Exacq Technologies, headquartered in Indianapolis, Indiana, is a leading developer of open architecture, Video Management System (VMS) solutions for security and surveillance applications. Our exacqVision VMS client-server solutions are scalable from a small single camera solution to large scale corporate or campus systems with thousands of cameras. Real-time and recorded video can be viewed, managed and configured from any location on the network.

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STORAGE SEVER SYSTEM MANAGER

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

28 00 00 Electronic Safety and Security

28 20 00 Electronic Surveillance

28 23 00 Video Surveillance

28 23 19 Digital Video Recorders and Analog Recording Devices

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 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 and related to the product referenced in this specification.

MasterFormat 2014:

27 20 00 Data Communications
28 05 00 Common Work Results for Electronic Safety and Security
28 13 00 Access Control
28 13 16 Access Control Systems and Database Management
28 16 00 Intrusion Detection
28 16 33 Intrusion Detection Control, GUI, and Logic Systems
28 23 00 Video Surveillance
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
28 23 29 Video Surveillance Remote Devices and Sensors

MasterFormat 2016:

27 15 01.xx Video Surveillance Communications Conductors and Cables
27 20 00 Data Communications
28 05 00 Common Work Results for Electronic Safety and Security
28 05 xx Power Sources for Electronic Safety and Security
28 05 xx Servers, Workstations and Storage 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 Communications Equipment for Electronic Safety and Security
28 05 xx Systems Integration and Interconnection Requirements
28 05 xx.xx Electrical
28 05 xx.xx Information
28 10 00 Access Control
28 10 xx Access Control Software
28 20 00 Video Surveillance
28 2x 00 Video Management System
28 30 00 Security Detection, Alarm, and Monitoring
28 3x 00 Intrusion Detection
28 3x xx.xx Intrusion Detection Interfaces to Security Monitoring and Control

HYBRID NETWORK VIDEO RECORDER

1. GENERAL

1.1. SUMMARY

1.1.1. Section includes a device to acquire, record, store, and display video signals from both directly connected analog cameras and IP network video cameras and encoders.

1.1.2. Related Requirements

1.1.2.1 28 23 19 – Digital Video Recorders and Analog Recording Devices

1.1.2.2 28 23 23 – Video Surveillance Systems Infrastructure

1.1.2.3 28 23 29 – Video Surveillance Remote Devices and Sensors

1.2. REFERENCES

1.2.1. Abbreviations

1.2.1.1. HDD – Hard Disk Drive

1.2.1.2. IP - Internet Protocol

1.2.1.3. LDAP – Lightweight Directory Access Protocol

1.2.1.4. Mbps – Megabits per second

1.2.1.5. NVR – Network Video Recorder

1.2.1.6. POS – Point of Sale

1.2.1.7. PSIM – Physical Security Information Management

1.2.1.8. VMS - Video Management System

1.2.2. Reference Standards

1.2.2.1. Institute of Electrical and Electronics Engineers (IEEE) 802.3 standards

1.2.2.2. FCC – Code of Federal Regulations, Title 47, Part 15

1.2.2.3. ISO / IEC 14496 – 10 – MPEG-4, Part 10 (H.264)

1.2.2.4. UL

1.2.2.5. CE

1.3. SUBMITTALS

1.3.1. Product Data

1.3.1.1. Manufacturer’s printed or electronic data sheets

1.3.1.2. Manufacturer’s installation and operation manuals

1.4. QUALIFICATIONS

1.4.1. Manufacturer shall be ISO 9001 certified with a minimum of three years’ experience in manufacturing digital storage equipment and associated interfaces.

1.5. LICENSES

1.5.1. The NVR shall have 8 IP camera licenses included, with a provision to acquire additional licenses to a total of 128.

1.6. WARRANTY AND SUPPORT

1.6.1. Manufacturer shall provide a limited three-year warranty and updates for device firmware and client and web software during the warranty period.

1.6.1.1. An extended support option shall be available.

END OF SECTION

2. PRODUCTS

2.1. EQUIPMENT

2.1.1. Manufacturer: Exacq Technologies, Inc.
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Phone: +1 317 845-5710
Web: https://www.exacq.com
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2.1.2. Model: Z-Series Hybrid 2U

Note: Exacq offers an IP-only version of this product.

2.1.3. Alternates: None

2.2. DESCRIPTION

2.2.1. The Hybrid Network Video Recorder (“NVR”) shall be an appliance to acquire, record, store, and display video signals from both directly connected analog cameras and IP network video cameras and encoders.

