February 2024

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

Europe, Middle East, Africa
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

Asia-Pacific
Robert Bosch (SEA) Pte Ltd,
Security Systems
11 Bishan Street 21
Singapore 573943
Phone: +65 6571 2600
Fax: +65 6571 2698
apr.securitysystems@bosch.com
www.boschsecurity.com

Product Guide Specification

SECTION 28 23 29
VIDEO SURVEILLANCE REMOTE DEVICES AND SENSORS
BOSCH DINION 3100i IR

A. – GENERAL

A.1 SUMMARY

1.A. Related Sections

1.A.1. Section [28 23 13 – Video Surveillance Control and Management Systems].

1.A.2. Section [28 23 16 – Video Surveillance Monitoring and Supervisory Interfaces].

1.A.3. Section [28 23 19 – Digital Video Recorders and Analog Recording Devices].

1.A.4. Section [28 23 23 – Video Surveillance Systems Infrastructure].

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

A.2 REFERENCES

2.A. EMC – Emissions

2.A.1. EN 55032 (Class A) - Electromagnetic compatibility of multimedia equipment - Emission requirements

2.A.2. CFR FCC part15, class A (STP) Code of Federal Title 47 – Telecommunication Chapter I - FEDERAL COMMUNICATIONS COMMISSION, Subchapter A – GENERAL, Part 15 - RADIO FREQUENCY DEVICES

2.A.3. VCCI (Class A)

2.A.4. AS/NZS CISPR32 (Class A) - Electromagnetic compatibility of multimedia equipment - Emission requirements

2.B. EMC – Immunity

2.B.1. EN 55035 - Electromagnetic compatibility of multimedia equipment. Immunity requirements

2.B.2. EN 61000-6-4 - Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

2.B.3. EN 61000-6-2 - Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments

2.C. Environmental

2.C.1. IEC 60068-2-1 - Environmental testing - Part 2-1: Tests - Test A: Cold

2.C.2. IEC 60068-2-2 - Environmental testing - Part 2-2: Tests - Test B: Dry heat

2.C.3. IEC 60068-2-6 - Environmental testing - Part 2-6: Tests - Test Fc: Vibration

2.C.4. IEC 60068-2-30 - Test Db: Damp heat, cyclic (12 h + 12 h cycle)

2.C.5. IEC 60068-2-27 - Environmental testing - Part 2-27: Tests - Test and guidance: Shock

2.C.6. EN IEC 63000 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

2.C.7. RoHS EU, 2011/65/EU and 2015/863/EU Directive of the European Parliament and of the Council as regards the list of restricted substances

2.C.8. WEEE EU, 2012/19/EU Directive of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE)

2.C.9. Packaging EU, 94/62/EU European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste

2.D. Safety

2.D.1. EN/IEC 62368-1 Audio/video, information and communication technology equipment - Part 1: Safety requirements

2.D.2. IEC 62368-1 Audio/video, information and communication technology equipment - Part 1: Safety requirements

2.D.3. UL 62368-1 Audio/video, information and communication technology equipment - Part 1: Safety requirements

2.D.4. EN/IEC/UL 60950-22 Information technology equipment - Safety – Part 22: Equipment to be installed outdoors

2.D.5. EN IEC 62368-1:2020 + A11:2020: Audio/video, information and communication technology equipment - Part 1: Safety requirements

2.E. Image performance

2.E.1. IEC 62676-5 Video surveillance systems for use in security applications - Part 5: Data specifications and image quality performance for camera devices

2.F. Color representation

2.F.1. ITU-R BT.709-6 - Parameter values for the HDTV standards for production and international programme exchange

2.G. ONVIF conformance

2.G.1. EN 50132-5-2 Alarm systems - CCTV surveillance systems for use in security applications - Part 5-2: IP Video Transmission Protocols

2.G.2. EN 62676-2 Video surveillance systems for use in security applications

2.H. Impact protection

2.H.1.a. EN 62262 (IK10) 2002 Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)

2.I. Ingress protection

2.I.1.a. EN60529 (IP66) Degrees of protection provided by enclosures (IP Code)

2.J. Marks

2.J.1. CE, FCC, UL, WEEE, RCM, VCCI, UKCA

2.K. IR lighting

2.K.1. IEC 62471 Photobiological safety of lamps and lamp systems

A.3 SYSTEM DESCRIPTION

3.A. Section Includes

3.A.1. Video Surveillance Remote Devices

3.B. Performance Requirements

3.B.1. The fixed network camera shall be a full-featured fixed bullet designed for discrete video surveillance applications in indoor or outdoor environments.

