

8 August 2016

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

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 MIC IP dynamic 7000 HD

PART 1 – GENERAL

1.1 SUMMARY

A. 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. Canadian Standards Association (CSA)

1. Complies with CSA product safety standards.

B. European Norm

1. Complies with CE Product Safety regulations
 2. Complies with EN Product Safety standards
 3. EN 50121-4 Railway Applications - Electromagnetic Compatibility - Part 4: Emission and Immunity of the Signaling and Telecommunications Apparatus.
 4. Complies with EN 50130-4:1995 + A1:1998 + A2:2003 - Alarm Systems - Electromagnetic Compatibility - Product Family Standard: Immunity Requirements for Components Of Fire, Intruder And Social Alarm Systems. (Conformity to EN 50130-4 requires the use of the following power supplies: VG4-A-PSU0, VG4-A-PSU1, VG4-A-PSU2, VG4-A-PA0, VG4-A-PA1, or VG4-A-PA2.)
 5. EN 55022:2006 inc. AL:2007 Class A - Information technology equipment. Radio disturbance characteristics. Limits and methods of measurement
 6. EN 61000-3-3 - Electromagnetic compatibility (EMC). Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection
 7. EN 61000-6-1 - Electromagnetic compatibility (EMC). Generic standards. Immunity for residential, commercial and light-industrial environments
 8. EN 61000-6-2 - Electromagnetic compatibility (EMC). Generic standards. Immunity standard for industrial environments
- C. Federal Communications Commission (FCC) (www.fcc.gov)
1. Complies with FCC Part 15.
- D. HD standards
1. Complies with the SMPTE 274M-2008 Standard in:
 - a. Resolution: 1920x1080
 - b. Scan: Progressive
 - c. Color representation: complies with ITU-R BT.709
 - d. Aspect ratio: 16:9
 - e. Frame rate: 25 and 30 frames/s
 2. Complies with the 296M-2001 Standard in:
 - a. Resolution: 1280x720
 - b. Scan: Progressive
 - c. Color representation: complies with ITU-R BT.709
 - d. Aspect ratio: 16:9
 - e. Frame rate: 25, 30, 50 and 60 frames/s
 - f. Interference-Causing Equipment Standards
- E. Complies with ICES-003 regulations.
- F. International Electrotechnical Commission (IEC)
1. Complies with IEC 60950-1 - Information technology equipment. Safety. General requirements
 2. Complies with IEC 60950-22 - Information technology equipment - Safety - Part 22: Equipment to be installed outdoors
- G. Product Safety
1. Complies with Underwriters Laboratories, Inc. (UL) (www.ul.com) safety standards.

1.3 SYSTEM DESCRIPTION

A. Section Includes

1. Video Surveillance Remote Devices

B. Performance Requirements

1. The HD PTZ camera shall be a full-featured, ruggedized HD PTZ unit designed for discrete video surveillance in outdoor, industrial, or commercial applications.
2. The HD PTZ camera shall be a high performance 1/2.8-in. progressive scan day/night Exmor CMOS sensor with up to 1920 x 1080 (2MP) resolution.
3. The HD PTZ camera shall comply with the IK10 impact rating and with the IP68 and NEMA 6P environmental protection rating.
4. The HD PTZ camera shall comply with the ASTM B117 salt spray standard.
5. The HD PTZ camera shall be engineered to withstand high-impact or continuous low-frequency vibration.
6. The HD PTZ camera shall support the following dual, redundant power options:
 - a. Without illuminator:
 - 1) 24 VAC or Bosch VIDEOJET connect (VJC-7000-90)
 - 2) Bosch 60 W Midspan (NPD-6001A)
 - b. With illuminator:
 - 1) 24 VAC or Bosch VIDEOJET connect (VJC-7000-90)
 - 2) Bosch 95 W Midspan (NPD-9501A)
 - c. The HD PTZ camera shall default to use power from the 24 VAC power supply, if connected.
 - d. The HD PTZ camera shall switch to the Midspan power supply if power from the 24 VAC power supply is lost with no interruption to camera operation.
7. The HD PTZ camera shall provide Intelligent Tracking to continuously track objects in motion.
8. The HD PTZ camera shall offer High Dynamic Range (90 dB) for images with simultaneous bright and dark areas.
9. The HD PTZ camera shall provide direct network connection using H.264 and JPEG compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
10. The HD PTZ camera shall offer embedded Intelligent Video Analysis (IVA) that eliminates dedicated PCs and associated software maintenance.
11. The HD PTZ camera shall conform to the ONVIF standard to provide interoperability with other conformant systems.
12. The HD PTZ camera shall offer configurable quad streaming with individually configurable HD streams.
13. The HD PTZ camera shall have an autofocus lens with 360x zoom (30x optical/12x digital).
14. The HD PTZ camera shall have variable pan and tilt speeds, and autopivot capability for optimal camera control and viewing at all zoom levels.
15. The HD PTZ camera shall offer a defog image feature that assists the camera in registering a usable image when viewing foggy or other low-contrast scenes.
16. The HD PTZ camera shall offer an effective window-defrosting function.
17. The HD PTZ camera shall offer simple installation via a hinged deep conduit adapter mounting accessory.
18. The HD PTZ camera shall be compatible with an optional, field-installable MIC illuminator.