2.2.2. The NVR appliance hardware shall have the following characteristics:

2.2.2.1. Camera inputs

2.2.2.1.1. **<16> <32>** analog

2.2.2.1.2. Up to 128 IP video cameras or encoders

2.2.2.2. Audio Inputs: **<16>** analog

2.2.2.3. Storage capacity: **<2 TB> <4 TB> <6 TB> <8 TB> <10 TB> <12 TB> on a single HDD**

2.2.2.4. RAID configuration: **<RAID 5>** All Z-Series are configured for RAID storage

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Exacq part numbers differentiated by number of analog inputs and on-board storage capacity (all models have up from 8 - 128 IP video inputs, depending on licenses acquired):

Model Number	Analog Video Inputs	Storage Capacity (TB)	Audio Inputs
1608-08T-2Z-2	16	8, 6 Available	16
1608-12T-2Z-2	16	12, 8 Available	16
1608-16T-2Z-2	16	16, 12 Available	16
1608-20T-2Z-2	16	20, 16 Available	16
1608-28T-2Z-2	16	28, 24 Available	16
1608-36T-2Z-2	16	36, 30 Available	16
1608-48T-2Z-2	16	48, 42 Available	16
1608-64T-2Z-2	16	64, 56 Available	16
1608-80T-2Z-2	16	80, 70 Available	16
1608-96T-2Z-2	16	96, 84 Available	16

3208-08T-2Z-2	32	8, 6 Available	16
3208-12T-2Z-2	32	12, 8 Available	16
3208-16T-2Z-2	32	16, 12 Available	16
3208-20T-2Z-2	32	20, 16 Available	16
3208-28T-2Z-2	32	28, 24 Available	16
3208-36T-2Z-2	32	36, 30 Available	16
3208-48T-2Z-2	32	48, 42 Available	16
3208-64T-2Z-2	32	64, 56 Available	16
3208-80T-2Z-2	32	80, 70 Available	16
3208-96T-2Z-2	32	96, 84 Available	16

2.2.2.5. Video compression – Analog: MJPEG, H.264

2.2.2.6. Video compression – IP: MJPEG, MPEG-4, H.264, H.265

2.2.2.7. Video output: 1 multiplexed via BNC connector per 16 channels

2.2.2.8. Microphone input: 1 RCA connector

2.2.2.9. Audio:

2.2.2.9.1. Inputs: 16 via screw terminal

2.2.2.9.2. Outputs: 1

2.2.2.10. Alarms:

2.2.2.10.1. Inputs: provision for 16 external TTL

2.2.2.10.2. Outputs: provision for 15 external TTL, 1 external relay

2.2.2.11. Server characteristics:

2.2.2.11.1. Operating system: Windows 10 / Windows 2016 / Ubuntu Linux 18.04

2.2.2.11.2. Operating system drive: 120 GB SSD

2.2.2.11.3. Monitor outputs: 1 HDMI + 1 DVI-I + 1 VGA (max 2 simultaneously)

2.2.2.11.4. Processor: Gen 7 Intel® Core i7 (Gen 7 Intel® Xeon E3 optional)

2.2.2.11.5. Memory: 8 GB (16GB Optional)

2.2.2.11.6. Network: 2 x 1000 BASE-T (2 x 10 Gbps SPF+ optional)

2.2.2.11.7. USB 3.0 ports: 6 (2 Front, 4 Rear)

2.2.2.11.8. Serial: 1 RS485

2.2.2.12. Enclosure

2.2.2.12.1. Material: painted steel

2.2.2.12.2. Dimensions (l x w x h): 24 in. x 17 in. x 3.5 in. (60.96 cm x 43.18 cm x 8.9 cm)

2.2.2.12.3. Weight: 34 – 50 lbs. (15.4 – 22.7 kg) maximum

2.2.2.13. Electrical

2.2.2.13.1. Input voltage: 120/240 VAC auto-sensing

2.2.2.13.2. Power Supply: Dual Hot Swap

2.2.3. Video Management System (“VMS”)

2.2.3.1. The NVR shall come pre-loaded with VMS server software.

2.2.3.2. The VMS server software shall provide the following features as a minimum:

2.2.3.2.1. System

2.2.3.2.1.1. One server connection per client

2.2.3.2.1.2. Browser-based viewing of live and stored video

2.2.3.2.1.3. Auto detection of supported cameras

2.2.3.2.1.4. Support for fish-eye and panoramic lens cameras

2.2.3.2.1.5. Client bandwidth throttling

2.2.3.2.1.6. Soft triggers

2.2.3.2.1.7. Pre and post alarm recording

2.2.3.2.1.8. Continuous motion, time or alarm-based recording, configurable per camera

2.2.3.2.2. Live video view

2.2.3.2.2.1. Multiple monitor view support

2.2.3.2.2.2. PTZ control and presets

2.2.3.2.2.3. Digital PTZ control and presets

2.2.3.2.2.4. Motion and alarm indication

2.2.3.2.2.5. Event linking on discrete inputs

2.2.3.2.3. Search, playback, export, archive

2.2.3.2.3.1. Instant replay

2.2.3.2.3.2. Event search

2.2.3.2.3.2.1. Thumbnail views

2.2.3.2.3.2.2. Timeline views

2.2.3.2.3.3. Multi-camera playback

2.2.3.2.3.4. Export options

2.2.3.2.3.4.1. USB storage device

2.2.3.2.3.4.2. .AVI, .MOV, .MP4 or.EXE file

2.2.3.2.4. The NVR shall have the ability to support pre-loaded VMS software providing additional advanced functionality, including the following:

