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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

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 FLEXIDOME panoramic 5100i

PART 1 – GENERAL

1.1 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.

1.2 REFERENCES

2.A. EMC – Emissions

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

2.A.2. 47CFR15, class A (STP) Code of Federal Title 47 – Telecommunication Chapter I - FEDERAL COMMUNICATIONS COMMISSION, Subchapter A – GENERAL, Part 15 - RADIO FREQUENCY DEVICES

2.B. EMC – Immunity

2.B.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.C. Environmental

2.C.1. EN IEC 63000: 2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

2.C.2. EN 50130-5 (Class IV) Alarm systems - Part 5: Environmental test methods

2.C.3. 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.4. 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.D. Safety

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

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

2.D.3. CAN/CSA 22.2 No. 62368-1-14 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. ONVIF conformance

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

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

2.G. Marks

2.G.1. CE, FCC, UL, WEEE, RCM, VCCI, CMIM, UKCA, China RoHS

1.3 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 panoramic camera designed for discrete video surveillance applications in indoor environments.

3.B.2. The fixed network camera shall be a high performance 1/1.8-inch (6MP) or a 1/2.3-inch (12MP) CMOS sensor type with up to 6MP or 12MP resolution.

3.B.3. The fixed network camera shall offer full 360º panoramic coverage.

3.B.4. The fixed network camera shall offer full resolution circular image recording.

3.B.5. The fixed network camera shall offer DORI (Detect, Observe, Recognize, Identify) coverage.

3.B.6. The fixed network camera shall offer edge or client-side dewarping for easy integration. Edge dewarping shall be available with a future firmware release.

3.B.7. The fixed network camera shall offer enhanced system flexibility with dual recording (iSCSI and SD card) options.

3.B.8. The fixed network camera shall support the following power option:

3.B.8.a.1) PoE (IEEE 802.3af, type 1, class 2)

3.B.9. The fixed network camera shall provide Intelligent Tracking to continuously track objects in motion.

3.B.10. The fixed network camera shall offer a High Dynamic Range of 120 dB for clear images in extreme high-contrast environments.

3.B.11. 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.12. The fixed network camera shall offer embedded Intelligent Video Analytics (IVA) that eliminates dedicated PCs and associated software maintenance.

3.B.13. The fixed network camera shall offer Audio AI and audio analytics, providing alarm functionality for audio events based on sound characteristics. Audio AI will not be available on release, but shall be available with a future firmware release. Audio AI shall continue its development after the release of the fixed network camera, at which point certain features might not yet be available or where performance can be limited.

3.B.14. The fixed network camera shall conform to the ONVIF standard to provide interoperability with other conformant systems.

3.B.15. The fixed network camera shall offer configurable multi streaming with individually configurable 6MP or 12MP streams.

3.B.16. The fixed network camera shall offer an integrated microphone array with 3 microphones.

3.B.17. The fixed network camera shall offer the possibility to rotate the lens separately during installation.

3.B.18. The fixed network camera shall:

3.B.18.a. Offer IK08 impact resistance (except lens).

3.B.18.b. Support a temperature range of -10 ºC to +45 ºC (14 ºF to +113 ºF) for continuous operation.

1.4 SUBMITTALS

4.A. Submit under 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.

1.5 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.

1.6 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.

1.7 WARRANTY

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

1.8 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.

PART 2 – PRODUCTS

2.1 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.]

2.2 BOSCH NDS-5703-F360, NDS-5704-F360, NDS-5703-F360-GOV, NDS-5704-F360-GOV, FLEXIDOME panoramic 5100i camera or comparable

2.A. General Characteristics:

2.A.1. The camera shall offer full 360° panoramic surveillance with complete area coverage, fine details and high speeds (6MP or 12MP @ 30 fps).

2.A.2. The camera shall offer full situational awareness and simultaneous E-PTZ views.

2.A.3. The camera shall provide edge or client-side dewarping for easy integration. Edge dewarping shall be available with a future firmware release.

2.A.4. The camera shall use the DORI (Detect, Observe, Recognize, Identify) standard system to distinguish persons or objects within a covered area.

2.A.5. The fixed network camera shall provide a 1/1.8-inch (6MP) or a 1/2.3-inch (12MP) CMOS image sensor with the following minimum capabilities:

2.A.5.a. 2112x2112 effective picture elements (6MP)

2.A.5.b. 3008x3008 effective picture elements (12MP)

2.A.6. 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.7. The fixed network camera shall offer a High Dynamic Range of 120 dB for clear images in extreme high-contrast environments.

2.A.8. The fixed network camera shall offer advanced Intelligent Video Analysis (IVA) with automated calibration by use of a gyro-sensor.

2.A.9. The fixed network camera shall offer an integrated microphone array with 3 microphones.

2.A.10. The fixed network camera shall offer intelligent tracking that digitally zooms & tracks movement to continuously follow objects or individuals.

2.A.11. 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.12. The fixed network camera shall directly integrate into mounting accessories.

