

Product Guide Specification

Specifier Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) 3-Part Format, based on *MasterFormat 2016* 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 21 00: Video Surveillance Section 28 21 13: IP Cameras

Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Section 28 21 17: Video Surveillance – Surveillance Cameras – Camera Housings
 - 2. Section 28 21 19: Video Surveillance – Surveillance Cameras – Camera Mounts
 - 3. Section 28 27 00: Video Surveillance – Video Surveillance Sensors
- B. Related Sections
 - 1. [Section 28 33 15: Security Detection, Alarm and Monitoring – Security Monitoring and Control – Security Monitoring and Control Software].

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

1.2 REFERENCES

- A. Federal Communications Commission (FCC) (www.fcc.gov)
 - 1. (SEFD1509190-B)
- B. Underwriters Laboratories, Inc. (UL) (www.ul.com)
 - 1. E234884-A60-UL
- C. CONFORMITE EUROPEENNE
 - 1. EN60950:2000
- 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 and 30 frames/s

1.3 SYSTEM DESCRIPTION

A. Section Includes

1. Video Surveillance – Surveillance Cameras – IP Cameras

B. Performance Requirements

1. Thermal Camera:

- a. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall be 400 x 300 VOx uncooled thermal sensor.
- b. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall have a pixel size of 17um.
- c. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall have a thermal sensitivity of <40mK@f/1.0.
- d. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall have a spectral range of 7~14um.
- e. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall have a fixed focal length of [35mm], [60mm].
- f. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall support 14 color palettes of Whitehot/Blackhot/Ironrow/Icefire/Fusion/Rainbow/Globow/Iconbow1/Iconbow2 etc.

2. Visible Camera:

- a. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall be a full-featured 2MP unit designed for discrete video surveillance applications in indoor and outdoor environments.
 - b. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall be a 1/1.9" progressive-scan Sony CMOS sensor with 2MP resolution.
 - c. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall have an Auto (ICR) that delivers color images during daylight and automatically switches to a monochrome image as the scene darkens.
 - d. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall have a focal length of 6mm ~ 180mm.
 - e. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall support noise reduction function of Ultra DNR (2D/3D).
 - f. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall support digital Defog function.
3. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall be high-performance and provide continuous 360° pan motion at a rate of 0.1° to 160°/second, and tilt motion of -90° to 40° at a rate of 0.1° to 60°/second.
 4. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall support 36 VDC power supply.
 5. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer Wide Dynamic Range for clear images in extreme high-contrast environments.
 6. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall provide direct network connection using H.264 High profile, H.264 Main profile, H.264 Basic profile and M-JPEG compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
 7. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall conform to the ONVIF profile S&G and CGI standards to provide interoperability with other conformant systems.

8. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer two (2) separate and configurable streams with one (1) individually configurable 2MP stream at 1 to 25/30 fps.
9. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer:
 - a. IP67 environmental protection.
 - b. 6 KV lightning rating.
10. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera housing shall be a durable, rugged design with a metal housing.

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. Dimensional Drawings; include
 1. Overall device dimensions.
 2. Dimensions specific for installation.
- D. Closeout Submittals
 1. User manual.
 2. Parts list.
 3. Maintenance requirements.

1.5 QUALITY ASSURANCE

- A. Manufacturer:
 1. Minimum of [10] years of experience in manufacture and design Video Surveillance Devices.
- B. Video Surveillance System:
 1. List certifying bodies (UL, etc.)
 2. Provide evidence of compliance upon request.
- C. Installer:
 1. Minimum of [5] years of 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.

1.7 WARRANTY

- A. Provide manufacturer's warranty covering [3] years for replacement and repair of defective equipment (except quick-wear parts, quick-wear parts cover 1 year warranty). Warranty varies from country to country.

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 via phone and e-mail.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. [Acceptable Manufacturer:
Zhejiang Dahua Technology Co.,Ltd
No.1199,Bin'an Road,Binjiang District, Hangzhou
Tel: +86 571 8768-8883
Fax: +86 571 8768-8815
Email: overseas@dahuatech.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 Thermal Network Hybrid Pan & Tilt Camera– [DH-TPC-ACPT8420AP/N-B35Z30], [DH-TPC-ACPT8420AP/N-B60Z30]

- A. General Characteristics:
1. Thermal Camera:
 - a. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall be 400 x 300 VOx uncooled thermal sensor technology.
 - b. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall have a pixel size of 17um.
 - c. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall have a thermal sensitivity of <40mK@ f/1.0.
 - d. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall have a spectral range of 7~14um.
 - e. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall have a fixed focal length of [35mm], [60mm].
 - f. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall support 14 color palettes of Whitehot/Blackhot/Ironrow/Icefire/Fusion/Rainbow/Globow/Iconbow1/Iconbow2 etc.
 2. Visible Camera:
 - a. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall be a full-featured 2MP unit designed for discrete video surveillance applications in indoor and outdoor environments.
 - b. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall be a 1/1.9" progressive-scan Sony CMOS sensor with 2MP resolution.
 - c. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer an Auto (ICR) that delivers color images during daylight and automatically switches to a monochrome image as the scene darkens.
 3. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall be high-performance and provide continuous 360° pan motion at a rate of 0.1° to 160°/second, and tilt motion of -90° to 40° at a rate of 0.1° to 60°/second.
 4. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall support 36 VDC power supply.

5. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer Wide Dynamic Range for clear images in extreme high-contrast environments.
6. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall provide direct network connection using H.264 High profile, H.264 Main profile, H.264 Basic profile and M-JPEG compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
7. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall conform to the ONVIF profile S&G and CGI standards to provide interoperability with other conformant systems.
8. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer two (2) separate and configurable streams with one (1) individually configurable 2MP stream at 1 to 25/30 fps.
9. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer:
 - a. IP67 environmental protection.
 - b. 6 KV lightning rating.
10. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera housing shall be a durable, rugged design with a metal housing.

B. Imaging

1. Thermal Camera:
 - a. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer a long life uncooled VOx microbolometer sensor.
 - b. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer an effective number of pixels of 400 x 300 effective picture elements.
 - c. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer a pixel size of 17um.
 - d. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall have a thermal sensitivity of <40mK@ f/1.0.
 - e. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall have a spectral range of 7~14um.
 - f. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer a fixed focal length of [35mm], [60mm].
 - g. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall have a [10.9°], [6.5°] field of view
 - h. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer 14 color palettes of Whitehot/Blackhot/Ironrow/Icefire/Fusion/Rainbow/Globow/Iconbow1/Iconbow2 etc.
2. Visible Camera:
 - a. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer a 1/1.9" progressive-scan Sony CMOS imager.
 - b. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer an effective number of pixels of 1944 x 1092 effective picture elements.
 - c. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer a 16:9 aspect ratio.
 - d. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer a focal length of 6mm ~ 180mm.
 - e. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall have a [59°] ~ [2.4°] field of view.

- f. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall have a 30x optical zoom and 16x digital zoom lens.
- g. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer a maximum aperture of F1.5 ~ F4.3.
- h. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall have a close focus distance of 100mm ~ 1000mm.
- i. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall produce a color image with a minimum scene illumination of 0.001 lux at F1.5 and a monochrome image, when in the night mode, with a minimum illumination of 0.0001 lux at F1.5.
- j. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall produce an image at 0 lux when in IR mode.

C. PTZ

- 1. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall be high-performance and provide continuous 360° pan motion at a rate of 0.1° to 160°/second, and tilt motion of -90° to 40° at a rate of 0.1° to 60°/second
- 2. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer up to 300 presets, 5 auto scan, 8 tour, 5 pattern.
- 3. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall auto restore to previous PTZ and lens status after power failure
- 4. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall support both DH-SD and Pelco-P/D protocols allowing set-up, configuration, and control from a wide variety of devices.

D. Video Characteristics

- 1. Thermal Camera:
 - a. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer 14 color palettes of Whitehot/Blackhot/Ironrow/Icefire/Fusion/Rainbow/Globow/Iconbow1/Iconbow2 etc.
 - b. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer region of interest and custom areas setting.
- 2. Visible Camera:
 - a. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer BLC, HLC, and WDR modes of backlight compensation.
 - b. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer Auto, ATW, Indoor, Outdoor and Manual white balance modes.
 - c. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer 2D/3D Ultra DNR noise reduction.
 - d. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer digital Defog function.
- 3. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer 24 privacy masking areas.
- 4. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer CBR/VBR bit rate control.
- 5. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer the following video compression protocols:
 - a. H.264 High profile
 - b. H.264 Main profile
 - c. H.264 Basic profile

d. M-JPEG

E. Streaming Capability

1. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall generate 2MP resolution using H.264 compression.
2. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer Unicast and Multicast streaming methods.
3. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer the following resolution streams:
 - a. Thermal Camera:
 - 1.3M (1280 x 1024 pixels)
 - 720P (1280 x 720 pixels)
 - b. Visible Camera:
 - 1080P (1920 x 1080 pixels)
 - 720P (1280 x 720 pixels)
4. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall generate two (2) streams at the following maximum resolutions:
 - a. Thermal Camera:
 - Main Stream: 1.3M at 25/30 fps
 - Sub Stream: 640 x 512 at 25/30 fps
 - b. Visible Camera:
 - Main Stream: 1080P at 25/30 fps
 - Sub Stream: D1 at 25/30 fps

F. IP Connectivity

1. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall allow full camera control and configuration capabilities via a TCP/IP network.
2. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall deliver 2 MP video, at rates up to 25/30 frames per second via TCP/IP over an RJ-45 (10/100 Base-T) connection.
3. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall conform to the ONVIF Profile S&G and the CGI standard.
4. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer Quality of Service (QoS) configuration options.
5. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
6. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall support the following protocols: IPv4/IPv6, HTTP, HTTPS, 802.1x, Qos, FTP, SMTP, UPnP, SNMP, DNS, DDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, ICMP, DHCP, PPPoE, ONVIF.
7. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall support the Smart PSS and DSS management software.
8. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall support the Android and the IOS mobile operating systems.

G. Installation Requirements

1. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall be capable of operating in an outdoor environment within a temperature range of -40°C to $+70^{\circ}\text{C}$ (-40°F to $+158^{\circ}\text{F}$).
2. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall accept power, transmit video, and accept control via a TCP/IP connection.
3. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall support 36 VDC power supply.

H. Housing Options

1. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall be offered in a metal housing.
2. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera housing shall conform to the IP67 standard for a weather-resistant package.

2.3 ACCESSORIES

- A. The Thermal Network Anti-corrosion Hybrid Pan & Tilt Camera shall offer the following optional accessories:
1. Optional mounting hardware:
 - a. [Junction box]

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