of defective equipment.

4.9 MAINTENANCE

- A. Make ordering of new equipment for expansions, replacements, and spare parts available to dealers and end users.
- B. Provide factory direct technical support from 8:00 a.m. to 8:00 p.m. via phone and e-mail.

PART 5 – PRODUCTS

5.1 MANUFACTURERS

- A. Acceptable Manufacturer:
[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]

[Bosch Security Systems B.V.
P.O. Box 80002
5600 JB Eindhoven, The Netherlands
Phone: + 31 40 2577 284
Fax: +31 40 2577 330
emea.securitysystems@bosch.com
www.boschsecurity.com]

[Robert Bosch (SEA) Pte Ltd, Security Systems
11 Bishan Street 21
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Phone: +65 6571 2808
Fax: +65 6571 2699
apr.securitysystems@bosch.com
www.boschsecurity.com]

- B. 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.

5.2 FLEXIDOME IP micro 3000i – outdoor [NDE-3503-F02]

A. General Characteristics:

1. The camera shall be capable of operating in an outdoor environment.
2. The camera shall have a 5.3MP sensor.
3. The camera shall offer tamper detection and Essential Video Analytics.
4. The camera shall utilize Intelligent Dynamic Noise Reduction (iDNR) technology to reduce the bitrate and storage requirements by removing noise artifacts
5. The camera shall offer Intelligent streaming possibilities.
6. The camera shall provide eight independent, fully programmable privacy mask areas.

B. Imaging Requirements

1. The camera shall offer a 1/2.9-inch CMOS image sensor.
2. The camera shall offer a video resolution of 3072x1728 pixels (5.3 MP).
3. The camera shall be fitted with a surface-mounted fixed 2.3 mm, F2.2 lens with a lens view angle of:
 - a. 118° (Horizontal)
 - b. 69° (Vertical).
4. The camera shall be fitted with a surface-mounted fixed 2.8 mm, F1.6 lens with a lens view angle of:
 - a. 94° (Horizontal)
 - b. 51° (Vertical).
5. The camera shall have a wide dynamic range of 120 dB.
6. The camera shall have high sensitivity in color (0.57 lx) and in monochrome (0.24 lx) in the 2.3 mm lens.
7. The camera shall have high sensitivity in color (0.53 lx) and in monochrome (0.19 lx) in the 2.8 mm lens.
8. The camera automatic electronic shutter shall offer a shutter speed of 1/30 (1/25) to 1/15000.
9. The camera shall be capable of capturing and storing images using the following compression standards:
 - a. H.265 MP
 - b. H.264 MP
 - c. M-JPEG

C. Network Video

1. The camera shall provide direct network connection using H.265, H.264 and M-JPEG compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
2. The camera shall allow full camera control and configuration capabilities over the network.
3. The camera shall deliver video, at rates up to 30 images per second, via TCP/IP over a 10/100 Base-T, half/full-duplex, RJ45 Ethernet connection.

4. The camera shall support TLS1.0/1.2, AES128, AES256 encryption.
 5. The camera shall support Auto-MDIX.
 6. The camera shall conform to the ONVIF Profile S, G and T standard.
 7. The camera shall conform to protocols: IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, ARP, DHCP, APIPA (Auto-IP, link local address), NTP (SNTP), SNMP (V1, V3, 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.
- D. Audio
1. The camera shall have audio line out for two-way, full-duplex and half-duplex audio communication with audio compression AAC, G.711, L16 (live and recording).
- E. Control
1. The camera shall be configured via a web browser or PC surveillance software.
- F. Connectors
1. The camera shall have one RJ-45 for Ethernet.
 2. The camera shall have one alarm input with short or DC 5 V activation.
 3. The camera shall have one alarm output (rating maximum 12 VDC / 50 mA).
 4. The camera shall have one audio line out for audio output.
- G. 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 2.
 3. The camera shall consume 10.5 W (max.).
- H. 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 offer a TPM (Trusted Platform Module), which stores all certificates, passwords and encryption data and guards it against unauthorized access.
 4. The camera shall store an SSL certificate for use with HTTPS.
- I. 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 2TB).
 4. The camera shall support industrial SD protocol for integrated health monitoring.
 5. The local storage feature shall be capable of storage for Automatic Network Replenishment (ANR).