1.4 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.

1.5 QUALITY ASSURANCE

- A. Manufacturer:
 - 1. Minimum of [10] years experience in manufacture and design Video Surveillance Devices.
- B. Video Surveillance System:
 - 1. Listed by CSA.
 - 2. Certified compliant to FCC and CE for the required loads. Test methods are in accordance with Industry Canada and the IEC. Provide evidence of compliance upon request.
- C. Installer:
 - 1. Minimum of [5] years experience installing Video Surveillance System.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Comply with requirements of Section 01 60 00.
- B. Deliver materials in manufacture'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.

1.7 WARRANTY

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

1.8 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, 1450, 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]

- 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.]

2.2 BOSCH MIC IP dynamic 7000 HD [MIC-7230-PB4] [MIC-7230-PW4] [MIC-7230-PG4]

A. General Characteristics:

1. The HD PTZ camera shall incorporate a 1/2.8-in. type Exmor CMOS imager.
2. The HD PTZ camera shall provide direct network connection using H.264 and – M-JPEG compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
3. The HD PTZ camera shall support the following dual, redundant power options:
 - a. Without illuminator:
 - 1) 24 VAC or Bosch VIDEOJET connect (VJC-7000-90)
 - 2) Bosch 60 W Midspan (NPD-6001A)
 - b. With illuminator:
 - 1) 24 VAC or Bosch VIDEOJET connect (VJC-7000-90)
 - 2) Bosch 95 W Midspan (NPD-9501A)
4. The HD PTZ camera shall offer 256 user-defined pre-positions with 20-character titles.
5. The HD PTZ camera shall offer five configurable, pre-programmed user modes.
6. The HD PTZ camera shall offer Intelligent Tracking that controls the pan, tilt, and zoom movements of the camera to continuously follow an object or individual.
7. The HD PTZ camera shall comply with the IK10 impact rating and with the IP68 and NEMA 6P environmental protection rating.
8. The HD PTZ camera shall comply with the ASTM B117 salt spray standard.
9. The HD PTZ camera shall be engineered to withstand high-impact or continuous low-frequency vibration.

B. Imaging

1. The HD PTZ camera shall offer a 1/2.8-inch type Exmor CMOS imager.
2. The HD PTZ camera shall offer an effective number of pixels of 1944 x 1224 (2.38 megapixels).
3. The HD PTZ camera shall offer a 16:9 aspect ratio.
4. The HD PTZ camera shall offer a 30x optical zoom lens (4.3 to 129 mm).
5. The HD PTZ camera shall have 2.3° to 65° field of view.
6. The HD PTZ camera shall produce a color image with a minimum scene illumination of 0.0103 lux and a monochrome image, when in the night mode, with a minimum illumination of 0.00129 lux at 30 IRE.
7. The HD PTZ camera shall offer automatic focus and iris control with manual override.
8. The HD PTZ camera shall offer a High Dynamic Range of 90 dB.
9. The HD PTZ 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.
10. The HD PTZ camera shall offer a defog image feature that assists the camera in registering a usable image when viewing foggy or other low-contrast scenes.

C. System Features

1. The HD PTZ camera PTZ camera shall be compatible with the Bosch Video Client and the Bosch Video Management System.
2. The HD PTZ camera shall have several built-in sensors and offer advanced diagnostics that display warnings on the cameras on-screen display, including

high and low temperature, low voltage, high humidity, high vibration, total hours of operation for camera and for illuminator.

