SECTION 27 41 16

INTEGRATED AUDIO-VIDEO SYSTEMS AND EQUIPMENT

GUIDE SPECIFICATION

Specifier: The Specifier/Design Professional is responsible for the accuracy of all project specifications, including system application and coordination with related sections. This guide specification is provided as a convenience and requires editing to match actual project requirements. CRESTRON ELECTRONICS, INC. SHALL NOT BE LIABLE FOR ANY DAMAGES ARISING OUT OF THE USE OF ANY OF ITS GUIDE SPECIFICATIONS. For Crestron design assistance and design review please contact Sales Support Services Department at 800.237.2041 or techsales@crestron.com.

Specifier: Please see PART 4 for a listing of products specified in this Guide Specification.

Table of Contents

1 GENERAL 4

1.1 Description: Intelligent Video Cameras and Switches 4

2 PRODUCTS 4

2.1 Camera Type 1 4

2.1.1 Basis of Design 4

2.1.2 Device Definition 4

2.1.3 Device Architecture 5

2.1.4 Functions 5

2.1.5 Connectors 7

2.1.6 Controls and Indicators 8

2.1.7 Power 8

2.1.8 Compliance 8

2.2 Camera Type 2 9

2.2.1 Basis of Design 9

2.2.2 Device Definition 9

2.2.3 Device Architecture 10

2.2.4 Functions 11

2.2.5 Connectors 13

2.2.6 Controls and Indicators 13

2.2.7 Power 14

2.2.8 Compliance 14

2.3 Camera Type 3 14

2.3.1 Basis of Design 14

2.3.2 Device Definition 15

2.3.3 Device Architecture 15

2.3.4 Functions 16

2.3.5 Connectors 18

2.3.6 Controls and Indicators 18

2.3.7 Power 18

2.3.8 Compliance 19

2.4 Camera Type 4 19

2.4.1 Basis of Design 19

2.4.2 Device Definition 20

2.4.3 Device Architecture 20

2.4.4 Functions 21

2.4.5 Connectors 23

2.4.6 Controls and Indicators 23

2.4.7 Power 24

2.4.8 Compliance 24

2.5 Camera Type 5 25

2.5.1 Basis of Design 25

2.5.2 Device Definition 25

2.5.3 Device Architecture 26

2.5.4 Functions 26

2.5.5 Power 29

2.6 Switch Type 1 29

2.6.1 Basis of Design 29

2.6.2 Device Definition 29

2.6.3 Device Architecture 30

2.6.4 Functions 30

2.7 Switch Type 2 32

2.7.1 Basis of Design 32

2.7.2 Device Definition 32

2.7.3 Device Architecture 33

2.7.4 Functions 33

2.8 Switch Type 3 35

2.8.1 Basis of Design 35

2.8.2 Device Definition 35

2.8.3 Device Architecture 36

2.8.4 Functions 36

3 EXECUTION 38

4 APPENDICES 38

4.1 SPECIFIED PRODUCTS 38

4.1.1 Crestron IV-CAM-P12 38

4.1.2 Crestron IV-CAM-I12 38

4.1.3 Crestron IV-CAM-P20 38

4.1.4 Crestron IV-CAM-I20 38

4.1.5 Crestron IV-CAMHK-12 38

4.1.6 Crestron IV-SAM-VXS-1B 38

4.1.7 Crestron IV-SAM-VXP-1B 38

4.1.8 Crestron IV-SAM-VXN-1B 38

# GENERAL

NOT USED in this Guide Specification. Specifier shall Specify PART 1 administrative and procedural requirements as needed.

