

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.

For additional information, contact:

Exacq Technologies, Inc.

11955 Exit Five Parkway

Fishers, IN 46037 USA

Phone: +1 317 845-5710

Web: <https://www.exacq.com>

E-mail: exacqinfo@tycoint.com

NETWORK RECORDER STORAGE EXPANSION AND ARCHIVAL

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.

Note: This product is designed to work exclusively with exacqVision Recorders from Exacq Technologies. Unless otherwise noted, < > bracketed options apply to 2 RU and 4 RU product versions, respectively.

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. Gbps – Gigabits per second
- 1.2.1.3. IP - Internet Protocol
- 1.2.1.4. MTBF – Mean Time Between Failure
- 1.2.1.5. NIC – Network Interface Card
- 1.2.1.6. Mbps – Megabits per second
- 1.2.1.7. NVR – Network Video Recorder
- 1.2.1.8. RAID – Redundant Array of Independent Disks
- 1.2.1.9. SSA – Software Subscription Agreement
- 1.2.1.10. SSH – Secure Shell
- 1.2.1.11. TB - Terabyte
- 1.2.1.12. 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. SOFTWARE AGREEMENT

1.5.1. The network storage expansion shall have a three year Software Subscription Agreement (SSA) providing for available feature upgrades at no additional cost.

1.6. WARRANTY AND SUPPORT

1.6.1. Manufacturer shall provide a limited three-year warranty and updates for device firmware 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.
11955 Exit Five Parkway
Fishers, IN 46037 USA
Phone: +1 317 845-5710
Web: <https://www.exacq.com>
E-mail: exacqinfo@tycoint.com
- 2.1.2. Model: S-Series Enterprise
- 2.1.3. Alternates: None

2.2. DESCRIPTION

- 2.2.1. The Network Recorder Storage Expansion and Archival equipment (“extended recorder storage”) shall be an appliance to expand the storage capability of multiple network-connected video recorders (“NVRs”) either as RAID-based virtual storage or as an archival device.
- 2.2.2. The recorder storage expansion appliance hardware shall have the following characteristics:
- 2.2.2.1. Management of the network video storage system, including software management, via a single manufacturer’s integrated products.
- 2.2.2.2. Chassis: **<2 RU Rackmount> <4 RU Rackmount>**
- 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 capability: RAID 5 or RAID 6

Exacq part numbers differentiated by on-board storage capacity and chassis size:

<u>Model Number</u>	<u>Storage Capacity (TB)</u>
S-08T-2U-2	08, 06 Available
S-12T-2U-2	12, 10 Available
S-16T-2U-2	16, 14 Available
S-20T-2U-2	20, 16 Available
S-28T-2U-2	28, 24 Available
S-36T-2U-2	36, 30 Available
S-48T-2U-2	48, 42 Available
S-64T-2U-2	64, 56 Available
S-80T-2U-2	80, 70 Available
S-96T-2U-2	96, 84 Available
S-24T-4U	24, 16 Available
S-28T-4U	28, 20 Available
S-32T-4U	32, 24 Available
S-36T-4U	36, 28 Available
S-42T-4U	42, Available
S-54T-4U	54, 30 Available
S-66T-4U	66, 42 Available
S-78T-4U	78, 56 Available

S-90T-4U	90, 70 Available
S-102T-4U	102, 84 Available
S-114T-4U	114, 06 Available
S-128T-4U	128, 10 Available
S-144T-4U	144, 14 Available
S-160T-4U	160, 16 Available
S-180T-4U	180, 24 Available
S-204T-4U	204, 30 Available
S-240T-4U	240, 42 Available

