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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 TINYON IP 2000 PIR camera**

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

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

* 1. REFERENCES

| **Standards** |  |
| --- | --- |
|  | EN 60950-1 |
|  | UL 60950-1 |
|  | CAN/CSA-C22.2 NO. 60950-1-07 |
|  | EN 50130-4; EN 50130-5 |
|  | FCC Part15 Subpart B, Class B |
|  | EMC directive 2004/108/EC |
|  | EN 55022 class B |
|  | EN 61000-3-2 |
|  | EN 61000-3-3 |
|  | EN 55024 |
|  | VCCI J55022 V2/V3 |
|  | AS/NZS CISPR 22 (equal to CISPR 22) |
|  | ICES-003 Class B |
| **ONVIF conformance** | EN 50132-5-2; IEC 62676-2-3 |
| **Product certifications** | CE, FCC, UL, cUL, C-tick, CB, VCCI |

* 1. DEFINITIONS
     1. Sensitivity: refers to the minimum level of light the sensor needs to generate an acceptable video picture, and is measured in lux.
     2. Day/Night (infrared sensitive): The camera has normal color operation in situations where there is sufficient illumination (day conditions), but when there is little light available (night conditions) the sensitivity is increased.
     3. iDNR (intelligent Dynamic Noise Reduction): The Intelligent Dynamic Noise Reduction applies temporal noise filtering when no motion is detected. The filtering reduces the noise in the image and this makes the encoder step more effective.
  2. SYSTEM DESCRIPTION
     1. Video Surveillance Remote Devices
        1. NPC-20012-F2L (-W) TINYON IP 2000 PIR camera
     2. Performance Requirements
        1. Complete indoor network video surveillance system inside a microbox camera.
        2. 720p resolution.
        3. 2.5 mm fixed board-mounted lens.
        4. Intelligent Dynamic Noise Reduction (iDNR) technology.
        5. Built-in microphone and loudspeaker.
        6. Electronic day/night function.
        7. Quad-streaming: Simultaneous dual H.264 streams, an M-JPEG stream and an I-frame stream.
        8. Micro SDHC/SDXC card slot for edge recording up to 2 TB.
        9. ONVIF conformant.
        10. +5 VDC power adapter or Power over Ethernet (IEEE 802.3af compliant).
  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. TINYON IP 2000 PIR   
     [NPC-20012-F2L (-W)]
     1. General Characteristics:
        1. The camera shall offer 720p resolution at 16:9 aspect ratio.
        2. The built-in passive infrared (PIR) sensor shall detect motion within 5 meters, even in complete darkness.
        3. The camera shall offer intelligent motion detection.
        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 accept power via a +5 VDC power adapter or Power over Ethernet (IEEE 802.3af compliant).
        6. The camera shall offer two-way audio communication.
        7. The camera shall be easy to install.
        8. The camera shall provide four independent, fully programmable privacy masks.
     2. Image processing and compression
        1. The camera shall offer a 1/4-inch CMOS image sensor.
        2. The camera shall offer a video resolution of 720p @30 fps.
        3. The camera shall offer 1280 x 720 sensor pixels.
        4. The camera shall be fitted with a board-mounted fixed 2.5 mm, F2.8 lens with a lens view angle of 89° (H) x 50° (V).
        5. The camera shall have a dynamic range of 76 dB.
        6. The camera shall offer a minimum sensitivity of 1.0 lx in color and 0 lx when wLED on.
        7. The camera automatic electronic shutter shall offer a shutter speed of 1/30 to 1/15000.
        8. The camera shall be capable of capturing and storing images using the following compression standards:
           1. H.264 MP (Main Profile)
           2. M-JPEG
     3. Audio
        1. The camera shall offer G.711, AAC and L16 audio compression (live and recording).
        2. Signal-to-Noise Ratio: >50 dB
        3. The camera shall offer two-way, full duplex audio communication via a built-in microphone and loudspeaker
     4. Night Vision (white-light LED)
        1. The camera shall have one white-light LED for effective night vision up to at least 1.1 lx at 4 meters (13 ft) directly in front of the camera.
        2. The wLED shall be able to perform for up to 5 minutes and allow users to select the duration.
     5. Network Video
        1. The camera shall provide direct network connection.
        2. The camera shall allow full camera control and configuration capabilities over the network.
        3. The camera shall be capable of capturing and storing images using the following compression standards:
           1. H.264 MP (Main Profile)
           2. M-JPEG
        4. The camera shall deliver video, at rates up to 30 images per second, over a 10/100 Base-T, auto-sensing, half/full duplex, RJ45 Ethernet connection.
        5. The camera shall comply with the IEEE 802.3af Power over Ethernet standard.
        6. The camera shall conform to the ONVIF standard.
     6. Electrical
        1. The camera shall accept either +5 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 typically 3.7 W (+5 VDC) or 4.60 W (PoE).
     7. Surveillance Software
        1. The camera shall be accessible from a web browser, with the Bosch Video Management System, with the free-of-charge Bosch Video Client, or via third-party software.
        2. The camera shall be accessible from the Bosch Security System mobile app.
     8. Environmental
        1. The camera shall operate in a -10°C to +45°C (14°F to +113°F) temperature range.
     9. Technical Specifications