D. PTZ Features

1. The HD PTZ camera shall provide a brushless, integral pan/tilt motor drive unit.
2. The HD PTZ camera shall provide a pan range of 360° continuous.
3. The HD PTZ camera shall provide a tilt angle of
 - a. 290° without illuminators (upright orientation).
 - b. 250° without illuminators (inverted orientation).
 - c. 186.6° with illuminators.
4. The HD PTZ camera shall offer the following tilt angles:
 - a. Upright unit: -58° to +90°
 - b. Canted unit: -90° to +90°
5. The HD PTZ camera shall provide pan and tilt preset repeatability accurate to within 0.17° (typical).
6. The HD PTZ camera shall offer variable pan speeds of 0.2°/second to 120°/second.
7. The HD PTZ camera shall offer a variable tilt speed of 0.2°/second to 90°/second.
8. The HD PTZ camera shall offer a pre-position speed of 120°/second.
9. The HD PTZ camera shall divide the cameras 360° rotation into 16 independent sectors with 20-character titles per sector. Any or all of the 16 sectors can be blanked from the operator's view.
10. The HD PTZ camera shall offer the ability to define 24 masks with up to 8 masks per scene that prohibit areas of the field of view from being seen even if the camera is panned, tilted, or zoomed.
11. The HD PTZ camera shall offer 24 virtual masks.
12. The HD PTZ camera shall store up to 256 preset scenes with each preset programmable for 20 character titles.
13. The HD PTZ camera shall support the following tour modes:
 - a. Recorded tours - two (2), maximum total duration 30 minutes (depending on amount of commands sent during recording)
 - b. Preset tour - one (1), consisting of up to 256 scenes consecutively, and (1) customized up to 64 scenes.

E. Pre-programmed Modes

1. The HD PTZ camera shall offer five (5) pre-programmed but configurable user modes.
2. The pre-programmed modes shall be optimized with the best settings for the following environments:
 - a. General (default mode)
 - b. Low Light
 - c. Motion
 - d. Vibrant
 - e. Illuminator
3. The HD PTZ camera shall allow users to customize these modes for the specific requirements of the camera site.

F. HD Characteristics

1. [The HD PTZ camera shall generate full HD 1080p25/30 resolution and 720p25/30 resolution using H.264 compression (ISO/IEC 14496-10).]
2. The HD PTZ camera shall generate multiple simultaneous configurable HD video streams.
3. The HD PTZ camera shall allow simultaneous streaming of individual HD streams, and allow a choice of HD resolution in combination with SD resolutions.

G. IP Connectivity

1. The HD PTZ camera shall allow full camera control and configuration capabilities via a TCP/IP network.
2. The HD PTZ camera shall be capable of capturing and storing images using H.264 compression at HD 1080p and HD 720p resolutions.
3. The HD PTZ camera shall deliver 1080p video, at rates up to 30 images per second, and 720p video, at rates up to 60 images per second via TCP/IP over Cat5/Cat6 UTP cable.
4. The HD PTZ camera shall support operation with Internet Explorer web browser version 7.0 or later, Bosch Configuration Manager, Bosch Video Management System (BVMS), Bosch Video Client (BVC), or other third party software.
5. The HD PTZ camera shall conform to the ONVIF standard.
6. The HD PTZ camera shall conform to the SNMP v1 standard.
7. The HD PTZ camera shall offer Quality of Service (QoS) configuration options.
8. The HD PTZ camera shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
9. The HD PTZ camera shall offer embedded Intelligent Video Analysis (IVA) that eliminates dedicated PCs and associated software maintenance.

H. Intelligent Video Analysis

1. The HD PTZ camera shall be capable of processing and analyzing video within the camera itself, with no extra hardware required.
2. The HD PTZ camera shall be capable of detecting and sending alarms for abnormal events.
3. The HD PTZ camera shall be configurable to analyze up to 10 different scenes for one or more of the following events: Line Crossing, Loitering, Idle Object, Removed Object, Conditional Change, Trajectory Tracking, and Filters.
4. The HD PTZ camera shall allow users to set up to 10 separate profiles and switch profiles based on a day/night or holiday schedules.
5. The HD PTZ camera shall support scene tours that automatically reposition the camera to each scene for a specified duration.
6. The HD PTZ camera shall support Bird's Eye View (BEV) people counting.
7. The HD PTZ camera shall incorporate an Alarm Rule Engine, enabling abnormal events that IVA detects to prompt the camera to take one or more actions such as:
 - a. Trigger a relay connected to an alarm siren and/or strobe
 - b. Trigger a visual alert to be displayed on the operator's screen
 - c. Go to a specified scene (preset position)