## Description: Intelligent Video Cameras and Switches

# PRODUCTS

## Camera Type 1

Specifier Note:

*The IV-CAM-P12 is a high quality PTZ camera that outputs up to 1080p60 resolution video. The IV-CAM-P12 is ideal for meetings in medium to large spaces where one camera needs to capture several areas of the room. The IV-CAM-P12 can be used with the Crestron 1 Beyond Automate VX Series as part of a complete multi-camera switching solution. The IV-CAM-P12 supports a single Ethernet connection and provides power (PoE), viewing and control on a network.*

### Basis of Design

#### Crestron IV-CAM-P12

Specifier Note:

IV-CAM-P12  
https://www.crestron.com/Products/Workspace-Solutions/Intelligent-Video/1-Beyond-Intelligent-Video/IV-CAM-P12-B

### Device Definition

#### PTZ Camera

##### Supports 12x optical zoom

##### Image flip allows for optional inverted mounting

##### Outputs 3G-SDI and HDMI at resolutions up to 1080p60

##### USB video output at resolutions up to 1080p30/25

##### Can be configured using proprietary camera manager software and controlled through VISCA over IP via control system from same manufacturer

##### PoE power, monitoring, configuration, and control provided through one (1) ethernet cable connection to camera

##### Compatible with multicamera system from same manufacturer to be used in a multicamera setup

##### Device available in the following colors: Moon Gray and Bright White

##### Mountable via universal mounting bracket, wall mount bracket, or j-mount ceiling mount bracket by same manufacturer

### Device Architecture

#### Physical Form factor

##### Dimensions: 6.55 in. x 8.89 in. x 5.86 in. (166 mm x 226 mm x 149 mm)

##### Weight: 4.12 lb. (1.87 kg)

#### Mounting

##### 1/4 in. threaded mount hole, compatible with Wall Mount, Universal Mount, and J-mount ceiling bracket by same manufacturer

#### Environmental Operating Conditions

##### Temperature: 32° to 104° F (0° to 40° C)

##### Humidity: 10% to 90% RH (noncondensing)

### Functions

#### The camera shall feature the following optics and processing capabilities:

##### Image Sensor: 1/2.8 Sony CMOS Sensor

##### Optical Zoom: 12x

##### Focal Length: F=4.1-49.2 mm

##### Field of View

###### Horizontal: 67.68°

###### Vertical: 53.88°

##### Shutter Speed: 1/50 – 1/10,000 sec

##### Iris: F1.8 - F2.68

##### Minimum Illumination: 20 Lux

#### The camera shall feature the following Pan, Tilt, Zoom capabilities:

##### Pan / Tilt Angle: Pan: -130° - 130°, Tilt: -30° - 90°

##### Pan / Tilt Speed: Pan: 0.2° - 90° / s, Tilt: 0.2° - 70° / s

#### The camera shall support the following communications protocols:

##### USB-B 3.0

##### 100 Mbps Ethernet

##### RS-232, RS-485

##### Control Protocols: VISCA/TCP, VISCA/UDP, PELCO-D, PELCO-P, ONVIF

#### The camera shall support management software by same manufacturer.

#### The camera shall support the following video signal characteristics:

##### Video Outputs: 3G-SDI, HDMI, USB, NDI|HX, ONVIF, RTSP

##### Signal Formats

###### SDI or HDMI: 1080p60/59.94/50/30/29.94/25, 720p60/59.94/50

###### USB: 1080p30/25, 720p30/25, 360p30

### Connectors

#### COM: (1) 5-pin 3.5 mm detachable terminal block; bidirectional RS-232/485 port

#### PoE: (1) 8-pin RJ-45 connector, female

#### 3G-SDI OUT: (1) BNC connector, female; 3G-SDI digital video output

#### HDMI OUT: (1) HDMI Type A connector; HDMI digital video output

#### USB: (1) USB Type B connector, female; USB 3.0 device port for video and control

#### 12VDC 2.5A: (1) 3.3 mm DC power connector; 12 VDC power input

### Controls and Indicators

#### Status Bar

##### (1) Multi segment tricolor LED bar graph

###### Half green LED bar graph indicates live camera feed

###### Full amber LED bar graph indicates firmware upgrade

###### Half red LED bar graph indicates Privacy mode

##### RESET: (1) Recessed push button for hardware reset

### Power

#### Power source options: Ethernet (PoE), power pack

#### Power over Ethernet: IEEE 802.3af Class 3 Powered Device

#### Power over Ethernet Rating: 15.4 W

Specifier Note: To comply with the European Directive (CE), shielded CAT5e cable must be used as a minimum for PoE power.