2.A.13. The fixed network camera shall support the following power option:

2.A.13.a.1) PoE (IEEE 802.3af, type 1, class 2)

2.A.14. The fixed network camera shall be able to be direct surface mounted to a wall or ceiling.

2.A.15. The fixed network camera shall be capable of operating in an indoor environment.

2.A.16. The fixed network camera shall offer the possibility to rotate the lens separately during installation.

2.A.17. The fixed network camera shall:

2.A.17.a. Offer IK08 impact resistance (except lens).

2.A.17.b. Support a temperature range of -10 ºC to +45 ºC (14 ºF to +113 ºF) for continuous operation.

2.A.18. The fixed network camera shall support the following languages:

2.A.18.a. English

2.A.18.b. Czech

2.A.18.c. Dutch
2.A.18.d. French
2.A.18.e. German
2.A.18.f. Italian
2.A.18.g. Polish
2.A.18.h. Portuguese (Portugal)
2.A.18.i. Russian
2.A.18.j. Spanish
2.A.18.k. Japanese
2.A.18.l. Chinese (Simplified)

2.A.19. The fixed network camera's country of origin shall be:
2.A.19.a. NDS-5703-F360/NDS-5704-F360: Thailand
2.A.19.b. NDS-5703-F360-GOV/NDS-5704-F360-GOV: Taiwan

2.B. Imaging

2.B.1. The fixed network camera shall offer a 1/1.8-inch (6MP) or a 1/2.3-inch (12MP) CMOS image sensor.

2.B.2. The camera shall offer full 360º panoramic surveillance.

2.B.3. The fixed network camera shall offer a minimum effective number of pixels of:
2.B.3.a. 2112x2112 effective picture elements (6MP sensor)
2.B.3.b. 3008x3008 effective picture elements (12MP sensor)

2.B.4. The fixed network camera shall produce a color image with a minimum scene illumination of 0.099 lux and a monochrome image, when in the night mode, with a minimum illumination of 0.008 lux (6MP variant), measured according to IEC 62676 Part 5 (1/25, F2.0).

2.B.5. The fixed network camera shall produce a color image with a minimum scene illumination of 0.150 lux and a monochrome image, when in the night mode, with a minimum illumination of 0.048 lux (12MP variant), measured according to IEC 62676 Part 5 (1/25, F2.0).

2.B.6. The fixed network camera shall offer a High Dynamic Range (HDR) of 120 dB.
a. The NDS-5703-F360/NDS-5703-F360-GOV fixed network camera shall deliver 4.5MP resolution with HDR enabled, at rates up to 30 images per second.
b. The NDS-5704-F360/NDS-5704-F360-GOV fixed network camera shall deliver 9MP resolution with HDR enabled, at rates up to 25 images per second.

2.B.7. The fixed network camera shall offer a Sodium Vapor White Balance mode that automatically compensate for light from a sodium vapor lamp to restore objects to their true color.

2.B.8. The fixed network camera shall offer an anti-fog image feature that assists the camera in registering a usable image through the heavy fog.

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 be capable of capturing and storing images using H.265 and H.264 compression.

2.C.3. The fixed network camera shall offer a 6MP or 12MP sensor.

2.C.4. 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 an integrated microphone array with 3 microphones.

2.D.3. The fixed network camera shall offer a micro HDMI output with 1080p resolution and dewarped viewing possibilities. Dewarped viewing possibilities with micro HDMI output shall be available with a future firmware release.

2.E. Pre-programmed Modes

2.E.1. The fixed network camera shall offer multiple pre-programmed configurable user modes for optimized settings for key applications.

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

2.F. Recording and Storage Management

2.F.1. The fixed network camera shall have a micro SD card slot that uses standard, off-the-shelf micro SD (Secure Digital), micro SDHC (Standard Digital High Capacity) or a micro SDXC (Secure Digital eXtended Capacity) card for local storage (up to 2 TB).

2.F.2. The fixed network camera shall support industrial SD cards with integrated health monitor.

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

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

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

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

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

2.G. Resolution Characteristics

2.G.1. The fixed network camera shall generate 4.5MP or 9MP 30 resolution using H.265 compression (ISO/IEC 14496-10).

2.G.2. The fixed network camera shall generate multiple simultaneous configurable 4.5MP or 9MP video streams.

2.G.3. The fixed network camera shall allow simultaneous streaming of individual 4.5MP or 9MP streams, and allow a choice of 4.5MP or 9MP resolution in combination with HD resolutions.

2.H. IP Connectivity

2.H.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.H.2. The fixed network camera shall conform to the ONVIF Profile S, G, M and T standard.

2.H.3. The fixed network camera shall offer Quality of Service (QoS) configuration options.

2.H.4. The fixed network camera shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.

2.I. Intelligent Video Analytics (IVA)

2.I.1. The fixed network camera shall offer advanced embedded Intelligent Video Analytics (IVA) that eliminates dedicated PCs and associated software maintenance.

2.I.2. The fixed network camera shall offer embedded machine learning capabilities that eliminates dedicated PCs and associated software maintenance.