6. Local Recording: Continuous recording, ring recording, alarm/events/schedule recording.
- J. 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.
- K. Essential Video Analytics (EVA)
1. The camera shall be EVA enabled.
 2. The camera shall offer embedded Essential Video Analytics that eliminates dedicated PCs and associated software maintenance.
 3. The camera shall be capable of processing and analyzing video within the camera itself, with no extra hardware required.
 4. The camera shall be capable of detecting and sending alarms for abnormal events.
 5. The camera shall allow users to set up to 10 separate profiles and switch profiles based on a day/night or holiday schedules.
 6. The camera shall offer Essential Video Analytics that uses an Intelligent tracker to follow objects within the defined regions of interest.
 7. The camera's Essential Video Analytics shall offer the following rule based alarms and tracking: Line crossing, Enter / leave field, Follow route, Loitering, Idle / removed object, People counting, Crowd density estimation, 3D tracking.
- L. Environmental
1. The camera shall operate in a -30°C to +50°C (-22°F to +122°F) temperature range.
 2. The camera can be stored in a -30°C to +70°C (-22°F to +158°F) temperature range.
 3. The camera can be operated/stored in 5% to 93% relative humidity (non-condensing).
 4. The camera shall offer IK10 impact protection
- M. Mechanical
1. The camera dimensions shall be:
 - a. Diameter 121 mm (4.76 in.)
 - b. Height 69.4 mm (2.7 in.)
 2. The camera weight shall be 456g (1.01 lbs) approx.
 3. The camera shall have 3-axis adjustment (pan/tilt/rotation).
 4. The camera shall be surface mounted.
 5. The camera color is white (RAL9003)

5.3 Accessories

- A. Other
1. NPD-5001-POE Power-over-Ethernet midspan injector for use with PoE enabled cameras; 15.4 W, 1-port
 2. NPD-5004-POE Power-over-Ethernet midspan injector for use with PoE enabled cameras; 15.4 W, 4-ports
 3. UPA-1220-50 Power supply for camera. 110-240 VAC, 50/60 Hz In; 12 VDC, 1 A Out; regulated. Input connector: 2-prong, European Europlug standard (4 mm / 19 mm).

4. UPA-1220-60 Power supply for camera. 100-240 VAC, 50/60 Hz In; 12 VDC, 1 A Out; regulated. Input connector: 2-prong, North American standard (non-polarized).

PART 6 EXECUTION

6.1 EXAMINATION

- A. Examine areas to receive devices and notify adverse conditions affecting installation or subsequent operation.
- B. Do not begin installation until unacceptable conditions are corrected.

6.2 PREPARATION

- A. Protect devices from damage during construction.

6.3 INSTALLATION

- A. Install devices in accordance with manufacturer's instruction at locations indicated on the floor drawings plans.
- B. Ensure selected location is secure and offers protection from accidental damage.
- C. Location must provide reasonable temperature and humidity conditions, free from sources of electrical and electromagnetic interference.

6.4 FIELD QUALITY CONTROL

- A. Test snugness of mounting screws of all installed equipment.
- B. Test proper operation of all video system devices.
- C. Determine and report all problems to the manufacturer's customer service department.

6.5 ADJUSTING

- A. Make proper adjustment to video system devices for correct operation in accordance with manufacturer's instructions.
- B. Make any adjustment of camera settings to comply with specific customer's need.

6.6 DEMONSTRATION

- A. Demonstrate at final inspection that video management system and devices function properly.