#### Power Pack: 12 VDC, 2.5 A, 50/60 Hz

### Compliance

#### Regulatory Model: M202306003

#### FCC Part 15 Class B, IC Class B, CE, Intertek Listed for US and Canada

## Camera Type 2

Specifier Note:

*The IV-CAM-I12 is a high quality intelligent PTZ camera that uses visual AI to automatically track or frame meeting participants. The IV-CAM-I12 is ideal for group framing meeting participants in medium to large conference rooms, and presenter tracking in medium sized training rooms and classrooms. The IV-CAM-I12 has a dual camera design; the wide-angle reference camera uses visual AI to direct the PTZ camera. All visual AI is built into the camera – no external system is needed.*

### Basis of Design

#### Crestron IV-CAM-I12

Specifier Note:

IV-CAM-I12  
https://www.crestron.com/Products/Workspace-Solutions/Intelligent-Video/1-Beyond-Intelligent-Video/IV-CAM-I12-B

### Device Definition

#### Intelligent PTZ camera

##### Visual AI for Group Framing or Presenter Tracking

##### Supports 12x optical zoom for tracking distances up to 25’ from participants

##### Automatically pans, tilts, and zooms with dual camera technology, no external computer required

##### Connects directly to codec or recording / streaming device

##### Outputs 3G-SDI and HDMI at resolutions up to 1080p60

##### USB video output at resolutions up to 1080p30/25

##### Can be configured using proprietary camera manager software and controlled through VISCA over IP via control system from same manufacturer

##### PoE power, monitoring, configuration, and control provided through one (1) ethernet cable connection to camera

##### Compatible with multicamera system from same manufacturer to be used in a multicamera setup

##### Can be paired with another device as described in section 2.15 for multicamera switching without additional hardware or software

##### Device available in the following color: Moon Gray

##### Mountable via universal mounting bracket, wall mount bracket, or j-mount ceiling mount bracket by same manufacturer

### Device Architecture

#### Physical Form factor

##### Dimensions: 6.55 in. x 8.89 in. x 5.86 in. (166 mm x 226 mm x 149 mm)

##### Weight: 4.11 lb. (1.87 kg)

#### Mounting

##### 1/4 in. threaded mount hole, compatible with Wall Mount, Universal Mount, and J-mount ceiling bracket by same manufacturer

