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**2 MP 32x NETWORK IR PTZ CAMERA**

**DIVISION 28 – ELECTRONIC SAFETY AND SECURITY**

**Notes to Specifier:**

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of inserting text, such choices are presented in **<bold text>.**

2. Explanatory notes and comments are presented in **colored** text.

**Important: See further notes on the following page.**

**Important Note to Security Systems Specifiers**

CSI MasterFormat 2016 incorporates numerous significant changes affecting electronic safety and security. This document is written to provide flexibility in using either format, although adoption of MasterFormat 2016 is encouraged. The following is a guide to the MasterFormat numbers relevant to the product referenced in this specification.

**Primary Specification Area:**

MasterFormat 2014:

28 20 00 Electronic Surveillance

28 23 00 Video Surveillance

28 23 29 Video Surveillance Remote Devices and Sensors

MasterFormat 2016:

28 20 00 Video Surveillance

28 2x xx Surveillance Cameras

28 2x xx IP Cameras

**Related Requirements:**

MasterFormat 2014:

27 20 00 Data Communications

28 23 13 Video Surveillance Control and Management Systems

28 23 16 Video Surveillance Monitoring and Supervisory Interfaces

28 23 19 Digital Video Recorders and Analog Recording Devices

28 23 23 Video Surveillance Systems Infrastructure

MasterFormat 2016

27 15 01.xx Video Surveillance Communications Conductors and Cables

27 20 00 Data Communications

28 05 xx.xx PoE Power Sources for Electronic Safety and Security

28 05 xx Storage Appliances for Electronic Safety and Security

28 05 xx.xx Network Video Recorders

28 05 xx Cyber Requirements for Electronic Safety and Security

28 05 xx Safety and Security Network Communications Equipment

28 2x 00 Video Management System

**2 MP 32x IR NETWORK PTZ CAMERA**

1. **GENERAL**
   1. **SUMMARY**
      1. Section includes a 2 MP IP IR camera.
      2. Product - A 2 MP IP IR PTZ camera with multi-streaming (H.265, H.264 and MJPEG) capability.

## Related Requirements

**Refer to MasterFormat notes at the beginning of this document to select requirements specific to the MasterFormat version being used in the specification.**

* 1. **REFERENCES**
     1. Abbreviations
        1. AGC Auto Gain Control
        2. ARP Address Resolution Protocol
        3. AWB Auto White Balance
        4. BLC Back light compensation
        5. CBR Constant Bit Rate
        6. CVBS Composite Video Blanking Sync
        7. DHCP Dynamic Host Configuration Protocol
        8. DNR Digital Noise Reduction
        9. DNS Domain Name Server
        10. DDNS Dynamic Domain Name Server
        11. DSCP Differentiated Services Code Point
        12. fps frames per second
        13. FTP File Transfer Protocol
        14. GOV Group of Video
        15. GUI Graphical User Interface
        16. HD High Definition
        17. HTTP Hyper Text Transfer Protocol
        18. ICMP Internet Control Message Protocol
        19. IGMP Internet Group Management Protocol
        20. IP Internet Protocol
        21. JPEG Joint Photographic Experts Group
        22. MJPEG Motion JPEG
        23. MP Mega Pixel
        24. MPEG Moving Pictures Experts Group
        25. NAS Network Attached Storage
        26. NTP Network Time Protocol
        27. PIM-SM Protocol Independent Multicast-Sparse Mode
        28. PoE Power over Ethernet
        29. PPPoE Point to Point Protocol over Ethernet
        30. RTP Real-time Transport Protocol
        31. RTCP Real-Time Control Protocol
        32. RTSP Real-Time Streaming Protocol
        33. SDK Software Development Kit
        34. SMTP Simple Mail Transfer Protocol
        35. SNMP Simple Network Management Protocol
        36. SSL Secure Sockets Layer
        37. TCP Transmission Control Protocol
        38. UDP User Datagram Protocol
        39. UPnP Universal Plug and Play
        40. VBR Variable Bit Rate
        41. VMS Video Management System
        42. WDR Wide Dynamic Range
        43. LDC Lens Distortion Correction
     2. Reference Standards
        1. Network - IEEE
           1. 802.3 Ethernet Standards
           2. 802.1x Port-based Network Access Control
        2. Video
           1. ISO / IEC 23008-2:2013, MPEG-H Part2 (ITU H.265, HEVC)
           2. ISO / IEC 14496–10, MPEG-4 Part 10 ( ITU H.264)
           3. ISO / IEC 10918 – JPEG
           4. ONVIF – Profiles S, G and T
        3. EMC & Safety
           1. FCC 47 CFR Part 15 Subpart B

