Hanwha Techwin is a leading supplier of advanced video surveillance solutions for IP-video, analog and hybrid systems. 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-efficiency. 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/>

1. **PRODUCTS**
	1. **EQUIPMENT**
		1. Manufacturer : Hanwha Techwin(http://www.hanwha-security.com/)
		2. Model : HRX-1634
		3. Alternates : None
	2. **GENERAL DESCRIPTION**
		1. The 16 channel Pentabrid DVR(“DVR”) shall record video and audio from total 18CH(maximum of 16ea analog video cameras and maximum 18ea with IP camera combination) to a hard disk array of 2 HDD’s and enable playback of video and audio.
		2. The manufacturer shall be responsible for rigorous testing of DVR’s reliability. The manufacturer shall provide a list of compatible hard disks that have been tested to guarantee reliable recording. The list shall be available in the manufacturer’s home page.
		3. The DVR shall provide auto recovery backup (ARB) to transfer video that is recorded on network camera’s SD cards during failures to the hard disk drive. The DVR shall allow users to set transfer speed or bandwidth dedicated for ARB in three levels; low, middle, high. If the bit-rate of video to be transferred exceeds the set bandwidth, then the DVR shall transfer video in the order of channel number until all transfer is finished or the video becomes more than 24 hours old based on DVR’s current time. The DVR with ARB shall be able to handle the following failures.
			1. Network disconnection between network cameras and DVR
			2. Unexpected shutdown of DVR
		4. The DVR shall receive text data from external devices and overlay it on live as well as recorded video. It shall also provide search for text data and list all video with previews that is relevant to the search queries. The text shall include but not limited to the following.
			1. Text from PoS devices, namely the texts printed on the receipt of transactions
			2. Text from automatic number plate recognition software
			3. Text from automated teller machines (ATM)
		5. The DVR shall provide a remote monitoring environment for video and audio over the network using a remote computer. The remote monitoring software shall allow users to receive live streams, search for recoded videos, and configure devices.
		6. P2P Service: The DVR shall provide easy configuration of mobile viewer. The mobile viewer shall be freely available and connection shall be established by simply scanning QR code from a mobile device.
		7. Dynamic event: New event function of cameras is available without DVR software (FW) update.
		8. The DVR shall have the following further general properties
			1. Network camera search and discovery: The DVR shall have the capability to search the network for connected compatible network cameras.
			2. The DVR shall support WiseStream and Dynamic GOV, a smart codec used by Wisenet IP cameras. The smart codec shall produce visually equal video quality while reducing storage required.
			3. Recording and playback functions
				1. Support recording from CIF up to 8MP per channel
				2. 128 Mbps recording throughput
				3. Simultaneous playback capability up to 18 video channels in local and network
				4. Support dual track recording for monitoring multi-channel from local monitor and Wisenet Mobile app.
				5. H.265, H.264, and MJPEG compression support
				6. View status of internal connected storage hardware
				7. Set recording schedules
				8. Set up triggered recording based o:

Sensor (input) detection

Camera event

Video loss detection

* + - * 1. Available recording settings by channel for standard and event-based recording types

Codec type

Resolution

Frame rate

Data transfer limit

Pre-event and post-event record duration

I-frame and full frame recording

* + - * 1. Available actions upon reaching full HDD storage capacity (with automatic notifications to users)

Stop recording

Overwrite

* + - * 1. Search recorded data by time, event, text, export, ARB, bookmark or smart search. Smart search shall include search options for

Virtual line (in/out/both)

Intrusion/Enter/Exiting

* + - 1. Storage
				1. SATA 8ea HDD Slot (Up to 6TB, Total Max. 48TB)
				2. USB connection for memory/storage device for video clip backup and settings export
			2. Live view
				1. Live, remote monitoring using Windows Network Viewer(Webviewer) or Manufacturer supplied viewer
				2. Configure and exercise functions for connected PTZ cameras, including functionality with compatible USB joystick
				3. Capture and save snapshot images
				4. Record current video in BU, SEC format (EXE format from GUI mode) from Local UI and AVI format from Webviewer
			3. Remote access
				1. Multicast or unicast