#### Environmental Operating Conditions

##### Temperature: 32° to 104° F (0° to 40° C)

##### Humidity: 10% to 90% RH (noncondensing)

### Functions

#### The camera shall feature the following optics and processing capabilities:

##### Image Sensor: 1/2.8 Sony CMOS Sensor

##### Optical Zoom: 12x

##### Focal Length: F=4.1-49.2 mm

##### Field of View (PTZ)

###### Horizontal: 67.68°

###### Vertical: 53.88°

##### Field of View (Reference)

###### Horizontal: 104° (dynamically adjusts)

###### Vertical: 57°

##### Shutter Speed: 1/50 – 1/10,000 sec

##### Iris: F1.8 - F2.68

##### Minimum Illumination: 20 Lux

#### The camera shall feature the following Pan, Tilt, Zoom capabilities:

##### Pan / Tilt Angle: Pan: -130° - 130°, Tilt: -30° - 90°

##### Pan / Tilt Speed: Pan: 0.2° - 90° / s, Tilt: 0.2° - 70° / s

#### The camera shall support the following processing capabilities:

##### Intelligent Video Functions: Group Framing, Presenter Tracking, Multi-Camera Switching

##### Recommended Range (Group Framing): 5-25 ft.

##### Recommended Range (Presenter Tracking): 10-25 ft.

#### The camera shall support the following communications protocols:

##### USB-B 3.0

##### 100 Mbps Ethernet

##### RS-232, RS-485

##### Control Protocols: VISCA/TCP, VISCA/UDP, PELCO-D, PELCO-P, ONVIF

##### IR Receiver: IR Camera Remote by same manufacturer

#### The camera shall support management software by same manufacturer.

#### The camera shall support the following video signal characteristics:

##### Video Outputs: 3G-SDI, HDMI, USB, ONVIF, RTSP

##### Signal Formats

###### SDI or HDMI: 1080p60/59.94/50/30/29.94/25, 720p60/59.94/50

###### USB: 1080p30/25, 720p30/25, 360p30

### Connectors

#### COM: (1) 5-pin 3.5 mm detachable terminal block; bidirectional RS-232/485 port

#### PoE: (1) 8-pin RJ-45 connector, female

#### 3G-SDI OUT: (1) BNC connector, female; 3G-SDI digital video output

#### HDMI OUT: (1) HDMI Type A connector; HDMI digital video output

#### USB: (1) USB Type B connector, female; USB 3.0 device port for video and control

#### 12VDC 2.5A: (1) 3.3 mm DC power connector; 12 VDC power input

### Controls and Indicators

#### Status Bar

##### (1) Multi segment tricolor LED bar graph

###### Half green LED bar graph indicates live camera feed

###### Full green LED bar graph indicates camera tracking

###### Full amber LED bar graph indicates firmware upgrade

###### Half red LED bar graph indicates Privacy mode

##### RESET: (1) Recessed push button for hardware reset

### Power

#### Power source options: Ethernet (PoE), power pack

#### Power over Ethernet: IEEE 802.3af Class 3 Powered Device

#### Power over Ethernet Rating: 15.4 W

Specifier Note: To comply with the European Directive (CE), shielded CAT5e cable must be used as a minimum for PoE power.

#### Power Pack: 12 VDC, 2.5 A, 50/60 Hz

### Compliance

#### Regulatory Model: M202306001

#### FCC Part 15 Class B, IC Class B, CE, Intertek Listed for US and Canada

## Camera Type 3

Specifier Note:

*The IV-CAM-P20 is a high quality PTZ camera that outputs up to 1080p60 resolution video. The IV-CAM-P20 is ideal for meetings in large to extra large spaces where one camera needs to capture several areas of the room. The IV-CAM-P20 can be used with the Crestron 1 Beyond Automate VX Series as part of a complete multi-camera switching solution. The IV-CAM-P20 supports a single Ethernet connection and provides power (PoE), viewing and control on a network.*

### Basis of Design

#### Crestron IV-CAM-P20

Specifier Note:

IV-CAM-P20  
https://www.crestron.com/Products/Workspace-Solutions/Intelligent-Video/1-Beyond-Intelligent-Video/IV-CAM-P20-B

### Device Definition

#### PTZ Camera

##### Supports 20x optical zoom

##### Image flip allows for optional inverted mounting

##### Outputs 3G-SDI and HDMI at resolutions up to 1080p60

##### USB video output at resolutions up to 1080p30/25

##### Can be configured using proprietary camera manager software and controlled through VISCA over IP via control system from same manufacturer

##### PoE power, monitoring, configuration, and control provided through one (1) ethernet cable connection to camera

##### Compatible with multicamera system from same manufacturer to be used in a multicamera setup

##### Device available in the following colors: Moon Gray and Bright White

##### Mountable via universal mounting bracket, wall mount bracket, or j-mount ceiling mount bracket by same manufacturer

### Device Architecture

#### Physical Form factor

##### Dimensions: 6.51 in. x 8.90 in. x 5.86 in. (165 mm x 226 mm x 149 mm)

##### Weight: 4.12 lb. (1.87 kg)

#### Mounting

##### 1/4 in. threaded mount hole, compatible with Wall Mount, Universal Mount, and J-mount ceiling bracket by same manufacturer