ANSI C63.4-2017 Class A

* + - * 1. IC Regulation ICES-003 Issue 7

CAN/CSA CISPR 32:17 Class A

* + - * 1. CE EMC-Directive 2014/30/EU

EN 55032:2015/A11:2020 Class A

EN 50130-4:2011

* + - * 1. UK EMC-Regulations 2016/1091

BS EN 55032:2015/A11:2020 Class A

BS EN 50130-4:2011

* + - * 1. VCCI-CISPR 32: 2016 Class A
        2. AS/NZS CISPR32:2015 Class A
        3. UL listed
        4. CE EN 50581:2012 (hazardous substances)
    1. Definitions
       1. GOV (Group of Video object planes) - A set of video frames for H.264 and H.265 compression, indicating a collection of frames from the initial I-Frame (key frame) to the next I-Frame. GOV consists of two kinds of frames in video surveillance setup: I-Frame and P-Frame.
       2. Dynamic GOV – Dynamic assignment of GOV length based on the complexity of the scene to efficiently manage bitrate of the video stream and reduce the storage required.
       3. Multi-exposure wide dynamic range - Operation which automatically adjusts shutter speed to provide a wide range between dark and light areas visible at the same time, preventing backlighting issues. Long exposure is used for dark areas and a short exposure is used in bright areas.
       4. Dynamic fps – Dynamic assignment of fps (frames per seconds) based on the movement of object(s) in the scene to efficiently manage bitrate of the video stream and reduce the storage required.
       5. Smart Codec –Codec that controls quantization parameter, fps, and GOV length in H.265 and H.264 to efficiently manage bitrate of the video stream and reduce the storage required. Smart Codec may be referred to as WiseStream in this document.
       6. DORI (Detect, Observe, Recognize, Identify) – A standard system (EN-62676-4) for defining the ability of a camera to distinguish persons or objects within a covered area.
          1. Detect : 25PPM / 8PPF
          2. Observe : 63PPM / 19PPF
          3. Recognize : 125PPM / 38PPF
          4. Identify : 250PPM / 76PPF
  1. **SUBMITTALS**
     1. Product Data
        1. Manufacturer’s printed or electronic data sheets
        2. Manufacturer’s installation and operation manuals
        3. Warranty documentation
  2. **QUALIFICATIONS**
     1. Manufacturer shall have a minimum of five years’ experience in producing IP video equipment.
     2. Installers shall be trained and authorized by the Manufacturer to install, integrate, test, and commission the system.
  3. **DELIVERY, STORAGE AND HANDLING**
     1. Deliver the camera in the manufacturer’s original, unopened, undamaged container with identification labels intact.
     2. Store the camera in a temperature environment specified in section 2.04 Detailed Specification, protected from mechanical and environmental conditions as designated by the manufacturer.
  4. **WARRANTY, LICENSING AND SUPPORT**
     1. Manufacturer shall provide at least a limited 3 year warranty for the product to be free of defects in material and workmanship.
     2. Manufacturer shall provide embedded camera video analytics free of license charges.

