

Hanwha Techwin is a global leading supplier of solutions for IP and analog video surveillance. Building on the company's history of innovation, Hanwha Techwin is dedicated to providing systems solutions with the highest levels of performance, reliability and cost-effectiveness. Hanwha Techwin is committed to the continued development of innovative systems products for professional security applications.

For additional information, visit http://www.hanwha-security.com/

**2M NETWORK INTERCOM**

**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 2018 incorporates numerous significant changes affecting electronic safety and security. This document is written to provide flexibility in using either format, although adoption of MasterFormat 2018 is encouraged. The following is a guide to the MasterFormat numbers relevant to the product referenced in this specification.

**Primary Specification Area:**

MasterFormat 2016:

28 10 00 Access Control

28 15 00 Access Control Hardware Devices

28 15 23 Intercom Entry Systems

28 15 23.17 Audio Video Intercom (IP)

MasterFormat 2018:

28 10 00 Access Control

28 15 00 Access Control Hardware Devices

28 15 23 Intercom Entry Systems

28 15 23.17 Audio-Video Intercom

**2M NETWORK INTERCOM**

1. **GENERAL**
   1. **SUMMARY**
      1. Intercoms shall be IP-based and comply with established network and video standards.
      2. Product - A 2M IP video intercom with multi-streaming (H.265, H.264 and MJPEG) capability with IR illuminator.

## 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. AES Advanced Encryption Standard
        3. API Application Programming Interface
        4. ARP Address Resolution Protocol
        5. AWB Auto White Balance
        6. BLC Back light compensation
        7. CBR Constant Bit Rate
        8. CVBS Composite Video Blanking and Sync
        9. DHCP Dynamic Host Configuration Protocol
        10. DNR Digital Noise Reduction
        11. DNS Domain Name Server
        12. DDNS Dynamic Domain Name Server
        13. DSCP Differentiated Services Code Point
        14. FPS frames per second
        15. FTP File Transfer Protocol
        16. GOV Group of Video
        17. GUI Graphical User Interface
        18. HD High Definition
        19. HTTP Hypertext Transfer Protocol
        20. HTTPS Secure HTTP
        21. ICMP Internet Control Message Protocol
        22. IGMP Internet Group Management Protocol
        23. IP Internet Protocol
        24. IR Infrared
        25. JPEG Joint Photographic Experts Group
        26. LAN Local Area Network
        27. LED Light Emitting Diode
        28. LDC Lens Distortion Correction
        29. LLDP Link Layer Discovery Protocol
        30. LPR License Plate Recognition
        31. MJPEG Motion JPEG
        32. MP Megapixel
        33. MPEG Moving Pictures Experts Group
        34. NAS Network Attached Storage
        35. NTP Network Time Protocol
        36. NVR Network Video Recorder
        37. ONVIF Global standard for the interface of IP-based physical security products
        38. PIM-SM Protocol Independent Multicast-Sparse Mode
        39. PoE Power over Ethernet
        40. PPPoE Point to Point Protocol over Ethernet
        41. QoS Quality of Service
        42. RTP Real-Time Transport Protocol
        43. RTCP Real-Time Control Protocol
        44. RTSP Real-Time Streaming Protocol
        45. SDK Software Development Kit
        46. SFP Small Form factor Pluggable
        47. SIP Session Initiation Protocol
        48. SMTP Simple Mail Transfer Protocol
        49. SNMP Simple Network Management Protocol
        50. SSDR Super Smart Dynamic Range
        51. SSNR Super Smart Noise Reduction
        52. SSL Secure Sockets Layer
        53. TCP Transmission Control Protocol
        54. UDP User Datagram Protocol
        55. UPnP Universal Plug and Play
        56. VBR Variable Bit Rate
        57. VMS Video Management System
        58. WDR Wide Dynamic Range
     2. Reference Standards
        1. Network - IEEE
           1. 802.3 Ethernet Standards
           2. 802.1x Port-based Network Access Control
           3. IPv4 IP addressing version 4
           4. IPv6 IP addressing version 6
           5. QoS Quality of Service
        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 – Profile S
        3. EMC & Safety
           1. FCC 47 CFR Part 15 Subpart B