3.B.1.a. 2MP models:

3.B.1.a.1. NBE-3702-AL

3.B.1.a.2. NBE-3702-AL-GOV

3.B.1.b. 5MP models:

3.B.1.b.1. NBE-3703-AL

3.B.1.b.2. NBE-3703-AL-GOV

3.B.2. The fixed network camera shall be a high-performance CMOS sensor type with up to:

3.B.2.a. All 2 MP models: 1/2.8-inch CMOS, 2MP resolution

3.B.2.b. All 5 MP models: 1/2.7-inch CMOS, 5MP resolution

3.B.3. The fixed network camera shall offer enhanced system flexibility with dual recording (iSCSI and SD card) options.

3.B.4. The fixed network camera shall support the following power option:

3.B.4.a. Input options:

1. PoE IEEE 802.3af / 802.3at Type 1, Class 3

3.B.4.b. The fixed network camera shall support power consumption of PoE:

3.B.4.c. All 2 MP models: power consumption typical / maximum: PoE: 2.6 W / 6.74 W

3.B.4.d. All 5 MP models power consumption typical / maximum: PoE: 3.24 W / 7.72 W

3.B.4.e. The fixed network camera shall be optimized for all lighting conditions with integrated Intelligent IR, covering up to 30 m (98 ft).

3.B.4.f. The fixed network camera shall offer a High Dynamic Range of at least 120 dB WDR to easily distinguish objects and features, for example, faces with bright backlight.

3.B.5. The fixed network 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.

3.B.6. The fixed network camera shall offer embedded deep learning-based person and vehicle detection and video analytics (IVA Pro Buildings) that eliminate dedicated PCs and associated software maintenance.

3.B.7. The fixed network camera shall conform to the ONVIF standard S, G, T, and M to provide interoperability with other conformant systems.

3.B.8. The fixed network camera shall offer three streams with individually configurable frame rate and bandwidth and up to 8 profiles.

3.B.9. The fixed network camera shall have support for both 4:3 - wide screen and 3:4 - upright aspect ratios, or, 16:9 - wide screen and 9:16 - upright aspect ratios.

3.B.10. The fixed network camera shall:

3.B.10.a. All models: Offer IK10 impact resistance housing.

3.B.10.b. All models: Support a temperature range of -30 ºC to +50 ºC (-22 ºF to +122 ºF) for continuous operation.

A.4 SUBMITTALS

4.A. Submit provisions of Section [01 33 00.]

4.B. Product Data:

4.B.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.

4.C. Shop Drawings; include

4.C.1. System device locations on architectural floor plans.

4.C.2. Full Schematic of system, including wiring information for all devices.

4.D. Closeout Submittals

4.D.1. User manual.

4.D.2. Parts list.

4.D.3. System device locations on architectural floor plans.

4.D.4. Wiring and connection diagram.

4.D.5. Maintenance requirements.

A.5 QUALITY ASSURANCE

5.A. Manufacturer:

5.A.1. Minimum of [20] years experience in manufacture and design Video Surveillance Devices.

5.B. Video Surveillance System:

5.B.1. Listed by cULus.

5.B.2. Complies to FCC, CE and UL product specific requirements. Test methods are in accordance to international standards. Provide evidence of compliance upon request.

5.C. Installer:

5.C.1. Minimum of [5] years experience installing Video Surveillance System.

A.6 DELIVERY, STORAGE AND HANDLING

6.A. Comply with requirements of Section 01 60 00.

6.B. Deliver materials in manufacture's original, unopened, undamaged containers; and unharmed original identification labels.

6.C. Protect store materials from environmental and temperature conditions following manufacturer's instructions.

6.D. Handle and operate products and systems according to manufacturer's instructions.

6.E. Bosch provides off-the-shelf availability for our top selling products and same-day or 24-hour shipping.

A.7 WARRANTY

7.A. Provide manufacturer's warranty covering 5 years for replacement and repair of defective equipment.

A.8 MAINTENANCE

8.A. Make ordering of new equipment for expansions, replacements, and spare parts available to dealers and end users.