END OF SECTION

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www.boschsecurity.asia

Product Guide Specification

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SECTION 28 23 29
VIDEO SURVEILLANCE REMOTE DEVICES AND SENSORS
Bosch FLEXIDOME IP micro 3000i – outdoor camera

PART 7 – GENERAL

7.1 SUMMARY

A. Section Includes

1. Video Surveillance Remote Devices.

B. 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.

7.2 REFERENCES

A. EMC – Emissions

1. EN 55032 Electromagnetic compatibility of multimedia equipment - Emission requirements
 2. CFR 47 FCC part 15, Class B Code of Federal Regulations Title 47 – Telecommunication Chapter I - FEDERAL COMMUNICATIONS COMMISSION, Subchapter A – GENERAL, Part 15 - RADIO FREQUENCY DEVICES
 3. AS/NZS CISPR 32 Electromagnetic compatibility of multimedia equipment - Emission requirements
- B. EMC – Immunity
1. EN 50130-4 Alarm systems - Part 4: Electromagnetic compatibility - Product family standard: Immunity requirements for components of fire, intruder, hold up, CCTV, access control and social alarm systems
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 6. EN 60068-2-27 Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock
 7. EN 60068-2-30 Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)
 8. EN 60068-2-75 Environmental testing - Part 2-75: Tests - Test Eh: Hammer tests
 9. EN 60068-2-78 Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state
- D. Safety
1. EN 60950-1 Information technology equipment - Safety - Part 1: General requirements
 2. UL 60950-1 Information Technology Equipment - Safety - Part 1: General Requirements
 3. CAN/CSA C22.2 No. 60950-1 Information Technology Equipment - Safety - Part 1: General Requirements
- E. Image performance
1. IEC 62676-5 Video surveillance systems for use in security applications - Part 5: Data specifications and image quality performance for camera devices
- F. HD
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 2. SMPTE 274M-2008 (Resolution:1920x1080) 1920 x 1080 Image Sample Structure, Digital Representation and Digital Timing Reference Sequences for Multiple Picture Rates

- G. Color representation
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- H. ONVIF conformance
 - 1. EN 50132-5-2 Alarm systems - CCTV surveillance systems for use in security applications - Part 5-2: IP Video Transmission Protocols
 - 2. EN 62676-2 Video surveillance systems for use in security applications
- I. Impact protection
 - 1. EN 62262 (IK08) Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)
- J. Environment
 - 1. EN 50581 (RoHS) Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances
- K. Marks
 - 1. CE, FCC, cULus, WEEE, RCM, VCCI, CMIM, EAC

7.3 DEFINITIONS

- A. Sensitivity: refers to the minimum level of light the sensor needs to generate an acceptable video picture, and is measured in lux.
- B. 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.

7.4 SYSTEM DESCRIPTION

- A. Video Surveillance Remote Devices
 - 1. NDE-3503-F02 FLEXIDOME IP micro 3000i 5MP 130° outdoor camera
- B. Performance Requirements
 - 1. Complete outdoor network video surveillance system inside a microdome camera.
 - 2. 1080p resolution.
 - 3. Built-in Essential Video Analytics to trigger relevant alerts and quickly retrieve data.
 - 4. Intelligent Dynamic Noise Reduction (iDNR) technology.
 - 5. Intelligent streaming technology for reduced bitrates.
 - 6. H.264, H.265 and M-JPEG encoding.
 - 7. 2.3 mm and 2.8 mm fixed surface-mounted lens.
 - 8. Triple-streaming IP video.
 - 9. Micro SDHC/SDXC card slot for edge recording up to 2 TB.
 - 10. ONVIF conformant.
 - 11. +12 VDC and Power over Ethernet (IEEE 802.3af compliant).

7.5 SUBMITTALS

- A. Submit under provisions of Section [01 33 00].
- B. 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.
- C. Shop Drawings; include
 - 1. System device locations on architectural floor plans.
 - 2. Full Schematic of system, including wiring information for all devices.
- D. Closeout Submittals
 - 1. User manual.
 - 2. Parts list.
 - 3. System device locations on architectural floor plans.
 - 4. Wiring and connection diagram.
 - 5. Maintenance requirements.

7.6 QUALITY ASSURANCE

- A. 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.
- B. Video Surveillance System
 - 1. Listed by cULus.
 - 2. Certified compliant to [FCC] [CE] [UL] product specific requirements. Test methods are in accordance with international standards. Provide evidence of compliance upon request.
- C. Installer:
 - 1. Minimum of [5] years experience installing Video Surveillance Systems.