ANSI C63.4-2017 Class A

* + - * 1. IC Regulation ICES-003:2016

CAN/CSA CISPR 32:17 Class A

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

EN 55032:2012/AC:2013 Class A

EN 50130-4:2011

EN 610000-3-2:2014

EN 610000-3-3:2014

* + - * 1. BS CE EMC-Regulations 2016/1091

BS EN 55032:2012/AC:2013 Class A

BS EN 50130-4:2011

BS EN 610000-3-2:2014

BS EN 610000-3-3:2014

* + - * 1. VCCI-CISPR 32:2016 Class A
        2. AS/NZS CISPR32:2015 Class A
      1. Safety
         1. UL listed
         2. CE EN 50581:2012 (hazardous substances)
         3. BS EN 50581:2012 (hazardous substances)
      2. Ingress Protection and Vandal Resistance
         1. IEC 60529:2006 – Degrees of Protection Provided by Enclosures – IP65
         2. IEC EN 62262 - Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts : IK08
    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 – Smart Codec that controls quantization parameter and dynamic FPS in H.265 and H.264 to efficiently manage bitrate of the video stream and reduce the storage required.
       6. WiseStream – Technology 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.
       7. 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.
  3. **DELIVERY, STORAGE AND HANDLING**
     1. Deliver the intercom in the manufacturer’s original, unopened, undamaged container with identification labels intact.
     2. Store the intercom 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 intercom video analytics free of license charges.

END OF SECTION

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

http://www.hanwha-security.com/

* + 1. Model TID-600R
    2. Alternates: None
  1. **GENERAL DESCRIPTION**
     1. Video Compression and Transmission – The intercom 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 – maximum of 60/50FPS(60Hz/50Hz) at all resolution
           2. MJPEG – maximum of 30fps/25fps(60Hz/50Hz)
        2. The intercom 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 intercom shall be able to configure various resolution selections.
           1. 16:9 aspect ratio : 1920x1080, 1280x720, 800x448,

640x360

* + - * 1. 4:3 aspect ratio : 1280x960, 1024x768, 800x600, 640x480, 320x240
        2. 5:4 aspect ratio : 1280x1024, 720x576
        3. 3:2 aspect ratio : 720x480
      1. The camera shall support unicast video streaming up to 20 users.
      2. The camera shall support multicast video streaming.
      3. The intercom shall support multicast video streaming up to 10 profiles.
      4. The intercom shall be able to configure Dynamic DNS (DDNS). DDNS shall be provided with no additional cost by the manufacturer.
      5. The intercom shall provide WiseStream, Dynamic GOV and Dynamic FPS to efficiently manage bit rate of the video stream and reduce storage.
    1. Camera – The intercom device shall have the following physical and performance properties:
       1. True day/night operation with scheduling and options for external devices.
          1. Low light level operation to 0.018 lux at F1.6 in color mode.
          2. Black and white mode operation to 0 lux with IR LED on.
       2. The intercom shall be able to produce clear images in highly contrast scenes with multi-exposure wide dynamic range up to 150dB.
       3. The intercom shall support digital noise reduction using both 2D and 3D noise reduction technology.
       4. The intercom shall be able to configure 32 privacy masking areas with polygonal zones.
       5. The intercom shall have the defog feature to remove fogginess of scene which can be triggered automatically from the fog detection event.
    2. Intelligence and Analytics – The intercom shall have a suite of intelligent analytic functions.
       1. Analytics event
          1. IVA

Directional detection, Appear/Disappear, Virtual line, Enter/Exit, Loitering, intrusion

* + - * 1. Motion detection

Motion detection with 8 definable detection areas with 8 point polygonal zones, and minimum/maximum object size.

* + - * 1. Tampering
        2. Fog detection
        3. Audio detection
        4. Shock detection
        5. Sound classification

Detection and classification of the following sound.

Scream

Gunshot

Explosion

Crashing glass

* + 1. Interoperability – The intercom shall be ONVIF Profile S.
    2. The intercom shall possess the following further characteristics:
       1. Micro SD/SDHC/SDXC memory card with configurable pre-alarm and post-alarm recording intervals
       2. NAS recording option with configurable pre-alarm and post-alarm recording intervals
       3. Alarms and notifications
          1. alarm notification triggers:

Analytics

Network disconnect

Alarm input

App event

Time schedule

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

File upload(image) : e-mail/FTP

Notification : e-mail

Recording : SD/SDHC/SDXC or NAS recording at event triggers

Alarm output

Handover(PTZ preset, Send message by HTTP/HTTPS)