#### Environmental Operating Conditions

##### Temperature: 32° to 104° F (0° to 40° C)

##### Humidity: 10% to 90% RH (noncondensing)

### Functions

#### The camera shall feature the following optics and processing capabilities:

##### Image Sensor: 1/2.8 Sony CMOS Sensor

##### Optical Zoom: 20x

##### Focal Length: F=5.2-94 mm

##### Field of View

###### Horizontal: 56.45°

###### Vertical: 40.31°

##### Shutter Speed: 1/50 – 1/10,000 sec

##### Iris: F1.5 – F3.0

##### Minimum Illumination: 20 Lux

#### The camera shall feature the following Pan, Tilt, Zoom capabilities:

##### Pan / Tilt Angle: Pan: -130° - 130°, Tilt: -30° - 90°

##### Pan / Tilt Speed: Pan: 0.2° - 90° / s, Tilt: 0.2° - 70° / s

#### The camera shall support the following communications protocols:

##### USB-B 3.0

##### 100 Mbps Ethernet

##### RS-232, RS-485

##### Control Protocols: VISCA/TCP, VISCA/UDP, PELCO-D, PELCO-P, ONVIF

#### The camera shall support management software by same manufacturer.

#### The camera shall support the following video signal characteristics:

##### Video Outputs: 3G-SDI, HDMI, USB, NDI|HX, ONVIF, RTSP

##### Signal Formats

###### SDI or HDMI: 1080p60/59.94/50/30/29.94/25, 720p60/59.94/50

###### USB: 1080p30/25, 720p30/25, 360p30

### Connectors

#### COM: (1) 5-pin 3.5 mm detachable terminal block; bidirectional RS-232/485 port

#### PoE: (1) 8-pin RJ-45 connector, female

#### 3G-SDI OUT: (1) BNC connector, female; 3G-SDI digital video output

#### HDMI OUT: (1) HDMI Type A connector; HDMI digital video output

#### USB: (1) USB Type B connector, female; USB 3.0 device port for video and control

#### 12VDC 2.5A: (1) 3.3 mm DC power connector; 12 VDC power input

### Controls and Indicators

#### Status Bar

##### (1) Multi segment tricolor LED bar graph

###### Half green LED bar graph indicates live camera feed

###### Full amber LED bar graph indicates firmware upgrade

###### Half red LED bar graph indicates Privacy mode

##### RESET: (1) Recessed push button for hardware reset

### Power

#### Power source options: Ethernet (PoE), power pack

#### Power over Ethernet: IEEE 802.3af Class 3 Powered Device

#### Power over Ethernet Rating: 15.4 W

Specifier Note: To comply with the European Directive (CE), shielded CAT5e cable must be used as a minimum for PoE power.

#### Power Pack: 12 VDC, 2.5 A, 50/60 Hz

### Compliance

#### Regulatory Model: M202306003

#### FCC Part 15 Class B, IC Class B, CE, Intertek Listed for US and Canada

## Camera Type 4

Specifier Note:

*The IV-CAM-I20 is a high quality intelligent PTZ camera that uses visual AI to automatically track or frame a presenter. The IV-CAM-I20 is ideal for presenter tracking in large to extra large sized training rooms and classrooms, and group tracking meeting participants in large to extra large conference rooms. The IV-CAM-I20 has a dual camera design; the wide-angle reference camera uses visual AI to direct the PTZ camera. All visual AI is built into the camera – no external system is needed.*

### Basis of Design

#### Crestron IV-CAM-I20

Specifier Note:

IV-CAM-I20  
https://www.crestron.com/Products/Workspace-Solutions/Intelligent-Video/1-Beyond-Intelligent-Video/IV-CAM-I20-B

### Device Definition

#### Intelligent PTZ camera

##### Visual AI for Presenter Tracking

##### Supports 20x optical zoom for tracking distances up to 50’ from participants

##### Automatically pans, tilts, and zooms with dual camera technology, no external computer required

##### Connects directly to codec or recording / streaming device

##### Outputs 3G-SDI and HDMI at resolutions up to 1080p60

##### USB video output at resolutions up to 1080p30/25

##### Can be configured using proprietary camera manager software and controlled through VISCA over IP via control system from same manufacturer