2.I.3. The fixed network camera shall offer advanced Intelligent Video Analytics (IVA) with automated calibration by use of an integrated gyro-sensor so only camera height needs to be set for a full calibration.

2.I.4. The fixed network camera shall offer advanced embedded Intelligent Video Analytics (IVA) with the following functionality:

2.I.4.a. Triggers: any object, object in field, line crossing, enter field, leave field, loitering, follow route, idle object, removed object, counting, occupancy, crowd density, condition change, similarity search, flow, counter flow, conditional change

2.I.4.b. Filters: duration, size, aspect ratio, speed, direction, color, object classes

2.I.4.c. Tracking modes: standard (2D) tracking, 3D tracking, 3D people tracking, ship tracking, museum mode.

2.I.4.d. Tamper detection: global change, scene too bright, scene too dark, reference check

2.I.5. The fixed network camera shall allow users to set up to ten (10) separate profiles and switch profiles based on a day/night or holiday schedules.

2.I.6. The fixed network camera shall support people counting.

2.I.7. The fixed network camera shall incorporate an IVA alarm rule engine that supports programming of up to sixteen (16) independent alarm tasks which are individually reported to the video management software.

2.J. Motion Tracking

2.J.1. The fixed network camera shall offer intelligent tracking that digitally zooms & tracks movement to continuously follow objects or individuals.

2.J.2. The fixed network camera shall provide intelligent tracking using intelligent video analytics.

2.J.3. The fixed network camera shall offer the following control options for the intelligent tracking feature:
2.J.3.a. Off – the fixed network camera does not track moving object.
2.J.3.b. Auto – the fixed network camera actively analyzes the video to detect moving objects and starts tracking.
2.J.3.c. One Click – the fixed network camera allows a user to click a moving object in the live video image to activate intelligent tracking.

2.K. Access Security
2.K.1. The fixed network camera shall offer three levels of password protection.
2.K.2. The fixed network camera shall support 802.1x authentication using a RADIUS (Remote Authentication Dial In User Service) server.
2.K.3. The fixed network camera shall store a SSL certificate for use with HTTPS.
2.K.4. The fixed network camera shall support RSA encryption key lengths of up to 4096 bits.

2.L. Installation Requirements
2.L.1. The fixed network camera shall support the following power option:
2.L.1.a.1) PoE (IEEE 802.3af, type 1, class 2)
2.L.2. The fixed network camera shall be able to be direct surface mounted to a wall or ceiling.
2.L.3. The fixed network camera shall be capable of operating in an indoor environment.
2.L.4. The fixed network camera shall offer the possibility to rotate the lens separately during installation.
2.L.5. The fixed network camera shall:
2.L.5.a. Offer IK08 impact resistance (except lens).
2.L.5.b. Support a temperature range of -10 ºC to +45 ºC (14 ºF to +113 ºF) for continuous operation.
2.L.6. The fixed network camera shall directly integrate into mounting accessories that supports an optional fiber optic media converter module.
2.L.7. The fixed network camera shall provide a multi-language on-screen display.

2.3 ACCESSORIES

3.A. Mounts & accessories

3.A.1.	NDA-5081-PIP	Pendant interface plate, 110mm
3.A.2.	NDA-U-WMT	Pendant wall mount
3.A.3.	NDA-U-WMP	Wall mount plate
3.A.4.	NDA-U-PMT	Pendant pipe mount, 12” (31 cm)
3.A.5.	NDA-U-PMTE	Pendant pipe extension 20” (50 cm)
3.A.6.	NDA-U-PMTS	Pendant pipe mount, 4” (11 cm)
3.A.7.	NDA-U-PSMB	Pendant wall/ceiling mount SMB
3.A.8.	NDA-U-PMAS	Pole mount adapter small
3.A.9.	NDA-U-PMAL	Pole mount adapter large
3.A.10.	NDA-5081-PC	Paintable Cover, NDS-570x-F360, 4 pcs
3.A.11.	NDA-5081-TM	Tilt mount 20º, 110mm
3.A.12.	NDA-5081-PLEN	In-ceiling mount kit, 110mm
3.A.13.	NDA-U-CMT	Corner mount adapter
3.A.14.	NDA-U-PMTG	Pendant pipe mount, gang box
3.A.15.	NDA-U-WMT G	Pendant wall mount, gang box
3.A.16.	NPD-3001-WAP	Portable installation tool
3.A.17.	NPD-5001-POE	Midspan, 15W, single port, AC in
3.A.18.	NPD-5004-POE	Midspan, 4 port x 15W, AC in
3.A.19.	MSD-064G	IP SECURITY MICROSD CARD 64GB
3.A.20.	MSD-128G	IP SECURITY MICROSD CARD 128GB
3.A.21.	MSD-256G	IP SECURITY MICROSD CARD 256GB

PART 3 – EXECUTION

3.1 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.

3.2 PREPARATION

2.A. Protect devices from damage during construction.

3.3 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.

3.4 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.

3.5 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.

3.6 DEMONSTRATION

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

END OF SECTION

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