8.B. Provide factory direct technical support from 8:00 a.m. to 8:00 p.m. via phone and e-mail.

B. – PRODUCTS

B.1 MANUFACTURERS

1.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]

[Asia-Pacific
Robert Bosch (SEA) Pte Ltd, Security Systems
11 Bishan Street 21
Singapore 573943
Phone: +65 6571 2600
Fax: +65 6571 2698
apr.securitysystems@bosch.com
www.boschsecurity.com]

1.B. Substitutions: [Not permitted.] [Under provisions of Division 1.]

1.B.1. [All proposed substitutions must be approved by the Architect or Engineer professional.]

1.B.2. [Proposed substitutions must provide a line-by-line compliance documentation.]

B.2 BOSCH DINION 3100i IR camera or comparable

2.A. General Characteristics:

2.A.1. The fixed network camera shall be a full-featured fixed bullet designed for discrete video surveillance applications in indoor or outdoor environments.

2.A.1.a. 2MP models:

2.A.1.a.1. NBE-3702-AL

2.A.1.a.2. NBE-3702-AL-GOV

2.A.1.b. 5MP models:

2.A.1.b.1. NBE-3703-AL

2.A.1.b.2. NBE-3703-AL-GOV

2.A.2. The fixed network camera shall provide high performance CMOS sensor with the following minimum capabilities:

2.A.2.a. All 2MP models: 1/2.8-inch CMOS image sensor with the minimum capabilities of 2MP (1920 x 1080) effective picture elements, sensitivity down to: 0.016 lx in monochrome, and High Dynamic Range (HDR) multi-exposure at HD 1080p resolution

2.A.2.b. All 5MP models: 1/2.7-inch CMOS image sensor with the minimum capabilities of 5MP (2592 x 1944) effective picture elements, sensitivity down to: 0.03 lx in monochrome, and High Dynamic Range (HDR) multi-exposure at 5 MP resolution

2.A.3. The fixed network camera shall offer an Automatic Varifocal (AVF) lens with DC-iris control and a focal length of 3.3 to 10.2 mm.

2.A.4. The fixed network camera shall have a viewing angle of:

a. All 2MP models: Wide: 106º x 55.2º (H x V), Tele: 31.2º x 17.5º (H x V)

b. All 5MP models: Wide: 101.4º x 69.6º (H x V), Tele: 30.1º x 21.8º (H x V)

2.A.5. The fixed network 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.A.6. The fixed network camera shall offer a High Dynamic Range of at least 120 dB WDR to easily distinguish objects and features, for example, faces with bright backlight.

2.A.7. The fixed network camera shall have support for both 4:3 - wide screen and 3:4 - upright aspect ratios, or, 16:9 - wide screen and 9:16 - upright aspect ratios.

2.A.8. The fixed network camera shall offer embedded IVA Pro Buildings for reliable deep learning-based person and vehicle detection.

2.A.9. The fixed network camera shall offer the ability to define 8 irregular polygon masks that will automatically recolor to match the scene color and prohibit areas of the field of view from being seen.

2.A.10. The fixed network camera shall support the following power option:

2.A.10.a. PoE IEEE 802.3af / 802.3at Type 1, Class 3

2.A.11. The fixed network camera shall support power consumption of PoE:
2.A.11.a. All 2 MP models: power consumption typical / maximum: PoE: 2.6 W / 6.74 W
2.A.11.b. All 5 MP models: power consumption typical / maximum: PoE: 3.24 W / 7.72 W
2.A.12. The fixed network camera shall be able to be direct surface mounted to a wall or ceiling.
2.A.13. All models: The fixed network camera shall be capable of operating in an outdoor environment.
2.A.14. The fixed network camera shall:
2.A.14.a. All models: Offer IK10 impact resistance housing.
2.A.14.b. All models: Support a temperature range of -30 ºC to +50 ºC (-22 ºF to +122 ºF) for continuous operation.
2.A.15. The fixed network camera shall provide a 3-axis adjustment (pan / tilt / rotation) of 0º-360º / +-90º / +- 180º.
2.A.16. The fixed network camera shall support the following languages:
2.A.16.a. English
2.A.16.b. Czech
2.A.16.c. Dutch
2.A.16.d. French
2.A.16.e. German
2.A.16.f. Italian
2.A.16.g. Polish
2.A.16.h. Portuguese
2.A.16.i. Russian
2.A.16.j. Spanish
2.A.16.k. Japanese
2.A.16.l. Chinese