END OF SECTION

1. **PRODUCTS**
   1. **EQUIPMENT**
      1. Manufacturer: Hanwha Techwin

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* + 1. Model QNP-6320R
    2. Alternates: None
  1. **GENERAL DESCRIPTION**
     1. Video Compression and Transmission – The camera shall have the following properties relating to the video signals it produces.
        1. H.265, H.264 and MJPEG compression, each derived from a dedicated encoder and capable of being streamed independently and simultaneously.
           1. H.265 and H.264 – Max. 60/50fps (60Hz/50Hz),
           2. MJPEG – Max. 30/25fps(60Hz/50Hz)
        2. The camera shall be able to configure up to 10 independent video stream profiles with differing encoding, quality, frame rate, resolution, and bit rate settings.
        3. The camera shall be able to configure various resolution selections.
           1. 16:9 aspect ratio : 1920 x 1080, 1280 x 720, 800 x 448, 640 x 360
           2. 4:3 aspect ratio : 1280 x 960, 1024 x 768, 800 x 600, 640 x 480, 320 x 240
           3. 5:4 aspect ratio : 1280 x 1024, 720 x 576
           4. 3:2 aspect ratio : 720 x 480
        4. The camera shall support unicast video streaming up to 20 users.
        5. The camera shall support multicast video streaming up to 128 users.
        6. The camera shall support multiple video streaming up to 10 profiles
        7. The camera shall be able to configure Dynamic DNS (DDNS). DDNS shall be provided with no additional cost by the manufacturer.
        8. The camera shall provide WiseStream II, Dynamic GOV, and Dynamic FPS) to efficiently manage bitrate of the video stream and reduce storage.
     2. Camera – The camera device shall have the following physical and performance properties
        1. The camera shall be able to produce clear images in highly contrast scenes with multi-exposure wide dynamic range up to 120dB.
        2. The PTZ camera shall have enhanced Digital Image Stabilization (DIS) with built-in gyro sensor. The gyro sensor greatly reduces false alarm triggered by scene changes.
        3. Automated, manual, scheduled, or externally triggered day and night operation with infrared cut filter. Images are available in color or black and white.
           1. Low light level operation to 0.05 lux (F1.6) in color mode and 0 lux (IR LED on) in black and white mode.
        4. The camera shall support digital noise reduction using both 2D and 3D noise reduction technology.
        5. Configurable 32 privacy masking regions utilizing a quadrangle.
        6. Defog feature to remove fogginess of scene.
        7. The camera shall have azimuth feature to display compass points on the screen. The available points are following.
           1. East, West, South, North, Northeast, Southeast, Northwest, Southwest
     3. Intelligence and Analytics – The camera shall have a suite of integral intelligent operations and analytic functions to include:
        1. Motion detection with eight definable detection areas with polygonal zones, and minimum/maximum object size.
        2. Detection of logical events of specified conditions from the camera’s video
           1. Tampering Directional detection, Motion detection, Enter/Exit, Tampering, Virtual line
           2. \* Audio detection(with NW I/O Box)
     4. Interoperability – The camera shall be ONVIF Profile S, G and T compliant.
     5. The camera shall possess the following further characteristics:
        1. Built-in web server, accessed via standard browsers including Google Chrome, MS Edge, Mozilla Firefox and Apple Safari.
        2. Micro SD/SDHC/SDXC memory card with configurable pre-alarm and post-alarm recording intervals
        3. NAS recording option with configurable pre-alarm and post-alarm recording intervals
        4. Alarms and notifications
           1. alarm notification triggers:

\*Alarm input(with NW I/O Box)

Video & Audio analytics

Network disconnection

* + - * 1. available notification means upon trigger:

File Upload Via FTP and E-mail

Notification Via E-mail

Local storage (micro SD / SDHC / SDXC) or NAS recording at event triggers

PTZ Presets

Handover

* + - 1. Pixel Counter available in the web viewer.
      2. IP66, IK10, NEMA 4x
      3. This device has been verified using STP cable. The use of appropriate GND grounding and STP cable is recommended to effectively protect your product and property from transient voltage, thunderstroke, communication interruption.
  1. **CAMERA SOFTWARE**
     1. The camera shall have a built in web server which supports non-plugin browsers including Google Chrome, MS Edge, Mozilla Firefox and Apple Safari from a PC or Mac.
     2. The web viewer shall provide a monitoring screen which displays live camera video and simultaneously provides same-screen access to the following functions:
        1. Live view window size
        2. Resolution setting
        3. Image (snapshot) capture
        4. Manual recording to SD or NAS
        5. Access recorded data playback and camera configuration menus
     3. The web viewer shall provide a playback screen which provides access to the following functions:
        1. Recorded data search using date and time range
        2. Recorded data search using event type
        3. Play a recorded video by event triggering
        4. Set resolution
        5. Generate a backup copy of saved video data
     4. The web viewer shall provide a setup screen which provides access to the following configuration settings and functions in the camera:
        1. Digital video profile to include compression type, maximum or target bit rate, frame rate, multicast parameters, crop encoding area
        2. User profile to include password, access level, authentication
        3. Date and time
        4. Network settings and IP version
           1. DDNS
           2. SSL, including certificate management
           3. 802.1x authentication
           4. Quality of Service settings
           5. SNMP to include version selection and settings
           6. Auto IP configuration
        5. Video setup to include flip and mirror mode, video type, and privacy zone
        6. Camera settings to include image preset, sensor frame capture, dynamic range, white balance, back light, exposure, day/night operation, on-screen display, sharpness, contrast, color level, lens distortion correction.
        7. Event detection setup to include notification parameters, recording rules, time schedule, tamper protection, motion detection, event triggers
        8. System function to include reboot, upgrade, check system and event logs, application (SDK) management
        9. View profile information
     5. Client requirements
        1. Recommend Browser : Chrome
        2. Acceptable Browser : Chrome, Safari, Firefox, MS Edge(chromium based)
        3. Acceptable Operating Systems: Windows, MAC, Android, iOS, Chrome
        4. Verified Environment:
           1. Windows 10 : Google chrome version 80 above, Firefox version 72 above,  
               MS Edge version 83 above
           2. Mac 10.13/14 : Safari version 11.0.1 above
* Decoding performance in web viewer depends on CPU/GPU performance of user
  1. **DETAILED SPECIFICATIONS**
     1. Video
        1. Imaging device 1/2.8" 2MP CMOS
        2. Minimum illumination Color: 0.05Lux (F1.6, 1/30sec)