##### PoE power, monitoring, configuration, and control provided through one (1) ethernet cable connection to camera

##### Compatible with multicamera system from same manufacturer to be used in a multicamera setup

##### Device available in the following colors: Moon Gray and Bright White

##### Mountable via universal mounting bracket, wall mount bracket, or j-mount ceiling mount bracket by same manufacturer

### Device Architecture

#### Physical Form factor

##### Dimensions: 6.51 in. x 8.90 in. x 5.86 in. (165 mm x 226 mm x 149 mm)

##### Weight: 4.11 lb. (1.87 kg)

#### Mounting

##### 1/4 in. threaded mount hole, compatible with Wall Mount, Universal Mount, and J-mount ceiling bracket by same manufacturer

#### Environmental Operating Conditions

##### Temperature: 32° to 104° F (0° to 40° C)

##### Humidity: 10% to 90% RH (noncondensing)

### Functions

#### The camera shall feature the following optics and processing capabilities:

##### Image Sensor: 1/2.8 Sony CMOS Sensor

##### Optical Zoom: 20x

##### Focal Length: F=5.2-94 mm

##### Field of View (PTZ)

###### Horizontal: 56.45°

###### Vertical: 40.31°

##### Field of View (Reference)

###### Horizontal: 104° (dynamically adjusts)

###### Vertical: 57°

##### Shutter Speed: 1/50 – 1/10,000 sec

##### Iris: F1.5 – F3.0

##### Minimum Illumination: 20 Lux

#### The camera shall feature the following Pan, Tilt, Zoom capabilities:

##### Pan / Tilt Angle: Pan: -130° - 130°, Tilt: -30° - 90°

##### Pan / Tilt Speed: Pan: 0.2° - 90° / s, Tilt: 0.2° - 70° / s

#### The camera shall support the following processing capabilities:

##### Intelligent Video Functions: Presenter Tracking, Group Tracking, Preset Zones

##### Recommended Range: 15-50 ft.

#### The camera shall support the following communications protocols:

##### USB-B 3.0

##### 100 Mbps Ethernet

##### RS-232, RS-485

##### Control Protocols: VISCA/TCP, VISCA/UDP, PELCO-D, PELCO-P, ONVIF

#### The camera shall support management software by same manufacturer.

#### The camera shall support the following video signal characteristics:

##### Video Outputs: 3G-SDI, HDMI, USB, NDI|HX, ONVIF, RTSP

##### Signal Formats

###### SDI or HDMI: 1080p60/59.94/50/30/29.94/25, 720p60/59.94/50

###### USB: 1080p30/25, 720p30/25, 360p30

### Connectors

#### COM: (1) 5-pin 3.5 mm detachable terminal block; bidirectional RS-232/485 port

#### PoE: (1) 8-pin RJ-45 connector, female

#### 3G-SDI OUT: (1) BNC connector, female; 3G-SDI digital video output

#### HDMI OUT: (1) HDMI Type A connector; HDMI digital video output

#### USB: (1) USB Type B connector, female; USB 3.0 device port for video and control

#### 12VDC 2.5A: (1) 3.3 mm DC power connector; 12 VDC power input

### Controls and Indicators

#### Status Bar

##### (1) Multi segment tricolor LED bar graph

###### Half green LED bar graph indicates live camera feed

###### Full green LED bar graph indicates camera tracking

###### Full amber LED bar graph indicates firmware upgrade

###### Half red LED bar graph indicates Privacy mode

##### RESET: (1) Recessed push button for hardware reset

### Power

#### Power source options: Ethernet (PoE), power pack

#### Power over Ethernet: IEEE 802.3af Class 3 Powered Device

#### Power over Ethernet Rating: 15.4 W

Specifier Note: To comply with the European Directive (CE), shielded CAT5e cable must be used as a minimum for PoE power.