Simultaneous unicast access by up to 10 users

Simultaneous multicast access by up to 20 users

Simultaneous search access by up to 3 users

* + - * 1. Mobile device

Supported platforms : Android, IOS

Supported remote users

Live unicast : 10

Playback : 3

* + - * 1. Dynamic DNS (DDNS) support
			1. VGA and High Definition (HDMI) local monitor outputs for live viewing, playback, & backup functions
			2. ONVIF Profile S compliance
			3. Alarm connections : 16 inputs/4 outputs
			4. NDAA Compliant
	1. **DETAILED SPECIFICATIONS**
		1. Video
			1. Analog Camera
				1. Inputs : 16 channel(1Vp-p 75 ohm, BNC)
				2. Signal Type

AHD(8MP, 5MP, 4MP, 1080p, 720p)

HDTVI(8MP, 5MP, 4MP, 1080p, 720p)

HDCVI(8MP, 5MP, 4MP, 1080p, 720p)

CVBS(NTSC/PAL)

* + - 1. Network Camera
				1. Input : Max. 18CH
				2. Resolution : 8MP ~ CIF
				3. Protocol : SUNAPI(Wisenet), ONVIF
		1. Live
			1. Local Display
				1. HDMI x 1, VGA x 1(Dual monitor)
				2. Clone/Expand mode
				3. HDMI : 3840 x 2160, 2560x1440, 1920x1080, 1280x1024, 1280x720
				4. VGA : 1920x1080, 1280x1024, 1280x720, 1024x768
			2. Resolution
				1. Analog camera(NTSC/PAL)

8MP : 15/12fps per CH

5MP : 20/12fps per CH

4MP : 30/25fps per CH

2MP : 30/25fps per CH

1MP : 30/25fps per CH

960H(or 720H) : 30/25fps per CH

* + - * 1. Network camera : Typ. 2MP(480fps)
		1. Recording
			1. Compression : H.265, H.264, MJPEG
			2. Record rate(\* The maximum recording frame rate depends on the frame rate of the input camera)
				1. Analog(NTSC/PAL)

Main Stream

1. 8MP : 8/8fps per CH
2. 5MP : 12/12fps per CH
3. 4MP : 15/12fps per CH
4. 2MP : 30/25fps per CH
5. 720p : 30/25fps per CH
6. Under 960H 30/25fps per CH

Sub Stream

1. 720p/CH or Higher : 640x368 Full fps per CH
2. SD : up to SD Full fps per CH
	* + 1. Bandwidth : Max. 128Mbps
			2. Resolution : 8MP ~ CIF
			3. Mode
				1. Normal
				2. Dual Stream
				3. Schedule(Continuous/Event)
				4. Event (Pre/Post)
				5. Bookmark
			4. Event Trigger
				1. Set : Alarm input
				2. Analog Camera

Video loss

Motion Detection

Tampering

* + - * 1. Network Camera

Camera Event : Sensor, MD, Video analytics

VA event

Dynamic event

User event

* + - 1. Event Action
				1. Record/Go to preset
				2. Alarm output
				3. E-mail
				4. Transfer images to FTP server
				5. Mobile push notification
				6. Monitor event
				7. Shutdown
				8. User Coding(SUNAPI Command)
		1. Search and Playback
			1. Playback bandwidth : Max. 32Mbps (18CH simultaneously)
			2. User : Max. 4 users (Set 1, Remote 3)
			3. Simultaneous Playback
				1. 18CH(Local Monitor, CMS)
				2. 4CH(Wisenet Mobile)
				3. 1CH(Web))
			4. Fisheye Dewarping : CMS (only N/W Camera)
		2. Storage
			1. Supported HDD : Up to 6TB
			2. HDD Slot : SATA 2ea(Max. 12TB)
		3. Backup
			1. File backup
				1. Set : Recorder, SEC, AVI
				2. Webviewer : AVI
			2. Function : Max. 16CH play, Date-time/title display
		4. Network
			1. Protocol : TCP/IP, UDP/IP, RTP (UDP), RTP (TCP), RTSP, NTP, HTTP, DHCP (Server, Client), PPPoE, SMTP, ICMP, IGMP, ARP, DNS, DDNS, uPnP, HTTPS, SNMP, ONVIF (Profile-S), SUNAPI(Server, Client)
			2. DDNS : Wisenet DDNS
			3. Transmission speed
				1. Analog Camera(NTSC/PAL)