I. Motion Tracking

1. The HD PTZ camera shall offer Intelligent Tracking to continuously track an object using pan, tilt, and zoom actions.

2. The HD PTZ camera shall provide automatic motion tracking using intelligent video analytics.
 3. The HD PTZ camera shall have the ability to follow an object continually when passing behind a privacy mask.
 4. The HD PTZ camera shall allow a user to define virtual masks for a scene so certain objects are not considered for flow analysis and will not trigger Intelligent Tracking.
 5. The HD PTZ camera shall offer the following control options for the Intelligent Tracking feature:
 - a. Off – the HD PTZ camera does not track moving object.
 - b. Auto – the HD PTZ camera actively analyzes the video to detect moving objects.
 - c. One Click – the HD PTZ camera allows a user to click a moving object in the live video image to activate Intelligent Tracking.
 - d. IVA-triggered – the HD PTZ camera continuously analyzes the scene for IVA alarms or an IVA rule violation. If an alarm or rule violation is detected, the camera activates Intelligent Tracking to track the object that triggered the alarm or rule violation.
 6. The HD PTZ camera shall have the ability to restart tracking if a target starts moving in the same area where the initial target stopped moving or if the camera detects an object moving along the last known trajectory.
 7. The HD PTZ camera shall allow an operator to select an object to track in the live image view.
 8. The HD PTZ camera shall automatically start tracking a target that violates an IVA rule or triggers an IVA alarm.
- J. Access Security
1. The HD PTZ camera shall offer three levels of password protection.
 2. The HD PTZ camera shall support 802.1x authentication using a RADIUS (Remote Authentication Dial In User Service) server.
 3. The HD PTZ camera shall store a SSL certificate for use with HTTPS.
 4. [The HD PTZ camera shall be capable of being independently AES encrypted with 128-bit keys.]

K. Installation Requirements

1. The HD PTZ camera shall be capable of operating in an outdoor environment within the following temperature range: -40°C to $+60^{\circ}\text{C}$ (-40°F to 140°F)
2. The HD PTZ camera shall offer a cold start-up temperature of: -40°C (-40°F) (Requires 60-minute warm-up prior to PTZ operations.)
3. The HD PTZ camera shall accept power, transmit video, and accept control via TCP/IP connection.
4. The HD PTZ camera shall support the following dual, redundant power options:
 - a. Without illuminator:
 - 1) 24 VAC or Bosch VIDEOJET connect (VJC-7000-90)
 - 2) Bosch NPD-6001A 60 W Midspan
 - b. With illuminator:
 - 1) 24 VAC or Bosch VIDEOJET connect (VJC-7000-90)
 - 2) Bosch NPD-9501A 95 W Midspan
 - c. The HD PTZ camera shall switch to the High PoE or PoE+ power supply if power from the 24 VAC power supply is lost with no interruption to camera operation.
5. The HD PTZ camera shall be able to be mounted in an upright, inverted, or canted position.
6. The HD PTZ camera shall be capable of being mounted to a wall, the corner of a wall and to a pole using optional mounting hardware.
7. [The HD PTZ camera shall offer an optional sunshield.]
8. [The HD PTZ camera shall offer an optional external alarm/washer interface to connect external alarm signals and to control an optional external washer pump device.]
9. [The HD PTZ camera shall provide an optional IP67-rated weatherproofing kit for the camera's electrical interface pigtail.]
10. [The HD PTZ camera shall provide an optional hinged deep conduit adapter to facilitate connecting cables to the camera before the final bolts are installed.]
11. The HD PTZ camera shall provide a multi-language on-screen display.

