**EL2 Outdoor IR Bullet Camera**

**IR 2MP HDR/TDN**

Architectural and Engineering Specifications

Section 28 23 00

Version: 1.0

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**PART 1 GENERAL**

1.1 SECTION INCLUDES

1. EL2 Outdoor IR Bullet Camera

1.2 RELATED SECTIONS

1. Section 26 05 00 - Common Work Results for Electrical
2. Section 27 11 23 - Communications Cable Management and Ladder Rack

1.3 REFERENCES

* + 1. Canadian ICES-003.
		2. Consultative Committee for International Radio (CCIR).
		3. Conformity for Europe (CE).
		4. Electronic Industry Association (EIA).
		5. Federal Communications Commission (FCC).
		6. Joint Photographic Experts Group (JPEG).
		7. National Television Systems Committee (NTSC).
		8. Phase Alternating Line (PAL).
		9. Underwriters Laboratories Inc. (UL).
		10. Conformity for UK (UK)
		11. Regulatory
1. The camera shall have passed the following safety and security standards:
* IEC/EN 62368-1
* UL 62368-1
* CSA 62368-1
* NDAA
* IP 66 and IP67
* IK10
1. The camera shall conform to the following rules and regulations:
* EMC FCC 47 CFR Part 15 (Subpart B)
* ICES-003
* EN55032, CISPR 32, AS/NZS CISPR 32, CISPR 25
* EN61000-3-2, EN 61000-3-3
* EN50130-4, EN55024
1. The camera shall have the following markings indicating compliance with the regulations for sale into the countries that accept the marking:
* CE
* cULus
* RCM
* WEEE
* UKCA
* NOM

1.4 DEFINITIONS

A. HD (High-definition) - refers to video having resolution substantially higher than traditional television systems. HD has one or two million pixels per frame.

1. CIF (Common Intermediate Format) - refers to a standard video format, which is categorized based on the resolution.

1.5 SUBMITTALS

* + 1. General: Submittals shall be made in accordance with the Conditions of the Contract and Submittal Procedure Section 01 30 00 - Administrative Requirements.
		2. Manufacturer's Product Data: Submit manufacturer's data sheets indicating systems and components proposed for use, including instruction manuals.
		3. Shop Drawings: Submit complete shop drawings including connection diagrams for interfacing equipment, list of connected equipment, and locations for major equipment components.
		4. Record Drawings: During construction maintain record drawings indicating location of equipment and wiring. Submit an electronic version of record drawings not later than Substantial Completion of the project.
		5. Operation and Maintenance Data: Submit manufacturer's operation and maintenance data, customized to the system installed. Include system and operator manuals.
		6. Field Tests: Submit results of field testing of every device including date, testing personnel, retesting date (if applicable), and confirmation that every device passed field testing.
		7. Maintenance Service Agreement: Submit a sample copy of the manufacturer's maintenance service agreement, including cost and services for a one year period for Owner's review. Maintenance shall include, but not be limited to, labor and materials to repair the system, tests and adjustments, and regular inspections.
		8. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color, and patterns.

1.6 QUALITY ASSURANCE

A. Manufacturer: Minimum 10 years’ experience in manufacturing and maintaining video management systems. Manufacturer shall provide toll-free technical assistance and support available 24/7.

B. Manufacturer shall provide customer service, pre-sales applications assistance, after-sales technical assistance, access to online technical support, and online training using Web conferencing.

1. Manufacturer shall provide 24/7 technical assistance and support by means of a toll-free telephone number at no extra charge within the terms of the warranty agreement.
2. Installer: Minimum two years’ experience installing similar systems, and acceptable to the manufacturer of the video management system.
3. Power Requirements: Components shall have the following electrical specifications: 100-240 V AC (50 Hz/60 Hz) or as specified for individual products within part 2 of the specification.
4. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
5. Finish areas designated by Architect.
	* 1. Do not proceed with remaining work until workmanship is approved by Architect.
6. Rebuild mock-up area as required to produce acceptable work.
	1. PRE-INSTALLATION MEETINGS
7. Convene minimum two weeks prior to starting work of this section.
	1. DELIVERY, STORAGE, AND HANDLING
		1. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
		2. Handling: Handle materials to avoid damage.
	2. PROJECT CONDITIONS
		1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
	3. SEQUENCING
		1. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
	4. WARRANTY
		1. The camera shall have a warranty of at least 5 years.
		2. Should the camera fail during the warranty period, a replacement camera shall be available as an advance replacement at no additional cost in order to return the end user to full functionality as quickly as possible.

