# GENERAL

## SYSTEM DESCRIPTION

### General Requirements

#### The specified unit shall be of manufacturer’s official product line, designed for commercial and/or industrial 24/7/365 use.

#### The specified unit shall be based upon standard components and proven technology using open and published protocols.

#### Related Requirements

##### 28 05 07.21 PoE Power Sources for Electronic Safety and Security

##### 28 05 11 Cyber Security Requirements for Electronic Safety and Security

##### 28 05 19 Storage Appliances for Electronic Safety and Security

##### 28 05 21 Network Attached Storage for Electronic Safety and Security

##### 28 05 23 Storage Area Network for Electronic Safety and Security

##### 28 23 11 Video Management System Analytics

##### 28 23 13 Video Management System Interfaces

### Sustainability

#### The specified unit shall be manufactured in accordance with ISO 14001.

#### The specified unit shall be compliant with the EU directives 2011/65/EU (RoHS) and 2012/19/EU (WEEE).

#### The specified unit shall be compliant with the EU regulation 1907/2006 (REACH).

#### The specified unit, including all its components, shall not contain any added PVC.

#### The manufacturer shall have signed and support the UN Global Compact initiative as defined by United Nations.

## CERTIFICATIONS AND STANDARDS

### General abbreviations and acronyms

#### AGC: Automatic gain control

#### ABR: Average Bit Rate

#### AES: Advanced Encryption Standard

#### API: Application Programming Interface

#### Aspect ratio: A ratio of width to height in images

#### Bit Rate: The number of bits/time unit sent over a network

#### Bonjour: Enables automatic discovery of computers, devices, and services on IP networks.

#### DHCP: Dynamic Host Configuration Protocol

#### DNS: Domain Name System

#### EIS: Electronic Image Stabilization

#### FPS: Frames per Second

#### FTP: File Transfer Protocol

#### SFTP: Secure File Transfer Protocol

#### H.264 (Video Compression Format)

#### H.265 (Video Compression Format)

#### HSMS: Hosted Security Management System (SaaS PACS Application)

#### IEEE 802.1x: Authentication framework for network devices

#### IP: Internet Protocol

#### IR light: Infrared light

#### ISO: International Standards Organization

#### JPEG: Joint Photographic Experts Group (image format)

#### LAN: Local Area Network

#### LED: Light Emitting Diode

#### LPR: License Plate Recognition

#### Lux: A standard unit of illumination measurement

#### MBR: Maximum Bit Rate

#### MPEG: Moving Picture Experts Group

#### Multicast: Communication between a single sender and multiple receivers on a network

#### NTP: Network Time Protocol

#### NTSC: National Television System Committee – a color encoding system based on 60Hz

#### ONVIF: Global standard for the interface of IP-based physical security products

#### PACS: Physical Access Control System

#### PAL: Phase Alternating Line – a color encoding system based on 50Hz

#### PoE: Power over Ethernet (IEEE 802.3af/at) standard for providing power over network cable

#### Progressive scan: An image scanning technology which scans the entire picture

#### PTZ: Pan/Tilt/Zoom

#### QoS: Quality of Service

#### RAID: Redundant Array of Independent Disks

#### RMD: Radar Motion Detection

#### RPC: Remote Procedure Call

#### SaaS: Software as a Service

#### SIP: Session Initiation Protocol

#### SMTP: Simple Mail Transfer Protocol

#### SMPTE: Society of Motion Picture and Television Engineers

#### SNMP: Simple Network Management Protocol

#### SSL: Secure Sockets Layer

#### TCP: Transmission Control Protocol

#### TLS: Transport Layer Security

#### Unicast: Communication between a single sender and single receiver on a network

#### UPnP: Universal Plug and Play

#### UPS: Uninterruptible Power Supply

#### VBR: Variable Bit Rate

#### VMS: Video Management System

#### WDR: Wide dynamic range

### The specified unit shall carry the following EMC approvals:

#### EN 55032 Class A

#### EN 61000-3-2

#### EN 61000-3-3

#### EN 55024

#### EN 61000-6-1

#### EN 61000-6-2

#### RCM AS/NZS CISPR 32 Class A

#### ICES-3(A)/NMB-3(A)

#### VCCI Class A

#### KC KN32 Class A

#### KC KN35

#### FCC Part 15 Subpart B Class A

### The specified unit shall meet the following product safety standards:

#### IEC/EN/UL 62368-1

#### IS 13252

### The specified unit shall meet the following standards

#### Networking:

##### IEEE 802.1x (EAP-TLS, PEAP-MSCHAPv2) (Authentication)

##### IPv4 (RFC 791)

##### IPv6 (RFC 2460)

##### NIST SP500-267

#### Cybersecurity

##### ETSI EN 303 645

##### FIPS 140

#### Mechanical Environment:

##### IEC60068-2-1

##### IEC60068-2-14

##### IEC60068-2-2

##### IEC60068-2-27

##### IEC 60068-2-6

##### IEC 60068-2-78

##### IEC/EN 60529 IP3X

## QUALITY ASSURANCE

### The contractor or security sub-contractor shall be a licensed security Contractor with a minimum of five (5) years’ experience installing and servicing systems of similar scope and complexity and evidence that is completed at least three (3) projects of similar design and is currently engaged in the installation and maintenance of systems herein described.