L. Housing Options

1. The HD PTZ camera shall be made of cast solid aluminum with a tempered flat glass viewing window.
2. The HD PTZ camera shall provide built-in surge protection for power, data, and network inputs.
3. The HD PTZ camera shall conform to the IP68 standard for a weather-resistant package.
4. The HD PTZ camera shall conform to the IP67 standard for a weather resistant package when using connector kit.
5. The HD PTZ camera shall conform to the NEMA 6P standard for ingress protection (when using installed MIC-DCA or MIC-WMB).
6. The HD PTZ camera shall provide an integrated silicone wiper.
7. The HD PTZ camera shall conform to the IK10 rating for external mechanical impact.
8. The HD PTZ camera shall conform to the following wind loads:
 - a. 209 km/h (130 mph) (sustained) (Gusts up to 290 km/h (180 mph))
 - b. Effective Projected Area (EPA): 0.044m^2 (0.47ft^2)
9. The HD PTZ camera shall conform to the IEC 60068-2-6, Test Fc: Vibration
10. (sinusoidal), 20m/s^2 (2.0g) and the Sinusoidal vibration test IAW MILSTD-167-1A vibration tests.

11. The HD PTZ camera shall conform to the IEC 60068-2-7, Test Ea: Shock, 20g Medium weight Hammer Shock IAW MILS-901D test.
12. The HD PTZ camera shall be available in the following colors:
 - a. Black (RAL 9005)
 - b. White (RAL 9010)
 - c. Grey (RAL 7001) (Specific regions only.)
13. The HD PTZ camera shall provide a corrosion protection surface treatment with powder coat paint, sand finish.

M. Illumination

1. The HD PTZ camera shall offer an optional field-installable illuminator.
2. The field-installable illuminator shall enable detection of objects more than 175 m (575 ft) away.
3. The field-installable illuminator shall offer 3D Diffuser technology to ensure even illumination across the entire scene.
4. The field-installable illuminator shall offer Constant Light technology to automatically control and adjust output to deliver a consistent level of illumination.
5. The field-installable illuminator shall offer both IR and White Light LEDs and shall allow operators to switch between the two sources.

N. Camera

1. Imager: 1/2.8-inch type Exmor CMOS sensor
2. Effective Picture Elements (Pixels): 1944 x 1224 (2.38 MP)
3. Lens:
 - a. 30x optical zoom, 4.3 to 129 mm
 - b. 12x digital zoom
 - c. Field of View: 2.3° to 65°
4. Focus: Automatic with manual override
5. Iris: Automatic with manual override
6. Gain Control: Auto/Manual/Max
7. Aperture Correction: Horizontal and vertical
8. Electronic Shutter Speed (AES): 1/1 sec to 1/0000 sec (22 steps)
9. High Dynamic Range of 90 dB
10. Signal-to-Noise Ratio (SNR): >50 dB
11. Backlight Compensation: On/Off
12. White Balance: 2000 K to 10,000 K; ATW, Indoor, Outdoor, AWB Hold, Extended ATW, Manual, Outdoor Auto, Sodium Lamp Auto, Sodium Lamp
13. Day/Night: Monochrome, Color, Auto
14. Defog Image Feature: Allows the camera to “see” and register a usable image when viewing foggy or other low-contrast scenes.

O. Mechanical

1. Drive Unit: Brushless, integral pan/tilt motor drive
2. Pan Range: 360° continuous rotation
3. Tilt Angle:
 - a. [Without illuminators (upright orientation): 290°]
 - b. [Without illuminators (inverted orientation): 250°]
 - c. [With illuminators: 186.6°]
4. Tilt Range:
 - a. [Upright unit: -58° to +90°]

- b. [Canted unit: -90° to $+90^{\circ}$]
- 5. Variable Pan Speed: 0.2° /second to 120° /second
- 6. Variable Tilt Speed: 0.2° /second to 90° /second
- 7. Pre-position Speed: 120° /second
- 8. Preset Accuracy: 0.17° (typical)
- 9. Proportional Pan/Tilt to Zoom: Yes
- 10. Zoom Movement Speed:
 - a. <5 seconds (optical Wide to optical TELE)
 - b. <7.5 seconds (optical Wide to digital TELE)
- 11. Audible Noise: <65 dB

P. Electrical

- 1. Input Voltage: 21-30 VAC, 50/60 Hz and or Ethernet High PoE cable connection (56 VDC)
- 2. Power Consumption:
 - a. Without illuminator: 40 W maximum
 - b. With illuminator: 70 W maximum

Q. Software Control

- 1. Via Internet Explorer web browser version 7.0 or later, Bosch Configuration Manager, Bosch Video Management System (BVMS), Bosch Video Client (BVC), or support for third party software
- 2. Software Update: Network firmware upload