**PART 2 PRODUCT**

2.1 MANUFACTURER

* + 1. Acceptable Manufacturer: March Networks, which is located at: 303 Terry Fox Drive, Suite 200; Ottawa, Ontario, Canada K2K 3J1; Toll Free Tel: 800-563-5564; Email:sales@marchnetworks.com; Web:[www.marchnetworks.com](http://www.marchnetworks.com)

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 EL2 OUTDOOR IR BULLET CAMERA

A. General Characteristics – The camera will have the following characteristics:

1. The camera shall be designed to provide 2MP images via H.264 or M-JPEG compression up to 30fps without compromising other features or performance.
2. The camera must fully integrate to manufacturer’s NVR and VMS solutions, as well as offer integration to other 3rd party network recording solutions.
3. The camera shall be part of the manufacturer’s own family of IP cameras and designed for 24 hour/7 day/365 day application use.
4. The camera shall be delivered with a quick start installation guide, screwdriver and screws, wall anchors, and mounting template.
5. Camera Features and Functions
6. The camera shall utilize a 1/3” sensor format, 2MP Progressive Scan HDR CMOS Imager.
7. The camera shall provide a Dynamic Range of up to at least 69dB.
8. The camera shall be available with an integrated auto 2.8 mm or 3.6 mm, F2.0 fixed focal lens.
9. The lens shall incorporate a focus feature that can automatically adjust to its optimal focal length settings based on the scene.
10. The lens angle of view shall be at least 118 degrees (2.8 mm) or 90 degrees (3.6 mm) (horizontal).
11. The Camera shall have Integrated Smart IR LEDs that provide uniform illumination up to 98 ft away.
12. The camera shall have True Day Night functionality incorporating an integrated IR cut filter.
13. The lens shall be an IR Corrected.
14. The camera shall provide color images in light sensitivity ≤ 0.08 lux (2.8 mm) or ≤ 0.1 lux (3.6 mm).
15. Via a removable IR cut filter, the TDN camera shall provide black and white images in light sensitivity ≤ 0 lux.
16. The camera shall provide a shutter time of 1/5s to 1/32000 s.
17. The camera angle adjustment shall be at least 340 degrees for pan, 80 degrees for tilt, and 100 degrees for rotation.
18. The camera shall accommodate digital pan, tilt and zoom via the Manufacturer’s video management software.
19. The camera shall incorporate a remote zoom feature whereby the focal length settings can be adjusted remotely.
20. The camera’s remote focus feature shall provide the ability to automatically optimize the focus settings via the click of a mouse. In addition, the user can fine tune the focus, remotely via a web browser.
21. The camera shall provide manual and automatic white balance.
22. Video
23. The camera shall encode Smart H.264 LBR and M-JPEG video compression streams.
24. The camera shall have options to provide progressive scan video in the following resolution formats:
* WXGA (1360 x 768 pixels)
* 720p (1280 x 720 pixels)
* Full HD 1080p (1920 x 1080 pixels)
1. The preceding image detail shall be provided at capture rates of up to 30 Frames per Second (1920x 1080). Other possible settings shall be 30-1 FPS.
2. The camera shall be capable of accommodating at least two simultaneous streams of H.264 2MP (1920 x 1080) @25/30fps + H.264 720p (1280 x 720) @ 30fps
3. The camera shall provide options to remotely program any of the following features via an integrated web browser interface:
	* Wide Dynamic Range (HDR)
	* Schedules to initiate sensor profiles or alarms
	* 90 degree rotation for Hallway or Corridor view
	* Anti-Flicker
	* White Balance Mode
	* Brightness
	* Contrast
	* Saturation
	* Hue
	* Sharpness
	* Auto Day/Night
	* Mirror Mode
4. Audio
5. The camera shall have a line level audio input capable of providing one-way audio streaming.
6. The camera shall provide the ability to encode audio data synchronized with video data. The audio compression protocol used shall be G.711 PCM compression.
7. Where audio recording is to accompany video capture, the video and audio shall be synchronized to within ≤ one second for both live viewing and playback.
8. Network

The camera shall have robust IP networking features, in line with IT management team expectations. These features shall include the following:

1. The camera shall have programmable username and password protection,
2. The camera shall offer communication protection using HTTPS encryption for camera configuration and password entry.
3. The camera shall operate using either DHCP or static IP addressing. If using DHCP addressing, client software must be able to connect to the camera using its new address without any action on the part of the user.
4. The camera shall offer bandwidth limiting such that video data traffic on the network will not exceed a preset maximum when distributing live or recorded video.
5. The camera shall support the following protocols:
	* ONVIF Profiles S/G/T