2.B. Imaging
2.B.1. The fixed network camera shall offer a CMOS image sensor:
2.B.1.a. All 2 MP models: 1/2.8-inch CMOS, 2MP resolution
2.B.1.b. All 5 MP models: 1/2.7-inch CMOS, 5MP resolution
2.B.2. The fixed network camera shall offer a minimum effective number of pixels of:
2.B.2.a. All 2MP models: 1920 × 1080 (1080p HD)
2.B.2.b. All 5MP models: 2592 × 1944 (5 MP)
2.B.3. The fixed network camera shall offer a 16:9 (2 MP) or 4:3 (5 MP) aspect ratio.
2.B.4. The fixed network camera shall have a sensitivity measured according to IEC 62676 Part 5:(1/25, F1.6):
2.B.4.a. All 2MP models: 0.06 lx (color), 0.016 lx (mono) , 0.0 lx (with IR)
2.B.4.b. All 5MP models: 0.14 lx (color), 0.03 lx (mono) , 0.0 lx (with IR)
2.B.5. The fixed network camera shall offer an Automatic Varifocal (AVF) lens with DC-iris control and a focal length of 3.3 to 10.2 mm.
2.B.6. The fixed network camera shall offer a High Dynamic Range of at least 120 dB WDR.

2.C. Image Processing

2.C.1. The fixed network camera shall support dynamic noise reduction to reduce bandwidth and storage requirements by optimizing the detail-to-bandwidth ratio via temporal and spatial noise filtering.

2.C.2. The fixed network camera shall include intelligent streaming functionality to reduce bandwidth and storage requirements by optimizing the camera encoder on to camera noise level.

2.C.3. The fixed network camera shall be capable of capturing and storing images using H.265 and H.264 compression at resolution:

2.C.3.a. All 2 MP models: 1080p HD video at rates up to 30 images per second.

2.C.3.b. All 5 MP models: 5 MP video at rates up to 30 images per second.

2.C.4. The fixed network camera shall deliver:

2.C.4.a. All 2 MP models: HD 1080p video with High Dynamic Range (HDR) multi-exposure enabled, at rates up to 30 images per second

2.C.4.b. All 5 MP models: 5 MP video with High Dynamic Range (HDR) multi-exposure enabled, at rates up to 30 images per second

2.C.5. 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.

2.D. System Features

2.D.1. The fixed network camera shall be compatible with the Bosch Video Client, Video Security Client, and the Bosch Video Management System.

2.D.2. The fixed network camera shall offer multiple pre-programmed configurable user modes for optimized settings for key applications.

2.D.3. The fixed network camera shall allow users to customize these modes for the specific requirements of the camera site.

2.D.4. The fixed network camera shall have one 10/100 Base-T and RJ45 Ethernet connection.

2.E. Recording and Storage Management

2.E.1. The fixed network camera shall have a microSD card slot that uses standard, off-the-shelf microSDHC (Standard Digital High Capacity), or microSDXC (Secure Digital eXtended Capacity) cards for local storage (up to 2 TB).

2.E.2. The fixed network camera shall support industrial microSD cards with integrated health monitor.

2.E.3. The local storage feature shall be capable of storage for Automatic Network Replenishment (ANR).

2.E.4. The fixed network camera shall offer enhanced system flexibility with dual recording (iSCSI and microSD card) options.

2.E.5. The fixed network camera shall support iSCSI devices to allow video stream to be recorded directly to an iSCSI RAID array.

2.E.6. The fixed network camera shall support iSCSI storage targets.

2.E.7. The fixed network camera shall be compatible with the Bosch Video Recording Manager (VRM) to control and manage video recording.

2.F. Resolution Characteristics

2.F.1. The fixed network camera shall generate:
2.F.1.a. All 2 MP models HD 1080p25/30 resolution using H.265 compression (ISO/IEC 14496-10).
2.F.1.b. All 5 MP models 5 MP 25/30 resolution using H.265 compression (ISO/IEC 14496-10).
2.F.2. The fixed network camera shall generate multiple simultaneous configurable:
2.F.2.a. All 2 MP models HD 1080p video streams.
2.F.2.b. All 5 MP models: 5 MP video streams.
2.F.3. The fixed network camera shall allow simultaneous streaming of individual configurable:
2.F.3.a. All 2 MP models HD 1080p25/30 streams.
2.F.3.b. All 5 MP models 5 MP 25/30 streams.