Audio clip playback

* + - 1. Pixel Counter available in the web viewer.
      2. IP65/IK08/NEMA4x
      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. Call functionality
       1. The intercom shall support SIP for integration with VoIP, peer-to-peer or integrated into SIP/PBX.
       2. The intercom shall support touchless call.
       3. Call group will
    2. Access control functionality
       1. The intercom shall support remote control using DTMF codes.
       2. DTMF code can be entered up to 4 digits (from 0 to 9)
       3. Account can be allowed to add up to 4 user using Register.
  1. **INTERCOM SOFTWARE**
     1. The intercom shall have a built in web server.
     2. The web viewer shall provide a monitoring screen which displays live intercom 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. Audio/microphone control
        6. Access recorded data playback and intercom 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 playback speed
        5. Play audio if present
        6. 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 intercom:
        1. Digital video profile to include compression type, maximum or target bit rate, frame rate, multicast parameters, and 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. IP filtering
           3. SSL/TLS, including certificate management
           4. 802.1x authentication
           5. Quality of Service settings
           6. SNMP to include version selection and settings
           7. Auto IP configuration
        5. Video setup
           1. Flip / mirror mode
           2. Video output type
           3. Privacy zone
        6. Audio setup to include source, audio codec type, gain and bit rate.
        7. Intercom settings to configure image preset, sensor frame capture, dynamic range, white balance, back light, exposure, day/night operation, on-screen display, sharpness, contrast, color level and lens distortion correction.
        8. Event detection setup to configure notification parameters, recording rules, time schedule, tamper protection, motion detection and event triggers
        9. System function to control reboot, upgrade, check system and event logs and application (SDK) management
        10. View profile information
  2. **DETAILED SPECIFICATIONS**
     1. Video
        1. Imaging device 1/2.8" CMOS
        2. Scanning Progressive
        3. Minimum Illumination Color: 0.018Lux (F1.6, 1/30sec),

B/W: 0Lux(IR LED On)

* + - 1. Video out CVBS : 1.0 Vpp/75Ω composite, 720x480(N), 720x576(P)

for installation

* + 1. Lens
       1. Focal length 1.6mm fixed focal
       2. Max. Aperture Ratio F1.6
       3. Field of View H : 108°, V : 114°, D : 180°
       4. Min. Object Distance 0.3m(0.98ft)
       5. Focus Control Fixed
    2. Operational Functions
       1. IR Viewable Length 5m(16.4ft)
       2. Camera Title Off / On (Displayed up to 85 characters)
       3. Day/Night Setting Auto (ICR) / Color / B/W / Schedule
       4. Backlight Compensation Off / BLC / HLC / WDR(150dB)
       5. Digital Noise Reduction (DNR) SSNRⅤ
       6. Digital Image Stabilization (DIS) Support
       7. Defog Support
       8. Motion Detection Off / On (8ea, 8-point polygonal)
       9. Privacy Masking Off / On (32ea, Poligonal zones)

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

- Mosaic

* + - 1. Gain Control Off / Low / Middle / High
      2. White Balance ATW / AWC / Manual / Indoor / Outdoor
      3. Electronic Shutter Speed Min / Max / Anti-flicker (2 ~ 1/12,000sec)
      4. Image Rotation Flip: Off / On

Mirror: Off / On

* + - 1. Alarm I/O Input 2ea / Output 1ea,

Relay out 1ea (DC 12V Max. 550mA with 2A adapter)

Tampering Switch, Touchless call

* + - 1. Alarm Triggers Analytics, Network disconnect, Alarm input
      2. Alarm Events File upload(image) : e-mail/FTP

Notification : e-mail

Recording : SD/SDHC/SDXC or NAS recording at event triggers

Alarm output

Handover(PTZ preset, Send message by HTTP/HTTPS/TCP)

Audio clip playback

* + - 1. Audio Streaming Two-way/One-way selectable, Full duplex,

Echo cancellation and noise reduction

* + - 1. Audio in Built-in MIC
      2. Audio out Built-in speaker, 85dB at 0.5m
      3. Pixel Counter Support
      4. Storage Micro SD/SDHC/SDXC 1slot 256GB
      5. Analytics Directional detection, Motion detection, Appear/Disappear

Enter/Exit, Loitering, Tampering, Virtual line, Audio detection

Shock detection, Sound classification

* + - 1. Memory 2GB RAM
    1. Video Streams
       1. Video compression H.265, H.264, MJPEG
       2. Resolution 1920x1080, 1280x1024,1280x960, 1280x720,1024x768,

800x600, 800x448, 720x576, 720x480, 640x360, 320x240

* + - 1. Maximum Framerate
         1. H.265 / H.264 H.265/H.264: Max. 60fps/50fps(60Hz/50Hz)
         2. MJPEG Max. 30fps/25fps(60Hz/50Hz)
      2. Smart Codec Manual(5ea area), Low/Middium/High
      3. WiseStream Off/Low/Medium/High
      4. Bitrate Control Method H.265 / H.264: CBR or VBR