1. System Integration
2. The camera shall be able to detect motion and trigger alarms based upon programmable Sensitivity and Threshold settings in at least four separate zones within the camera’s field of view.
3. Video analytics shall include smart motion detection.
4. The camera shall offer an integrated industry-standard MicroSD/MicroSDHC/MicroSDXC memory card slot for local back-up of video and audio. SDHC recording options shall consist of continuous or motion based recording. When used with integrated VMS, the camera shall offer a Shadow ArchivingTM feature such that the video recorded on the SDHC card is accessible directly from compatible client software. In addition, recorded video and audio can be recalled via the camera’s integrated web interface.
5. Functionality
6. The camera shall have a three-axis gimbal for positioning the camera and lens.
7. The camera shall support a Power over Ethernet (PoE) Class 0 interface.
8. The camera shall offer at least 5 privacy zones when used with manufacturer’s video management software.
9. Remote Access
10. The camera parameters shall be programmed directly on the device via an integrated HTML web page. Settings such as video capture rates, compression formats, network streaming rates and more shall be controlled in this manner. The web page shall have a video window to display results of menu changes after they have been applied.
11. The camera shall have the ability to stream video in real time, with no appreciable delay or quality reduction other than limitations in the underlying network.
12. The camera shall offer a virtual (digital) zoom capability of at least 50% magnification via the manufacturer’s video management software.
13. The camera shall support the integration of video and bi-directional audio streams, enabling personnel at the central facility to communicate in real-time with persons at any remote site equipped for this type of interaction.
14. Alarms shall be triggered by the detection of motion within at least four user-definable zones with up to 10 user defined schedules.
15. Mechanical
16. The camera housing shall be IP66 and IP67-rated, IK10 vandal resistant, with a polycarbonate transparent window.
17. The camera housing shall incorporate an aluminum inner camera module with encapsulated electronics.
18. The cameras shall incorporate an internal MicroSD/MicroSDHC/MicroSDXC memory card slot.
19. The overall dimensions shall be no greater than 91.1 mm H x 181.5 mm diameter (3.6” H x 7.2” diameter).
20. The camera shall weigh no more than 0.67Kg (1.48 lbs).
21. The camera housing shall accommodate mounting options of surface mount and flush mount or wall mount applications with a single housing.
22. The camera shall be offered with optional accessories to mount on walls, poles and from ceilings.
23. The mounting accessories shall be 1.5” NPT for mounting the camera to industry standard 1.5” NPT mounts.
24. The camera shall be offered with a housing that allows the cable to be routed through the side of the housing.
25. Electrical
26. The camera shall be powered from a PoE IEEE 802.3af Class 0 device; 12VDC.
27. The camera shall have a power consumption ≤6.5W (PoE); 5.1W (12VDC).
28. Environmental
29. The camera shall have an operating temperature of at least -30 to 50°C (-22 to 122°F).
30. The camera shall have a Relative Humidity of 10-95 % non-condensing.
31. ONVIF Compliancy

The camera shall be ONVIF-compliant, allowing it to be used with a variety of third party systems. When used in conjunction with an ONVIF-compliant system, the camera shall support the following features:

1. Discovery
2. Audio Streaming
3. Video Streaming
4. Privacy Masking (provided the third-party system supports this feature)
5. Digital Zoom (provided the third-party system supports this feature)
6. H.264
7. M-JPEG
8. Accessories

The following accessories are available for this camera:

* 1. 40741 – L-Shaped Wall Bracket
	2. 40742 – 4S Mounting Box Adapter
	3. 40743 – Pendant Pipe Mount Cap
	4. 40744 – Waterproof Junction Box
	5. 40745 – Pole Mount Adapter
	6. 40746 – Outdoor Conduit Box
	7. 40747 – Corner Mount Adapter

## PART 3 EXECUTION

3.1 EXAMINATION

* + 1. Do not begin installation until substrates have been properly prepared.
		2. Examine site conditions prior to installation. Notify Architect and Owner in writing if unsuitable conditions are encountered. Do not start installation until site conditions are acceptable.
		3. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.

3.2 INSTALLATION

* + - 1. All components of the camera shall be thoroughly tested before shipping to the project location.
			2. Camera shall be installed, programmed and tested in accordance with manufacturer's installation instructions.
			3. Coordinate interfaces with Owner's representative where appropriate.
			4. Provide backboxes, connectors, supports, conduit, cable, and wire for a complete and reliable installation. Obtain Owner's approval for exact location of all boxes, conduit, and wiring runs prior to installation.
			5. Install conduit, cable, and wire parallel and square with building lines, including raised floors areas. Do not exceed forty percent (40 percent) fill in conduits. Gather wires and tie to create an orderly installation.
			6. Coordinate with other trades to provide proper sequencing of installation.

3.3 FIELD COMMISSIONING

1. Test camera as recommended by manufacturer, including the following:
	* + 1. Conduct complete inspection and testing of equipment, including verification of operation with connected equipment.
			2. Test devices and demonstrate operational features for Owner's representative and authorities having jurisdiction, as applicable.
			3. Correct deficiencies until satisfactory results are obtained.
			4. Submit written copies of test results.

3.4 TRAINING AND CERTIFICATION

The camera manufacturer shall offer free online training for authorized dealer technicians through user controlled portal access.

1. Training material shall cover all aspects of installation, configuration and maintenance.
2. The dealer shall receive a certificate upon the successful completion of the certification exam. Certifications shall be valid for a period of 2 years.
3. The camera manufacturer shall offer free online training tutorials for system administrators accessible 24/7 via open (non-restricted) website for an unlimited number of system users. The training tutorial shall cover the system, User management, Health alert management and Mass Management (upgrades) of the camera.

The camera manufacturer shall offer free online training for Guards and Investigators accessible 24/7 via open (non-restricted) website for an unlimited number of system users.

**End of section**