B/W : 0Lux (IR LED On)

* + 1. Lens:
       1. Focal length 4.44 ~ 142.6mm (32x) zoom
       2. Max. Aperture Ratio F1.6 (Wide) ~ F4.4 (Tele)
       3. Field of view H : 64.66˚(Wide) ~ 2.29˚(Tele) / V : 38.08˚(Wide) ~ 1.30˚(Tele)
       4. Min. Object Distance Wide 1.5m(4.92ft), Tele : 2m (6.56ft)
       5. Focus Control One-shot Auto Focus, Focus save
       6. Lens Type DC Auto Iris
    2. Pan/Tilt
       1. Pan Range 360° endless
       2. Pan Speed Preset: 700˚/sec, Manual: 0.024˚/sec~250˚/sec
       3. Tilt Range 110˚(-20˚~90˚)
       4. Tilt Speed Preset: 300˚/sec, Manual: 0.024˚/sec~250˚/sec
       5. Sequence Preset (300ea), Swing, Group (6ea), Trace, Tour, Auto Run, Schedule
       6. Preset Accuracy ±0.2˚ (±20°C by temperature at preset setting)
       7. Azimuth Yes (E / W / S / N / NE / SE / NW / SW OSD)
    3. The following features with control settings shall be available:
       1. Camera Title Off / On (Displayed up to 85 characters per line)
       2. Direction Indicator Support
       3. Day & Night Auto (ICR)
       4. Back Light Compensation: Off / BLC / HLC / WDR, SSDR
       5. WDR 120dB
       6. Digital Noise Reduction (DNR) SSNR V
       7. Digital Image Stabilization Support (Built-in gyro sensor)
       8. Defog Support
       9. Motion Detection Off / On (8ea, polygonal zones)
       10. Privacy Masking Off / On (32ea, quadrangle zones)

- Color: Gray/Green/Red/Blue/Black/White

- Solid/Mosaic

* + - 1. Gain Control Low / Middle / High
      2. White Balance ATW / AWC / Manual / Indoor / Outdoor /

Mercury / Sodium

* + - 1. Electronic Shutter Speed setting min / max / anti-flicker (2 ~ 1/12,000sec)
      2. Image flip Off / On
      3. Image mirror Off / On
      4. Analytics Directional detection, Motion detection, Enter/Exit

Tampering, Virtual line

\* Audio detection (with NW I/O Box)

* + - 1. Alarm Triggers Analytics, Network disconnection

\*Alarm Input (with NW I/O Box)

* + - 1. Alarm Events File Upload via FTP and E-mail, Notification via E-mail,

Local storage (micro SD / SDHC / SDXC) or

NAS recording at event triggers,

PTZ Preset

Handover

\*Alarm output (with NW I/O Box)

19. Pixel Counter Support

20. Storage Micro SD/SDHC/SDXC 1slot 256GB

21. Memory 1024MB RAM, 256MB Flash

* + 1. Video Streams
       1. Video compression H.265, H.264, MJPEG
       2. Resolution 1920 x 1080, 1280 x 1024, 1280 x 960, 1280 x 720, 1024 x 768,

800 x 600, 800 x 448, 720 x 576, 720 x 480, 640 x 480,

640 x 360, 320 x 240

* + - 1. Maximum Framerate
         1. H.265 / H.264 Max. 60/50fps(60Hz/50Hz) at all resolutions
         2. MJPEG Max. 30/25fps
      2. Smart Codec Manual Mode (area-based : 5EA)
      3. WiseStream WiseStreamⅡ
      4. Bitrate Control Method H.265 / H.264: CBR or VBR