### All installation, configuration, setup, program and related work shall be performed by electronic technicians thoroughly trained by the manufacturer in the installation and service of the equipment provided.

### The contractor or designated sub-contractor shall submit credentials of completed manufacturer certification, verified by a third-party organization, as proof of the knowledge.

### The specified unit shall be manufactured in accordance with ISO9001.

## WARRANTY

### The manufacturer shall provide a five (5) year limited hardware warranty for product that is free from defects in design, workmanship and materials under substantiated normal use. Defective products under the warranty period will be either repaired or replaced by the manufacturer.

# PRODUCTS

## GENERAL

### The product shall be IP-based and comply with established network and video standards.

### The product shall be powered by the switch utilizing the network cable.

### The product shall be fully supported by an open and published API (Application Programmers Interface), which shall provide necessary information for integration of functionality into third-party applications.

## VIDEO SURVEILLANCE SCHEDULE

### The product or product types listed below describing various resolutions, form-factor and features shall be supplied by a single manufacturer for video surveillance system.

### The product name and model numbers will be as follows:

#### Body-worn system controller shall be AXIS W800 System Controller

## VIDEO SURVEILLANCE CAMERAS

### Body-worn system controller:

#### The specified product shall meet or exceed the following design specifications:

##### The system controller shall operate on an open source and Linux-based platform, and include a built-in web server.

##### The system controller shall provide local video storage utilizing an SSD of at least 480 GB.

##### The system controller shall be manufactured with an IP3X-rated aluminum and plastic casing.

##### The system controller shall support at least 5 docking stations and 40 cameras per unit.

#### The system controller shall meet or exceed the following performance specifications:

##### Video throughput

###### For camera to system controller, the controller shall support throughput of at least 100 Mbit/s per camera.

###### For system controller to content destination, the controller shall support throughput of at least 1 Gbit/s.

##### Transmission

###### The system controller shall allow for video to be transported over:

HTTPS (Unicast)

RTP over RTSP (Unicast)

RTP over RTSP over HTTP (Unicast)

SRTP/RTSPS (Unicast & Multicast)

##### User Interface

###### Web server

The system controller shall contain a built-in web server
making video and configuration available to multiple clients in a
standard operating system and browser environment using HTTP, without
the need for additional software.

###### Language Specification

The system controller shall provide a function for altering
the language of the user interface, and shall include support for
at least 5 different languages.

###### IP addresses

The system controller shall support both fixed IP addresses
and dynamically assigned IP addresses provided by a Dynamic Host Control
Protocol (DHCP) server.

The system controller shall allow for automatic detection
of the controller based on Bonjour when using a computer with an operating
system supporting this feature.

The system controller shall provide support for both IPv4
and IPv6.

The system controller shall provide support for IPv6 USGv6.

##### Storage

###### The system controller shall support file storage on:

1 x built-in SSD drive with at least 480 GB capacity.

##### Protocols

###### The system controller shall incorporate support for at least IPv4, IPv6 USGv6, HTTPS, TLS, Bonjour, DNS, NTP, NTS, SRTP/RTSPS, TCP, UDP, ICMP, DHCP, ARP.

##### Security

###### The system controller shall support the following:

Secure web browsing

The use of HTTPS and TLS, providing the ability to upload
signed certificates to encrypt and secure authentication and communication
of both administration data and video streams.

Restrict access to the built-in web server by usernames and
passwords at three different levels.

Certificate management

Provide centralized certificate management, with both pre-installed
CA certificates and the ability to upload additional CA certificates.
The certificates shall be signed by an organization providing digital
trust services.