2.2.2.5. Server characteristics:

2.2.2.5.1. Operating system:	Ubuntu Linux 18.04
2.2.2.5.2. Operating system drive:	120 GB SSD
2.2.2.5.3. Monitor outputs:	1 HDMI + 1 DVI-I + 1 VGA (max 2 simultaneously)
2.2.2.5.4. Processor:	Gen 7 Intel® Core i3 (Gen 7 Intel® Xeon E3 optional)
2.2.2.5.5. Memory:	8 GB (16GB Optional)
2.2.2.5.6. Network:	3 x 1 Gbps (4 x 1 Gbps; 2 x 10 Gbps SPF+ optional)
2.2.2.5.7. USB 3.0 ports:	6 (2 Front, 4 Rear)

2.2.2.6. Enclosure

2.2.2.6.1. Material:	Painted steel
2.2.2.6.2. Dimensions (l x w x h):	
2.2.2.6.2.1. 2 RU:	24 in x 17 in x 3.5 in (60.96 cm x 43.18 cm x 8.9 cm)
2.2.2.6.2.2. 4 RU:	27 in x 16.875 in x 7.0 in (68.6 cm x 42.9 cm x 17.8 cm)
2.2.2.6.3. Weight (maximum):	
2.2.2.6.3.1. 2 RU:	34 – 50 lbs. (15.4 – 22.7 kg)
2.2.2.6.3.2. 4 RU:	49 – 90 lbs. (22.3 – 40.9 kg)

2.2.2.7. Electrical

2.2.2.7.1. Input voltage:	120/240 VAC auto-sensing
2.2.2.7.2. Power Supply:	Dual Hot Swap

2.2.3. Storage Management System (“SMS”)

2.2.3.1. The Storage Expansion and Archival server shall come pre-loaded with storage management software. This software package shall allow both remote and local configuration management.

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

2.2.3.2.1. Thick client

2.2.3.2.1.1. Client software shall be downloadable at no charge from the NVR Manufacturer’s website and be fully compatible with all available features of the SMS server software.

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

2.2.3.2.2. Local management – The local management interface shall be available through an SSH utility and include the following functions:

- 2.2.3.2.2.1. Backing up and restoring server configuration.
 - 2.2.3.2.2.1.1. Backup configuration to USB
 - 2.2.3.2.2.1.2. Restore configuration from USB
- 2.2.3.2.2.2. Performing special modifications to system files.
- 2.2.3.2.2.3. Viewing and troubleshooting services, including:
 - 2.2.3.2.2.3.1. Displaying archive status.
 - 2.2.3.2.2.3.2. Displaying extended drive storage status.
- 2.2.3.2.2.4. Configuring network settings.
- 2.2.3.2.2.5. Check drive for bad blocks.
 - 2.2.3.2.2.5.1. Modify Global system settings.
 - 2.2.3.2.2.5.2. Open system for modification.
 - 2.2.3.2.2.5.3. Commit changes by restarting server.
 - 2.2.3.2.2.5.4. Modify extended storage settings.
 - 2.2.3.2.2.5.5. Modify archiving settings.
 - 2.2.3.2.2.5.6. Modify network interface settings.
 - 2.2.3.2.2.5.7. Restart extended storage service.
 - 2.2.3.2.2.5.8. Restart archiving service.
 - 2.2.3.2.2.5.9. Restart networking service.
- 2.2.3.2.2.6. Display system files
 - 2.2.3.2.2.6.1. Display iSCSI targets.conf file.
 - 2.2.3.2.2.6.2. Display Samba smb.conf file.
 - 2.2.3.2.2.6.3. Display Drive fstab file.
 - 2.2.3.2.2.6.4. Display Networking interfaces file.

Note: The SMS comes with the exacqVision Enterprise software pre-loaded.

2.3. PERFORMANCE

2.3.1. Compatibility

2.3.2. Recording

- 2.3.2.1. Video storage rate:
 - 1500 Mbps – Dual-NIC bonding
 - 2000 Mbps – Tri-NIC bonding (optional)

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):

- 2.4.2.1. 2 RU: 240 Watts/790 BTU/hr | 170 Watts/570 BTU/hr
- 2.4.2.2. 4 RU: 390 Watts/1320 BTU/hr | 210 Watts/700 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