Main Stream

1. 8MP : 8/8fps per CH
2. 5MP : 12/12fps per CH
3. 4MP : 15/12fps per CH
4. 2MP : 30/25fps per CH
5. 720p : 30/25fps per CH
6. SD : 30/25fps per CH

Sub Stream

1. 720p or higher : 640x368 full fps per CH
2. SD signal : up to CIF 15/12 fps per CH
	* + 1. Transmission Bandwidth : Max. 100Mbps
			2. Maximum remote users
				1. Search : 3
				2. Live Unicast : 10
				3. Live Multicast : 20
			3. Security
				1. IP address filtering
				2. User access log
				3. 802.1x Authentication
				4. Encryption (ID/PW, Recording, Transmission, Backup)
				5. Device Certificate(Hanwha Techwin Root CA)
		1. Monitors
			1. HDMI : 1 HDMI (3840 x 2160, 2560x1440, 1920x1080, 1280x1024, 1280x720)
			2. VGA : 1 VGA (1920x1080, 1280x1024, 1280x720, 1024x768)
			3. Spot Composite : 1 BNC
		2. Audio
			1. Input and output
				1. 4 Line in
				2. 1 Line out
			2. Compression
				1. Analog camera : G.711
				2. Network camera : G.711, G.726
			3. Communication : 2-Way
		3. Alarm
			1. Input and output
				1. 16 Inputs
				2. 4 outputs

Relay out 1 (NO/NC/COM)

Relay out 2~4 (NO/COM)

* + 1. Connections
			1. Ethernet : 1 x RJ-45 10/100/1000 Base-T
			2. Serial interface : RS-485 (Samsung-T/Pelco-D/Pelco-p) for PTZ
			3. USB : 3EA
				1. Front 2ea USB 2.0
				2. Rear USB 3.0
			4. System support
				1. Mouse
				2. Webviewer
				3. System Controller (SPC-7000, SPC-6000, SPC-2000)
			5. Coax Protocol : CVBS(Pelco-C)/AHD/CVI/TVI
		2. Language : English, French, German, Italian, Spanish, Russian, Turkish, Polish, Dutch, Swedish, Czech, Portuguese, Danish, Rumanian, Serbian, Croatian, Hungarian, Greek, Norwegian, Finnish, Korean, Chinese, Japanese, Thai
		3. Electrical
			1. Input voltage and current : DC12V
			2. Power consumption : Max. 40W (6T HDD 2ea)
		4. Environmental
			1. Operating temperature : +0°C ~ +40°C (+32°F ~ +104°F)
			2. Operating humidity : 20% ~ 85% RH
		5. Mechanical
			1. Color / Material : Black / Metal
			2. Dimensions (W x H x D) : 370.0 x 44.0 x 320mm(14.57” x 1.73” x12.6”)
			3. Weight : Approx. 4.5Kg (9.9 lb, 4TB HDD 1ea)
		6. EMC & Safety
			1. FCC 47 CFR Part 15 Subpart B
1. ANSI C63.4-2017 Class A
	* + 1. IC Regulation ICES-003 Issue 7
2. CAN/CSA CISPR 32:17 Class A
	* + 1. CE EMC-Directive 2014/30/EU
3. EN 55032:2012/AC:2013 Class A
4. EN 50130-4:2011
5. EN 61000-3-2:2014
6. EN 61000-3-3:2013
	* + 1. UK EMC-Regulations 2016/1091
7. BS EN 55032:2012/A1:2013
8. BS EN 50130-4:2011
9. BS EN 61000-3-2:2014
10. BS EN 61000-3-3:2013
	* + 1. VCCI-CISPR 32: 2016 Class A
			2. AS/NZS CISPR32:2015 Class A
			3. UL listed
			4. CE EN 50581:2012 (hazardous substances)

END OF SECTION