| Power | |
| --- | --- |
| Power Supply | +5 VDC via supplied power adapter;  Power-over-Ethernet 48 VDC nominal |
| Power Consumption | 3.7 W |
| PoE | IEEE 802.3af (802.3at Type 1)  Power level: Class 1 |
| Power adapter | 100-240 VAC to +5 VDC power supply included |

| Sensor | |
| --- | --- |
| Type | 1/4‑inch CMOS |
| Total sensor pixels | 1280 x 720 |

| Video performance – Sensitivity  (3200K, 89% reflectivity, 30IRE, F2.8) | |
| --- | --- |
| Sensitivity | 1.0 lx  0.0 lx (with LED) |

| Video performance ‑ Dynamic range | |
| --- | --- |
| Dynamic range | 76 dB |

| Video streaming | |
| --- | --- |
| Video compression | H.264 (MP); M- JPEG |
| Streaming | Multiple configurable streams in H.264 and M-JPEG, configurable frame rate and bandwidth. |
| Overall IP Delay | Min. 120 ms, Max. 340 ms |
| GOP structure | IP, IBP, IBBP |
| Encoding interval | 1 to 30 ips |

| Video resolution (H x V) | |
| --- | --- |
| 720p HD | 1280 x 720 (at 30 ips) |
| Upright 9:16 (cropped) | 400 x 720 |
| D1 4:3 (downscaled/cropped) | 704 x 480 |
| 480p SD | Encoding: 704 x 480;  Displayed: 854 x 480 |
| 432p SD | 768 x 432 |
| 288p SD | 512 x 288 |
| 240p SD | Encoding: 352 x 240;  Displayed: 432 x 240 |
| 144p SD | 256 x 144 |

| Video functions | |
| --- | --- |
| Adjustable picture settings | Contrast, Saturation, Brightness |
| White Balance | Standard automatic mode, manual mode and hold |
| Shutter | Automatic Electronic Shutter (1/30 to 1/150000)  Fixed shutter (1/30 to 1/15000) selectable |
| Backlight compensation | On/off |
| Noise reduction | Intelligent Dynamic Noise Reduction (iDNR) |
| Privacy Masking | Four independent areas, fully programmable |
| Video Analysis | Motion+ |
| Other functions | Image mirror, Image flip, Pixel counter, Video watermarking, Display stamping, Motion detection, Tamper alarm, Audio alarm |

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

| Input/output | |
| --- | --- |
| Audio input | Built-in microphone |
| Audio output | Built-in loudspeaker |
| Alarm input | 1 input |
| Alarm activation voltage | 0 to 3.3 VDC active low, or short |
| Alarm output | 1 output |
| Alarm output voltage | +5 VDC  Load current 1 A max. |

| Detection | |
| --- | --- |
| Detector | PIR (passive infrared) |
| Distance | 5 m (16 ft) |
| Detection angle | 90° (H) |

| Night vision | |
| --- | --- |
| Distance | 4 m (13 ft) |
| Illumination | White light LED |

| Optical | |
| --- | --- |
| Lens type | Fixed 2.5 mm, F2.8 |
| Lens mount | Board mounted |
| Horizontal field of view | 89° |
| Vertical field of view | 50° |

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

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

| Network | |
| --- | --- |
| Protocols | IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, Telnet, ARP, DHCP, NTP (SNTP), 802.1x, DNS, DNSv6, DDNS (DynDNS.org, selfHOST.de, no-ip.com), SMTP, iSCSI, UPnP (SSDP), DiffServ (QoS), LLDP, SOAP, Dropbox, CHAP, digest authentication |
| Encryption | TLS 1.0, SSL, DES, 3DES, AES (optional) |
| Ethernet | 10/100 Base-T, auto-sensing, half/full duplex |
| Connectivity | ONVIF Profile S, Auto-MDIX |

| Mechanical | |
| --- | --- |
| Dimensions (H x W x D) | 109 x 65 x 47 mm (4.29 x 2.56 x 1.85 in) |
| Weight | 105 g (3.70 oz) |

| Environmental | |
| --- | --- |
| Operating Temperature | -10 ºC to +45 ºC (14 ºF to +113 ºF) |
| Storage Temperature | -20 ºC to +70 ºC (-4 ºF to +158 ºF) |
| Humidity | 0% to 95% relative humidity (non condensing) |

* 1. ACCESSORIES

N/A

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