

Office of Integrated Security Systems  
Longwood University  
Camera System Standards

**1 GENERAL**

- A. All equipment and materials used shall be standard components that are regularly manufactured and used in the manufacturer's system.
- B. All systems and components shall have been thoroughly tested and proven in actual use.
- C. All systems and components shall be provided with the availability of a toll-free (U.S. and Canada), 24-hour technical assistance program (TAP) from the manufacturer.- The TAP shall allow for immediate technical assistance for either the dealer/installer or the end user at no charge for as long as the product is installed.
- D. All systems and components shall be provided with a one-day turnaround repair express and 24-hour parts replacement. The repair and parts express shall be guaranteed by the manufacturer on warranty and non-warranty items

**1.1 Scope**

Longwood wishes to have the means of reviewing recorded digital video of all activity at selected locations within a specified time period and to have the capability of viewing live video from any one or group of cameras at any time.

The system shall:

- A. Consist of fixed position and pan tilt-zoom color cameras installed at various locations inside and outside the buildings and areas designated in section 8.
- B. Have the ability to capture and store images from cameras digitally.
- C. Have the ability to record images from all cameras simultaneously.
- D. Permit simultaneous recording and live viewing of cameras
- E. Permit simultaneous recording of cameras while viewing previously recorded images.
- F. Permit multiple cameras to be viewed simultaneously on a single monitor.
- G. Permit recording of camera images under various user programmable conditions including.

- i. Continuously
  - ii. When motion occurs within the cameras field of view
  - iii. When motion occurs only within pre-selected portion of a cameras field of view
  - iv. During pre-determined times during the day
  - v. Record only when an external stimulus is received (software message, logic input, contact-closer, etc.)
- H. Permit cameras to record at different record rates based upon user programmable conditions. Each camera separately programmable.
- I. Images displayed on computer monitor must be of sufficient pixels to allow user to digitally zoom to a degree acceptable to the owner without loss of quality of the image and the ability to enlarge or zoom shall be demonstrated as a condition of contract award.

## 2) Digital Video Recorders ( DVRs )

- A. A DVR shall be installed at each building. The contractor shall be responsible to determine if more than one per building is necessary and provide all required.
- B. The DVR shall capture high resolution video at up to 4CIF resolution and shall record up to 30 ips at 4CIF resolution per input.
- C. DVR locations within the building, or set of buildings, shall be located in the buildings MDF/DATA closet.
- D. Future cameras placement for a building should be taken into consideration when choosing the location of the DVR.
- E. All DVRs shall be interconnected via the campus network to permit remote access for viewing and DVR administration.
- F. DVRs shall have the storage capacity for a minimum of 30 days of recording, based upon
  - I. Every camera for the building, or set of buildings, being recorded simultaneously;
  - II. 100% motion (extremely high scene activity);
  - III. Recording rate of 2.5 images per second per camera;
  - IV. Highest image resolution setting.
- G. The DVRs shall be supplied with the capacity to store images from all camera inputs simultaneously at a rate of not less than 7.5 images per second per camera.
- H. The DVRs shall be capable of recording 20% of all cameras inputs in the system of rates not less than 30 images per second per camera, while all other camera inputs are recorded at rates not less than 2.5 images per second per camera.
- I. The actual image capture rate(s) shall be user programmable on a per camera basis.
- J. Images captured and stored shall be remotely viewable using a network connected personal computer running compatible remote viewing software

(provided by the contractor); Contractor shall assist in selecting a suitable computer and monitor.

- K. The DVR shall be Endura Enabled and shall incorporate Endurastor storage optimization technology.
- L. The DVR shall incorporate motion detection capability, compatible with the KBD5000 for control and operation, and it shall allow the user to configure and program via a USB keyboard. The DVR shall control PTZ cameras from the front panel via Coaxitron, Pelco P, or Pelco D protocol.
- M. The remote viewing software shall permit viewing of images from any camera in the system, as well as any combination of cameras in the system. The remote computer shall have the ability to view not less than 16 cameras simultaneously.
- N. Owner will provide network port and IP address. The contractor will be responsible for providing (plenum) cat 6 cabling from DVRs to closet network port. Longwood cabling protocols must be followed.
- O. AC power shall be installed by contractor as required. Existing outlets may be used if the circuit load available is adequate at the selected location. Power cord length shall be limited to 6 feet and the use of extension cords will not be permitted.
- P. The vender shall furnish to Longwood University adequate battery backup to achieve the requirements listed. ( CISCO 24 port P.O.E. switch WS-C3750-24PS-S Recommended )For each 24 port powered patch panel or switch provided, an APC Smart-Ups 1500VA RM2U, part number SUA1500RM2U, or equivalent shall be provided. Additionally, for each server provided, Please note that if multiple power patch panels or switches are installed in the same closet, vender may consolidate UPS needs to provide approximately one (1) hour of run time fully loaded based on 500 watts.
- Q. Power Loss.....The system shall have the capability to recover from restart or power loss without aid of human intervention. When powered, the system shall automatically reestablish network connection to camera and resume image capture according to the server configuration as to time and frame rate for each specified camera. In the event of power outage the unit shall retain camera settings and assignments so that all configurations will be restored and communication will be reestablished after power restoration.
- R. Preferred manufacturer.