MJPEG: VBR

* + - 1. Streaming Capability Multiple streaming (Up to 10 profiles)
      2. Streaming method Unicast / Multicast
      3. Simultaneous Users 20 maximum (Unicast), 128 maximum (Multicast)
      4. Interoperability ONVIF Profile S / G / T, SUNAPI(HTTP API), Open Platform
    1. Network
       1. Connectivity – Metal Shielded RJ-45(10/100 Base-T)
       2. Protocols supported:
          1. IP v4 / v6, TCP, UDP
          2. Configuration: DHCP, LLDP
          3. Web service: HTTP, HTTPS
          4. Network Service: ARP, Bonjour, DNS, ICMP, NTP, PIM-SM, SNMP v1/2c/3 – MIB-2, UPnP
          5. Media: RTP, RTCP, RTSP, SRTP
          6. Multicast: IGMP
          7. Notifications: FTP, SMTP
       3. DDNS – The camera shall support DDNS services offered by the Manufacturer and other publicly available service offerings.
       4. Quality of Service (QoS) – Layer 3 DSCP
       5. Security features
          1. user password protection
          2. IP address filtering - list of allowed or blocked IP addresses
          3. HTTPS(SSL) login authentication
          4. HTTPS(SSL) secured communications
          5. Digest login authentication
          6. User access log
          7. 802.1X Authentication(EAP-TLS, EAP-LEAP)
       6. Discovery - Manufacturer shall offer a discovery program to identify all devices of his manufacture on the network.
       7. Configuration – Manufacturer shall offer a configuration program that remotely allows users to change settings on multiple cameras simultaneously.
       8. Firmware upgrade – The manufacturer shall offer a program capable of upgrading multiple cameras at the same time (not requiring access to individual cameras).
       9. Camera backup setting – The manufacturer shall provide a program that provides the ability to save multiple camera settings to a file and restore these camera settings if needed.
       10. Reporting – The manufacturer shall provide a tool that can generate a report including thumbnail view, MAC address, IP address, serial number and other camera settings.
    2. Electrical
       1. Power
          1. Input Voltage / Current PoE+(IEEE802.3at, Class4)
          2. Power Consumption Max. 25.5W Camera only (typical : 14.7W)
    3. Mechanical And Environmental
       1. Color / Material Hard-coated dome
          1. Body White / Aluminum
          2. Head Black / Polycarbonate
       2. RAL Code RAL9003
       3. Dimensions (W x H): Ø158 x 293.3mm (6.22 x 11.54")
       4. Weight 3.1Kg (6.83lb)
       5. Temperature
          1. Operating

Normal -35°C ~ +55°C (-31°F ~ +131°F)

Intermittent -40°C ~ +60°C (-40°F ~ +140°F)

\* Start up should be done at above -30°C

* + - * 1. Storage -50°C ~ +60°C (-58°F ~ +140°F)
      1. Humidity Less than 95% RH (Non-condensing)
      2. Ingress Protection None
      3. Vandal Resistance None
    1. DORI (EN62676-4 standard)
       1. Detect Wide: 64.2m(191.1ft) / Tele: 1921m(6303.4ft)
       2. Observe Wide: 24.3m(79.6ft) / Tele: 768.5m(2521.4ft)
       3. Recognize Wide: 12.1m(39.8ft) / Tele: 384.3m(1260.7ft)
       4. Identify Wide: 6.1m(19.9ft) / Tele: 192.1m(630.3ft)

END OF SECTION

1. **EXECUTION**
   1. **INSTALLERS**
      1. Contractor personnel shall comply with all applicable state and local licensing requirements.
   2. **PREPARATION**
      1. The network design and configuration shall be verified for compatibility and performance with the camera(s).
      2. Network configuration shall be tested and qualified by the Contractor prior to camera installation.
      3. All firmware found in products shall be the latest and most up-to-date provided by the manufacturer, or of a version as specified by the provider of the Video Management Application (VMA) or Network Video Recorder (NVR).
      4. All equipment requiring users to log on using a password shall be configured with user/site-specific password/passwords. No system/product default passwords shall be allowed.
   3. **INSTALLATION**
      1. The contractor shall carefully follow instructions in documentation provided by the manufacturer to insure all steps have been taken to provide a reliable, easy-to-operate system.
      2. All equipment shall be tested and configured in accordance with instructions provided by the manufacturer prior to installation.
      3. Before permanent installation of the system, the contractor shall test the system in conditions simulating the final installed environment.
   4. **STORAGE**
      1. The hardware shall be stored in an environment where temperature and humidity are in the range specified by the manufacturer.

END OF SECTION