MJPEG: VBR

* + - 1. Streaming Capability Unicast(20 users) / Multicast

Multiple streaming(Up to 10 profiles)

* + - 1. Streaming method Unicast / Multicast
      2. Simultaneous Users 20 maximum (Unicast)
      3. Profile set Max. 10 ea
      4. Interoperability ONVIF Profile S, SUNAPI(HTTP API),

Wisenet Open Platform

* + 1. Network
       1. Connectivity Metal shielded RJ-45(10/100BASE-T)
       2. Protocol
          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, SNMPv1/v2c/v3(MIB-2), UPnP
          5. Media: RTP, RTCP, RTSP, SIP 2.0
          6. Unicast: SRTP
          7. Multicast: IGMP, PIM-SM
          8. Notifications: FTP, SMTP
       3. DDNS – The intercom shall support DDNS services offered by the manufacturer and others publicly available service offerings
       4. QoS – Layer 3 DSCP
       5. Security Feature
          1. User password protection
          2. The device shall not provide a manufacture default password. Default password change shall be required to access the intercom.
          3. A minimal level of password complexity shall be required by the intercom.
          4. The intercom shall not have a manufacture back-door password.
          5. The manufacturer shall provide a tool that provides the ability to make password changes to multiple intercoms at the same time.
          6. IP address filtering – List of allowed or blocked IP addresses
          7. HTTPS(SSL/TLS) login authentication
          8. HTTPS(SSL/TLS) secured communication
          9. Digest login authentication
          10. User access log
          11. 802.1X Authentication(EAP-TLS, EAP-LEAP)
          12. Device Certificate(Hanwha Techwin Root CA, pre-installed)
       6. Discovery – The manufacturer shall offer a discovery program to identify all devices of them on the network.
       7. Configuration – The manufacturer shall offer a configuration program that remotely allows users to change settings on multiple intercoms simultaneously.
       8. Firmware upgrade – The manufacturer shall offer a program capable of upgrading multiple intercoms at the same time (not requiring access to individual intercoms).
       9. Intercom backup setting – The manufacturer shall provide a program that provides the ability to save multiple intercom settings to a file and restore these intercom 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 intercom settings.
    2. Electrical
       1. Power
          1. Input Voltage PoE, 12VDC
          2. Power Consumption PoE: Max 12.95W, typical 9.1W

12VDC: Max 17.6W, typical 7W

※12VDC power consumption includes 12VDC/550mA relay out

* + 1. Mechanical And Environmental
       1. Color/Material Dark Gray / Aluminum
       2. RAL Code RAL7022
       3. Dimensions (W x H x D) Ø49x165x48mm(1.93x6.50x1.89")
       4. Weight 490g(1.08 lb)
       5. Skin Cover SBC-165W
       6. Temperature
          1. Operating -30 °C ~ 55 °C(-22°F ~ +131°F)
          2. Storage -50°C ~ +55°C(-58°F ~ +131°F)
       7. Humidity
          1. Operating Less than 95% RH (non-condensing)
          2. Storage Less than 90% RH (non-condensing)
       8. Ingression Protection IP65, NEMA4x
       9. Vandal Resistance IK08
    2. DORI
       1. Detect (25PPM/ 8PPF) 25.4m(83.33ft)
       2. Observe (63PPM/ 19PPF) 10.02m(32.87ft)
       3. Recognize (125PPM/ 38PPF) 5.01m(16.43ft)
       4. Identify (250PPM/ 76PPF) 2.5m(8.2ft)

END OF SECTION

1. **EXECUTION**
   1. **INSTALLERS**

Contractor personnel shall comply with all applicable state and local licensing requirements.

* 1. **PREPARATION**

The network design and configuration shall be verified for compatibility and performance with the intercom(s).

Network configuration shall be tested and qualified by the Contractor prior to intercom installation.

All firmware found in products shall be the latest and the most up-to-date provided by the manufacturer, or of a version as specified by the provider of the VMS or NVR.

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.

* 1. **INSTALLATION**

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.

All equipment shall be tested and configured in accordance with instructions provided by the manufacturer prior to installation.

Before permanent installation of the system, the contractor shall test the system in conditions simulating the final installed environment.

* 1. **STORAGE**

The hardware shall be stored in an environment where temperature and humidity are in the range specified by the manufacturer.

END OF SECTION