R. Network

- 1. Communications Protocols: Standard Bosch IP protocol, including ONVIF and SNMP v1
- 2. Video Compression: H.264 (ISO/IEC 14496-10), M-JPEG, JPEG
- 3. Streaming: Four (4) individually configurable streams: Two (2) independently configurable H.264 recording streams plus two (2) additional non- recording streams. Configurable frame rate and resolution.
- 4. H.264 recording Stream 1:
 - a. H.264 MP 1080p25/30 fixed
 - b. H.264 MP 720p25/30 fixed
 - c. H.264 MP SD
- 5. H.264 recording Stream 2: Options vary depending on Stream 1 selection.
 - a. Options with "H.264 MP 1080p25/30 fixed" selected for Stream 1:
 - 1) Copy Stream 1
 - 2) H.264 MP SD
 - 3) H.264 MP 720p8/10 fixed
 - 4) H.264 MP 1080p4/5 fixed
 - 5) H.264 MP upright (cropped)
 - 6) H.264 MP D1 4:3 (cropped)
 - b. Options with "H.264 MP 720p25/30 fixed" selected for Stream 1:
 - 1) H.264 MP SD
 - 2) H.264 MP 720p35/30 fixed
 - 3) H.264 MP upright (cropped)
 - 4) H.264 MP D1 4:3 (cropped)
 - 5) H.264 MP 1280x960 (cropped)
 - c. Option with "H.264 MP SD" selected for Stream 1: H.264 MP SD
- 6. Two (2) non-recording (I-frame only) streams/profiles:

- a. HD Image Optimized;
 - b. HD Balanced;
 - c. HD Bit Rate Optimized;
 - d. SD Image Optimized;
 - e. SD Balanced;
 - f. SD Bit Rate Optimized;
 - g. DSL Optimized;
 - h. 3G Optimized
 - 7. Resolution (H x V):
 - a. 1080p HD: 1920 x 1080
 - b. 720p HD: 1280 x 720
 - c. 432p SD: 768 x 432
 - d. 288p SD: 512 x 288
 - e. 144p SD: 256 x 144
 - 8. Protocols: IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, Telnet, ARP, DHCP, SNTP, SNMP (v1, MIB-II), 802.1x, DNS, DNSv6, DDNS (DynDNS.org, selftHOST.de, no-ip.com), SMTP, iSCSI, UPnP (SSDP), DiffServ (QoS), LLDP, SOAP, Dropbox, CHAP, digest authentication
 - 9. Ethernet: 10-Base T/100 Base-TX, auto-sensing, half/full duplex, RJ45
 - 10. Encryption: TLS 1.0, SSL, DES, 3DES, AES
 - 11. GOP Structure: IP, IBP, IBBP
 - 12. Data Rate: 9.6 kbps to 6 Mbps (per stream)
 - 13. Overall IP Delay: 240 ms
- S. Miscellaneous
- 1. Sectors/Titling: 16 independent sectors with 20-character titles/sector
 - 2. Privacy Masking: 24, individually configurable
 - 3. Virtual Masking: 24 individually configurable masks to hide parts of the scene (background motion such as moving trees, pulsating lights, busy roads, etc.) which should not be considered for flow analysis to trigger Intelligent Tracking.
 - 4. Pre-positions: 256, each with 20-character titles
 - 5. Camera Setup/Control: 100 Base-Tx Ethernet
 - 6. Guard Tours: Two (2) types of tours:
 - a. Recorded tours – two (2), maximum total duration 30 minutes (depending on amount of commands sent during recording)
 - b. Preset tour – one (1), consisting of up to 256 scenes consecutively, and (1) customized up to 64 scenes
 - 7. Supported Languages: English, Czech*, Dutch, French, German, Italian, Polish, Portuguese, Russian*, Spanish (* Available with separate language upload)
- T. User Connections:
- 1. Power
 - a. Network:
 - 1) Without illuminator: RJ-45 100 Base-TX Ethernet PoH (60 W midspan; NPD-6001A), or HPoE 95 W midspan (NPD-9501A) 21-30 VAC, 50/60 Hz
 - 2) With illuminator: HPoE 95 W midspan (NPD-9501A)
 - b. Camera: 24 VAC (power supply)
 - 2. Video and Control: RJ-45 100 Base-TX Ethernet