2.2.3.2.4.1. System

2.2.3.2.4.1.1. Server connections – up to 512 via a thick client interface or 16 via web client

2.2.3.2.4.1.2. Ability to specify minimum and maximum retention times on a per camera basis

2.2.3.2.4.1.3. Time-lapse recording

2.2.3.2.4.1.4. Extended storage

2.2.3.2.4.1.5. Archiving

2.2.3.2.4.1.6. Audit trail

2.2.3.2.4.1.7. Custom user groups

2.2.3.2.4.1.8. Intelligent search

2.2.3.2.4.1.9. E-mail notifications on system health

2.2.3.2.4.1.10. Enterprise level camera, server, and user management

2.2.3.2.4.1.11. LDAP and active directory support

2.2.3.2.4.2. Live view

2.2.3.2.4.2.1. Event linking on video, serial, and health events

2.2.3.2.4.2.2. Video wall support

2.2.3.2.4.2.3. Event-driven and time-based video switching

2.2.3.2.4.2.4. Camera groups

2.2.3.2.4.2.5. Multi-streaming

2.2.3.2.4.2.6. Event notifications

2.2.3.2.4.2.7. Map support, including hierarchical maps

2.2.3.2.4.2.8. Two-way audio

2.2.3.2.4.3. Search, playback, export, archive

2.2.3.2.4.3.1. Multiple camera export

The NVR comes with the exacqVision Start software pre-loaded. Additional functionality is available through upgrade to exacqVision Professional or exacqVision Enterprise VMS software.

2.2.4. User Interfaces – The NVR shall support both thick client browser-based and a mobile web client interface.

2.2.4.1. Thick client

2.2.4.1.1. Client software shall be downloadable at no charge from the NVR Manufacturer's web site and be fully compatible with all available features of the VMS server software.

2.2.4.1.2. The client software shall be available for Windows, Apple iOS, and Linux operating systems.

2.2.4.2. Mobile web client

2.2.4.2.1. A free mobile application shall be available permitting remote view of live and recorded video through the NVR.

2.2.4.2.2. The mobile application shall support PTZ control and the monitoring and activation of alarms and triggers for the mobile device.

2.2.4.2.3. The mobile application shall be available for devices running Apple iOS, Google Android, Microsoft Windows, and Amazon Kindle Fire software.

2.2.4.2.4. The mobile application shall allow simultaneous interaction with multiple NVR devices from the same Manufacturer.

2.2.4.2.5. The web service supporting the mobile application shall size the video stream to accommodate both low bandwidth and high bandwidth networks.

2.3. PERFORMANCE

2.3.1. Compatibility

2.3.1.1. Video – The NVR shall be compatible with the following video manufacturers:

2.3.1.2. Access control - The NVR shall be compatible with the following access control manufacturers:

2.3.1.3. POS and retail analytics - The NVR shall be compatible with the following POS and retail analytics manufacturers: Agilence, Sensormatic, Prism Skylabs, Tokheim and Voloforce.

2.3.1.4. PSIM - The NVR shall be compatible with the following PSIM manufacturers: SureView and VidSys.

Specifier should complete the above sections to include manufacturers of those existing or new devices or software that will interface with the NVR.
A list of integrations from Exacq is available at https://exacq.com/integration.

2.3.2. Recording

2.3.2.1. Video storage rate: 400 Mbps – Windows

800 Mpbs – Linux

2.3.3. Display

2.3.3.1. Local client display rate: 700 frames per second (Windows) – HD resolution

900 frames per second (Linux) – HD resolution

1800 frames per second – Analog resolution

2.4. ENVIRONMENTAL

2.4.1. Operating temperature: 40 – 95 degrees Fahrenheit (4.5 – 35 degrees C)

2.4.2. Power/heat load (Max | Typical): 250 Watts/850 BTU/hr | 180 Watts/600 BTU/hr

2.5. OPTIONAL EQUIPMENT

2.5.1. The NVR shall have optional expansion capability for alarm inputs and outputs.

Exacq's USB I/O Module provides 8 TTL inputs, 4 TTL outputs, 1 relay output, and 1 RS-485 serial port through a USB interface.

END OF SECTION

3. EXECUTION

3.1. INSTALLATION

3.1.1. Contractor shall comply with all Manufacturer installation guidelines.

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

3.2. STORAGE

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

END OF SECTION