7.7 DELIVERY, STORAGE AND HANDLING

- A. Comply with requirements of Section [01 60 00].
- B. Deliver materials in manufacturer's original, unopened, undamaged containers; and unharmed original identification labels.
- C. Protect store materials from environmental and temperature conditions following manufacturer's instructions.
- D. Handle and operate products and systems according to manufacturer's instructions.
- E. Bosch provides off-the-shelf availability for our top selling products and same-day or 24-hour shipping.

7.8 WARRANTY

- A. Provide manufacturer's warranty covering [3] years for replacement and repair of defective equipment.

7.9 MAINTENANCE

- A. Make ordering of new equipment for expansions, replacements, and spare parts available to dealers and end users.
- B. Provide factory direct technical support from 8:00 a.m. to 8:00 p.m. via phone and e-mail.

PART 8 – PRODUCTS

8.1 MANUFACTURERS

- A. Acceptable Manufacturer:
[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]

[Bosch Security Systems B.V.
P.O. Box 80002
5600 JB Eindhoven, The Netherlands
Phone: + 31 40 2577 284
Fax: +31 40 2577 330
emea.securitysystems@bosch.com
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
www.boschsecurity.com]

- B. 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.

8.2 FLEXIDOME IP micro 3000i – outdoor [NDE-3503-F02]

A. General Characteristics:

1. The camera shall be capable of operating in an outdoor environment.
2. The camera shall have a 5.3MP sensor.
3. The camera shall offer tamper detection and Essential Video Analytics.
4. The camera shall utilize Intelligent Dynamic Noise Reduction (iDNR) technology to reduce the bitrate and storage requirements by removing noise artifacts
5. The camera shall offer Intelligent streaming possibilities.
6. The camera shall provide eight independent, fully programmable privacy mask areas.

B. Imaging Requirements

1. The camera shall offer a 1/2.9-inch CMOS image sensor.
2. The camera shall offer a video resolution of 3072x1728 pixels (5.3 MP).
3. The camera shall be fitted with a surface-mounted fixed 2.3 mm, F2.2 lens with a lens view angle of:
 - a. 118° (Horizontal)
 - b. 69° (Vertical).
4. The camera shall be fitted with a surface-mounted fixed 2.8 mm, F1.6 lens with a lens view angle of:
 - a. 94° (Horizontal)
 - b. 51° (Vertical).
5. The camera shall have a wide dynamic range of 120 dB.
6. The camera shall have high sensitivity in color (0.57 lx) and in monochrome (0.24 lx) in the 2.3 mm lens.
7. The camera shall have high sensitivity in color (0.53 lx) and in monochrome (0.19 lx) in the 2.8 mm lens.
8. The camera automatic electronic shutter shall offer a shutter speed of 1/30 (1/25) to 1/15000.
9. The camera shall be capable of capturing and storing images using the following compression standards:
 - a. H.265 MP
 - b. H.264 MP
 - c. M-JPEG

C. Network Video

1. The camera shall provide direct network connection using H.265, H.264 and M-JPEG compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
2. The camera shall allow full camera control and configuration capabilities over the network.
3. The camera shall deliver video, at rates up to 30 images per second, via TCP/IP over a 10/100 Base-T, half/full-duplex, RJ45 Ethernet connection.

4. The camera shall support TLS1.0/1.2, AES128, AES256 encryption.
 5. The camera shall support Auto-MDIX.
 6. The camera shall conform to the ONVIF Profile S, G and T standard.
 7. The camera shall conform to protocols: IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, ARP, DHCP, APIPA (Auto-IP, link local address), NTP (SNTP), SNMP (V1, V3, 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.
- D. Audio
1. The camera shall have audio line out for two-way, full-duplex and half-duplex audio communication with audio compression AAC, G.711, L16 (live and recording).
- E. Control
1. The camera shall be configured via a web browser or PC surveillance software.
- F. Connectors
1. The camera shall have one RJ-45 for Ethernet.
 2. The camera shall have one alarm input with short or DC 5 V activation.
 3. The camera shall have one alarm output (rating maximum 12 VDC / 50 mA).
 4. The camera shall have one audio line out for audio output.
- G. 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 2.
 3. The camera shall consume 10.5 W (max.).
- H. 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 offer a TPM (Trusted Platform Module), which stores all certificates, passwords and encryption data and guards it against unauthorized access.
 4. The camera shall store an SSL certificate for use with HTTPS.
- I. 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 2TB).
 4. The camera shall support industrial SD protocol for integrated health monitoring.
 5. The local storage feature shall be capable of storage for Automatic Network Replenishment (ANR).