### **2.03 ELECTRICAL SPECIFICATIONS**

- A. Power Input: 100-240 VAC, 50/60 Hz, auto ranging
- B. Power Supply: Internal
- C. Cable Type: 1 USA standard (117 VAC, 3 prongs, 6 ft or 1.8 m cord) 1  
European standard (220 VAC, 3 prongs, molded connector, 6 ft or 1.8 m)

1 UK standard (250 VAC, 3 prongs, molded connector, 6 ft or 1.8 m)

D. Power Consumption: 136 W, 465 BTU/H (maximum)

## **2.04 ENVIRONMENTAL SPECIFICATIONS**

A. Operating temperature: 50° to 95°F (10° to 35°C)

B. Operating Humidity: 20% to 80%, non condensing

C. Max. Humidity Gradient: 10% per hour

D. Operating Altitude: -50 ft to 10,000 ft (-16 m to 3,048 m)

E. Operating Vibration: 0.25 G at 3 Hz to 200 Hz at a sweep rate of  
0.5 octave/minimum

## **2.05 PHYSICAL SPECIFICATIONS**

A. Construction: Steel cabinet

B. Finish: Front panel: gray metallic with black end caps

Chassis: black matte finish

C. Dimensions: 17.0 (D) x 17.1 (W) x 3.5 (H) (43.2 x 43.4 x 8.9 cm)

D. Mounting: Desktop (feet) or rack

2 RU per unit, 1 RU between units

E. Unit Weight: 28.8 lb (13.06 kg)

## **2.06 MECHANICAL SPECIFICATIONS**

A. System

1. Operating System: Linux®

2. User Interface: Semitransparent on-screen overlays

B. Video

1. Video Standards

a. Input: NTSC/PAL, composite

- b. Output: NTSC/PAL, S-Video, composite  
VGA (1024 x 768)  
60 Hz capability for NTSC  
50 Hz capability for PAL
- 2. Video Decoding: MPEG-4
- 3. Video Resolutions: NTCS PAL
  - a. 4CIF: 704 x 480 704 x 576
  - b. 2CIF: 704 x 240 704 x 288
  - c. CIF: 352 x 240 352 x 288
- 4. Video Inputs/Connectors: 4/8/16, BNC, looping, 75 ohms, 0.5-1 Vp-p
- 5. Video Termination: Hi-Z, 75 ohms, software controlled
- 6. Display/Recording Speed: Up to recording rate
- 7. Display Modes: Single image, 2x2, 3x3, and 4x4
- 8. Video Outputs: 1, BNC, NTSC/PAL, 75 ohms, 1 Vp-p  
1, S-Video, NTSC/PAL  
1, VGA

#### C. Audio

- 1. Audio Decoding: G.711 speech codec
- 2. Audio Bit Rate: 64 kbps
- 3. Audio Levels: Line-level input/output
- 4. Audio Connectors: Three or five 3.5 mm stereo jacks
- D. Network Interface: 10/100/1000 Mbps, Ethernet, RJ-45 port

E. PTZ Control Interface: Front panel, KBD5000, or through remote client

#### F. Alarms/Relays

- 1. Alarm Inputs: 1 per camera, programmable, 10 kohms, triggered
- 2. Relay Outputs:
  - a. 4/8 channels: 2, N.O. /N.C. form C relay, 30 VDC at 1 A
  - b. 16 channels: 4, N.O. /N.C. form C relay, 30 VDC at 1 A
  - c. All alarms, relays, and audio inputs: Incorporated onto the digital video recorder with no external module accepted.

#### G. Auxiliary Interface

H. USB 2.0: 1 high-speed USB 2.0 port on the front panel and 2 high-speed USB .0 ports on the rear panel

I. Front Panel Indicators/Functions

1. Indicators

- a. Power: Blue
- b. Hard Drive Activity: Yellow
- c. Network Activity: Green
- d. Network Status: Green, amber, red
- e. Unit Status: Green, amber, red

2. Buttons: Configuration/reset  
Power

J. Remote Control: Full remote control operation of pan, tilts, and zoom functions via CP/IP network

**2.07 CERTIFICATIONS**

- A. CE, Class B
- B. UL Listed
- C. UL Listed to Canadian safety standards
- D. FCC, Class B
- E. C-Tick

**2.08 WARRANTY**

- A. 18 months, parts and labor

SECURITY.....Server and all cameras systems must be secured through client software or passwords in order to keep out unauthorized users. Access control must be configurable such that multiple users can be added to the system with individual passwords.

Additional installation comments:

- A. Cameras shall be placed in various locations as proposed by the University.
- B. Cameras shall be positioned at each location to provide optimum coverage and picture quality.
- C. Where necessary (in all locations where the camera will be within reach or is easily accessible) cameras shall be placed inside a vandal resistant enclosure and power and video cables protected.
- D. Outdoor cameras shall have Day & Nighttime viewing capabilities.
- E. Camera lenses shall have vary-focal capability.
- F. Camera mounting shall be reviewed with owner prior to installation.
- G. Cat 6 Plenum or Plenum Rated cable wiring from camera to DVR shall be provided and installed by contractor.

3) Installation

- A. Terminate and mount cameras per the manufacturer's instructions.
- B. Supply and install appropriate lens on all cameras.
- C. Install cameras at optimal locations taking in consideration view, focusing, vandalism, and functionality.
- D. Setup and adjust cameras as recommended by the manufacturer.
- E. Aim, focus, and adjust camera field of view to the satisfaction of the university.
- F. All wires and cables shall be located within walls and above ceilings wherever possible. Installation using exposed wires, cables, conduit or wire-molding shall be approved by the university prior to installation.
- G. All wires and cables shall be code compliant for the application, location and manner in which the cable is used and installed.
- H. Provide service loops of sufficient length to permit service access to equipment after complete system installation.
- I. Install and terminate the DVR in accordance with the manufacturer's instructions and as additionally noted and detailed.
- J. Label all physical camera inputs on the DVR to identify the source of the video signal.
- K. Provide surge protection at camera locations for all outdoor cameras.