Enhanced security features

The product shall include a tamper-resistant hardware module,
certified to at least Common Criteria EAL4+. The trusted platform
module (TPM) shall provide a set of cryptographic features suitable
for protecting private keys from unauthorized access. TPM is certified
according to FIPS 140-2 level 2.

The use of signed OS validates the software’s integrity before
accepting to install it.

The use of a secure boot process, based on the use of signed
OS, ensures that the system controller can boot only with authorized
software.

Authentication

IEEE 802.1X (EAP-TLSPEAP-MSCHAPv2)a

IEEE 802.1AR

HTTPS/HSTS

TLS v1.2/v1.3

Network Time Security (NTS)

X.509 Certificate PKI

Host-based firewall

Brute force delay protection

###### Software support

The manufacturer should provide a Software Bill of Material
(SBOM) for each device software in machine-readable format (CycloneDX,
SPDX) that contains information about the software composition of
the device’s operating system, publicly available for download.

The manufacturer must provide device software with long-term
support that only contains corrections for critical bugs, security
flaws and performance issues.

The device should maintain high-level cybersecurity without
introducing any significant functional changes or affecting any existing
integrations.

##### System integration

###### The system controller shall be fully supported by an open and published API (Application Programmers Interface), which shall provide necessary information for integration of functionality into third-party applications.

###### The system controller shall be compatible with third-party evidence management systems.

###### The system controller shall be compatible with the manufacturer’s video management system, as well as with other third-party applications.

##### Installation and maintenance

###### The system controller shall be supplied with Windows-based management software which allows the assignment of IP addresses, upgrade of device software and backup of configurations.

###### The system controller shall allow updates of the software over the network, using FTP or HTTP.

###### The system controller shall store all customer-specific settings in a non-volatile memory that shall not be lost during power cuts or soft reset.

###### The system controller shall accept external time synchronization from an NTP (Network Time Protocol) server.

##### Access log

###### The system controller shall provide a log file, containing information about the 250 latest connections and access attempts since the unit’s latest restart. The file shall include information about the connecting IP addresses and the time of connecting.

###### The system controller shall provide a connection list of all currently connected viewers. The file shall include information about connecting IP address, time of connecting and the type of stream accessed.

##### Diagnostics

###### The system controller shall be equipped with LEDs, capable of providing visible status information. LEDs shall indicate the unit’s operational status and provide information about power, communication with receiver, the network status and device status.

###### The system controller shall be monitored by a Watchdog functionality, which shall automatically re-initiate processes or restart the unit if a malfunction is detected.

###### The system controller shall send a notification when the unit has rebooted and all services are initialized.

##### Hardware interfaces

###### Network interface

The system controller shall be equipped with 5x (device network)
10BASE-T/100BASE-TX Ethernet-ports using RJ45 connectors, and shall
support auto negotiation of network speed (100 MBit/s and 10 MBit/s)
and transfer mode (full and half-duplex).

The system controller shall be equipped with 1x (uplink)
10BASE-T/100BASE-TX/1000BASE-T Ethernet-port using a RJ45 connector,
and shall support auto negotiation of network speed and transfer mode
(full and half-duplex).

###### Power

The system controller shall be equipped with one DC connector
for 12 V DC input.

###### External RFID card reader

The system controller shall be equipped with one USB connector
for connection to an external RFID card reader.

##### Enclosure

###### The system controller shall be manufactured with an IP3X-rated aluminum and plastic casing.

##### Power

###### The system controller be powered by 12 V DC, Typical 12.25 W, max 16 W.

##### Environmental

###### The system controller shall:

Operate in a temperature range of 0 °C to 40 °C (32
°F to 104 °F)

Operate in a humidity range of 10–85% RH (non-condensing).

# EXECUTION

## INSTALLATION

### The contractor’s or subcontractor’s main resources within the project shall carry proper professional certification issued by the manufacturer and verified by a third-party organization to confirm sufficient product and technology knowledge.

### The contractor shall carefully follow instructions in documentation provided by the manufacturer to ensure 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.

### Software found in products shall be the latest and most up-to-date version as specified by the manufacturer, or by the product component provider.

### 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.

### A proper installation shall meet NEC (National Electrical Code – US only) per the guidelines of that year’s revision. When properly installed equipment meets Low Voltage, Class 2 classification of the NEC.

END OF SECTION