6. Local Recording: Continuous recording, ring recording, alarm/events/schedule recording.
- J. 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.
- K. Essential Video Analytics (EVA)
1. The camera shall be EVA enabled.
 2. The camera shall offer embedded Essential Video Analytics that eliminates dedicated PCs and associated software maintenance.
 3. The camera shall be capable of processing and analyzing video within the camera itself, with no extra hardware required.
 4. The camera shall be capable of detecting and sending alarms for abnormal events.
 5. The camera shall allow users to set up to 10 separate profiles and switch profiles based on a day/night or holiday schedules.
 6. The camera shall offer Essential Video Analytics that uses an Intelligent tracker to follow objects within the defined regions of interest.
 7. The camera's Essential Video Analytics shall offer the following rule based alarms and tracking: Line crossing, Enter / leave field, Follow route, Loitering, Idle / removed object, People counting, Crowd density estimation, 3D tracking.
- L. Environmental
1. The camera shall operate in a -30°C to +50°C (-22°F to +122°F) temperature range.
 2. The camera can be stored in a -30°C to +70°C (-22°F to +158°F) temperature range.
 3. The camera can be operated/stored in 5% to 93% relative humidity (non-condensing).
 4. The camera shall offer IK10 impact protection
- M. Mechanical
1. The camera dimensions shall be:
 - a. Diameter 121 mm (4.76 in.)
 - b. Height 69.4 mm (2.7 in.)
 2. The camera weight shall be 456g (1.01 lbs) approx.
 3. The camera shall have 3-axis adjustment (pan/tilt/rotation).
 4. The camera shall be surface mounted.
 5. The camera color is white (RAL9003)

8.3 Accessories

- A. Other
1. NPD-5001-POE Power-over-Ethernet midspan injector for use with PoE enabled cameras; 15.4 W, 1-port
 2. NPD-5004-POE Power-over-Ethernet midspan injector for use with PoE enabled cameras; 15.4 W, 4-ports
 3. UPA-1220-50 Power supply for camera. 110-240 VAC, 50/60 Hz In; 12 VDC, 1 A Out; regulated. Input connector: 2-prong, European Europlug standard (4 mm / 19 mm).

4. UPA-1220-60 Power supply for camera. 100-240 VAC, 50/60 Hz In; 12 VDC, 1 A Out; regulated. Input connector: 2-prong, North American standard (non-polarized).

PART 9 EXECUTION

9.1 EXAMINATION

- A. Examine areas to receive devices and notify adverse conditions affecting installation or subsequent operation.
- B. Do not begin installation until unacceptable conditions are corrected.

9.2 PREPARATION

- A. Protect devices from damage during construction.

9.3 INSTALLATION

- A. Install devices in accordance with manufacturer's instruction at locations indicated on the floor drawings plans.
- B. Ensure selected location is secure and offers protection from accidental damage.
- C. Location must provide reasonable temperature and humidity conditions, free from sources of electrical and electromagnetic interference.

9.4 FIELD QUALITY CONTROL

- A. Test snugness of mounting screws of all installed equipment.
- B. Test proper operation of all video system devices.
- C. Determine and report all problems to the manufacturer's customer service department.

9.5 ADJUSTING

- A. Make proper adjustment to video system devices for correct operation in accordance with manufacturer's instructions.
- B. Make any adjustment of camera settings to comply with specific customer's need.

9.6 DEMONSTRATION

- A. Demonstrate at final inspection that video management system and devices function properly.

END OF SECTION