2.G. IP Connectivity
2.G.1. The fixed network camera shall support iSCSI devices to allow the network-enabled camera to stream video directly to an iSCSI RAID array.
2.G.2. The fixed network camera shall conform to the ONVIF Profile S, G, T, and M standard.
2.G.3. The fixed network camera shall offer Quality of Service (QoS) configuration options.
2.G.4. The fixed network camera shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.

2.H. Intelligent Video Analytics Pro (IVA Pro)
2.H.1. The fixed network camera shall offer embedded deep learning-based person and vehicle detection, and video analytics (IVA Pro Buildings) that eliminate dedicated PCs and associated software maintenance.
2.H.2. The fixed network camera shall offer IVA Pro Buildings with the following functionality:
2.H.2.a. Triggers: any object, object in field, line crossing, enter field, leave field, loitering, follow route, objects stopping or starting to move, counting, occupancy, condition change, similarity search
2.H.2.b. Filters: duration, size, aspect ratio, direction, color, object classes
2.H.2.c. Object classes: Persons, Vehicles
2.H.2.d. Tamper detection: Global change, Scene too bright, Scene too dark, Reference check
2.H.3. The fixed network camera shall support people counting.

2.I. Access Security
2.I.1. The fixed network camera shall offer three levels of password protection.
2.I.2. The fixed network camera shall support 802.1x authentication using a RADIUS (Remote Authentication Dial In User Service) server.
2.I.3. The fixed network camera shall store a SSL certificate for use with HTTPS.
2.I.4. The fixed network camera shall be capable of being independently AES encrypted with 256-bit keys.

2.I.5. The fixed network camera shall support RSA encryption key lengths of up to 4096 bits.

2.J. Installation Requirements

2.J.1. The fixed network camera shall provide motorized zoom / focus for local (re-)commissioning

2.J.2. The fixed network camera shall support the following power option:

2.J.2.a. Input options:

2.J.2.a.1. PoE IEEE 802.3af / 802.3at Type 1, Class 3

2.J.3. The fixed network camera shall be able to be direct surface mounted to a wall or ceiling.

2.J.4. All models: The fixed network camera shall be capable of operating in an outdoor environment.

2.J.5. The fixed network camera shall:

2.J.5.a. All models: Offer IK10 impact resistance housing.

2.J.5.b. All models: Support a temperature range of -30 ºC to +50 ºC (-22 ºF to +122 ºF) for continuous operation.

2.J.6. The fixed network camera shall provide a multi-language on-screen display.

2.K. Night Vision

2.K.1. The fixed network camera shall incorporate 4 LED of high efficiency and capture image within 30 m (98 ft)

B.3 ACCESSORIES

3.A. Mounts & accessories

TBC

3.B. Universal

TBC

C. – EXECUTION

C.1 EXAMINATION

1.A. Examine areas to receive devices and notify adverse conditions affecting installation or subsequent operation.

1.B. Do not begin installation until unacceptable conditions are corrected.

C.2 PREPARATION

2.A. Protect devices from damage during construction.

C.3 INSTALLATION

3.A. Install devices in accordance with manufacturer's instruction at locations indicated on the floor drawings plans.

3.B. Perform installation with qualified service personnel.

3.C. Install devices in accordance with the National Electrical Code or applicable local codes.

3.D. Ensure selected location is secure and offers protection from accidental damage.

3.E. Location must provide reasonable temperature and humidity conditions, free from sources of electrical and electromagnetic interference.

C.4 FIELD QUALITY CONTROL

4.A. Test snugness of mounting screws of all installed equipment.

4.B. Test proper operation of all video system devices.

4.C. Determine and report all problems to the manufacturer's customer service department.

C.5 ADJUSTING

5.A. Make proper adjustment to video system devices for correct operation in accordance with manufacturer's instructions.

5.B. Make any adjustment of camera settings to comply with specific customer's need.

C.6 DEMONSTRATION

6.A. Demonstrate at final inspection that video management system and devices functions properly.

END OF SECTION

202308181349