3. Alarm/Washer communication: 3-wire RS-485 Simplex 9600 baud (dedicated for MIC-ALM-WAS-24)

U. Environmental

1. Ingress Protection Rating/Standard:
 - a. IP68
 - b. NEMA 6P, when using installed MIC-DCA or MIC-WMB
 - c. IP67 (dust and moisture) rating on pigtail connections
2. External Mechanical Impact (IK Code or Impact rating): IK10
3. Operating Temperature: -40°C to $+60^{\circ}\text{C}$ (-40°F to 140°F)
4. Cold Start-up Temperature: -40°C (-40°F)
(Requires 60-minute warm-up prior to PTZ operations)
5. Storage Temperature: -60°C to $+70^{\circ}\text{C}$ (-76°F to 158°F)
6. Humidity: 0% to 100%
7. Wind Load: 209 km/h (130 mph) (sustained) (Gusts up to 290 km/h (180 mph))
Effective Projected Area (EPA): 0.044m^2 (0.47ft^2)
8. Vibration: IEC 60068-2-6, Test Fc: Vibration (sinusoidal), 20m/s^2 (2.0g)
Sinusoidal vibration test IAW MILSTD-167-1A
9. Shock: IEC 60068-2-7, Test Ea: Shock, 20g Medium weight Hammer Shock
IAW MILS-901D

V. Construction

1. Dimensions: Refer to product datasheet
2. Product Weight: 6.7 kg (14.7 lb)
3. Viewing Window: Tempered flat glass
4. Construction Material: Cast solid aluminum
5. Standard Colors: Black (RAL 9005); White (RAL 9010); Grey (RAL 7001)
(Specific regions only.)
6. Standard Finish: Corrosion protection surface treatment with powder coat paint, sand finish
7. Window Wiper: Standard, long-life silicone wiper
8. Sunshield: Optional; sold separately
9. Canting: On-site canting functionality

2.3 ACCESSORIES

A. Mounts

1. MIC Hinged DCA, Black (MIC-DCA-HB)
2. MIC Hinged DCA, White (MIC-DCA-HW)
3. MIC Hinged DCA, Grey (MIC-DCA-HG)
4. MIC Hinged DCA, Black (MIC-DCA-HB), with adapter (available in specific regions only)
5. MIC Hinged DCA, White (MIC-DCA-HW), with adapter (available in specific regions only)
6. MIC Hinged DCA, Grey (MIC-DCA-HG), with adapter (available in specific regions only)
7. Wall Mount Bracket, Black (MIC-WMB-BD)
8. Wall Mount Bracket, White (MIC-WMB-WD)
9. Wall Mount Bracket, Grey (MIC-WMB-GD)
10. Wall Mount Bracket, Stainless Steel (MIC-WMB-S)
11. Pole Mount Bracket (MIC-PMB)
12. Corner Mount Bracket, Black (MIC-CMB-BD)
13. Corner Mount Bracket, White (MIC-CMB-WD)
14. Corner Mount Bracket, Grey (MIC-CMB-GD)
15. Spreader Plate, Black (MIC-SPR-BD)
16. Corner Mount Bracket, Stainless Steel (MIC-CMB-S)
17. Spreader Plate, White (MIC-SPR-WD)
18. Spreader Plate, Grey (MIC-SPR-GD)
19. Spreader Plate, Stainless Steel (MIC-SPR-S)
20. Shallow Conduit Adapter, Black (MIC-SCA-BD)
21. Shallow Conduit Adapter, White (MIC-SCA-WD)
22. Shallow Conduit Adapter, Grey (MIC-SCA-GD)
23. MIC7000 Sunshield (MIC-67SUNSHLD)

B. Illuminators

1. Illuminator, IR/White Light Combo, Black (MIC-ILB-100)
2. Illuminator, IR/White Light Combo, White (MIC-ILW-100)
3. Illuminator, IR/White Light Combo, Grey (MIC-ILG-100)

C. Power Supplies/Alarm Interface

1. PoH Midspan, 95 W (NPD-9501A)
2. High PoE Midspan, 60W (NPD-6001A)
3. VIDEOJET connect Power Supply Unit (VJC-7000-90)
4. MIC7000 Alarm/Washer Interface Unit (MIC-ALM-WAS-24)

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. Perform installation with qualified service personnel.
- C. Install devices in accordance with the National Electrical Code or applicable local codes.
- D. Ensure selected location is secure and offers protection from accidental damage.
- E. 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 functions properly.

END OF SECTION