#### Power Pack: 12 VDC, 2.5 A, 50/60 Hz

### Compliance

#### Regulatory Model: M202306001

#### FCC Part 15 Class B, IC Class B, CE, Intertek Listed for US and Canada

## Camera Type 5

Specifier Note:

*The IV‑CAMHK‑12 is an intelligent participant tracking solution that uses two HD PTZ cameras to automatically cut to whoever is speaking in the room. Ideal for small to medium sized rooms, deploy the IV‑CAMHK‑12 when a close-up view of the meeting participants is desired. The IV‑CAMHK‑12 uses voice and facial recognition to automatically switch to a shot of the active speaking participant. With production‑style switching, the IV‑CAMHK‑12 allows remote participants to follow an in‑room conversation without excessive camera switching.*

### Basis of Design

#### Crestron IV-CAMHK-12

Specifier Note:

IV-CAMHK-12  
https://www.crestron.com/Products/Workspace-Solutions/Intelligent-Video/1-Beyond-Intelligent-Video/IV-CAMHK-12-SLVR-1B

### Device Definition

#### Participant tracking solution that uses two HD PTZ cameras to automatically cut to whoever is speaking in the room

##### Ideal for small to medium sized rooms

##### Allows remote participants to follow an in-room conversation without excessive camera switching

##### Clean switching with broadcast-style cuts

##### Side-by-side dialog mode captures multiple participants in conversation

##### Intended for spaces up to 25 ft. from participants

#### Uses voice and facial recognition to automatically switch to a shot of the actively speaking participant

#### Works with a variety of microphones and audio speakers, offers echo cancel audio input.

#### Outputs 3G-SDI and HDMI at resolutions up to 1080p60

#### Compatible with Microsoft Teams®, Zoom Rooms™, Cisco WebEx®, MediaSite®, and Panopto® video conferencing platforms

#### Up to 256 pan, tilt, and zoom (PTZ) configuration preset points available

#### Can be configured using proprietary camera manager software or controlled through VISCA over IP via control system from same manufacturer

#### Device takes DC power input

### Device Architecture

#### Physical Form factor

##### Dimensions: 19.69 in. x 6.4 in. x 5.71 in. (500 mm x 163 mm x 145 mm)

##### Weight: 6.61 lb. (3 kg)

#### Mounting

##### 3 x 1/4 in. threaded mount hole for 90° Wall Shelf Mount

##### Recommended Mounting: 5-25 ft. from the subject, 4-6 ft. from the ground

#### Environmental Operating Conditions

##### 32° to 104° F (0° to 40° C)

### Functions

#### The camera shall feature the following optics and processing capabilities:

##### Image Sensor

###### Tracking Cameras: 1/2.8 in. Sony Exmor CMOS, 2.14 MP

###### Wide-Angle Camera: 1/2.8 in. CMOS, 2.14 MP

##### Focal Lens & Iris-Tracking Cameras: f = 3.9 - 46.8 mm, F1.6 - F2.8

##### Field of View

###### Tracking Cameras: 72.5° - 6.3°

###### Wide-Angle Camera: 86°

##### Focus System: Auto, Manual, PTZ Push, One Push

##### Minimum Illumination: 0.5 Lux (Color), 0.1 Lux (B/W)

##### Shutter Speed: 1/25 – 1/10,000 sec

##### Gain: Auto, Manual

##### White Balance: Auto, Indoor, Outdoor, One Push, Manual, Auto Track

##### Exposure: Auto, Manual, Shutter Priority, Iris Priority

##### Number of Presets: Up to 256

##### Serial Control: PELCO-D, VISCA, PELCO-P

##### Control: TCP/IP

##### Control Protocols: HTTP, RTP, TCP, UDP, ONVIF

#### The camera shall feature the following Pan, Tilt, Zoom capabilities:

##### Tilt / Pan Angle: Tilt: -30° - +90°, Pan: 90° - 90°

##### Tilt / Pan Speed: Tilt: 0.1° - 80° / sec, Pan: 0.1° - 120° / sec

##### Zoom: 12x Optical, 12x Digital

#### Ethernet Connectivity: RJ45, 100 Mb

#### The camera shall support the following video signal characteristics:

##### Video Outputs: 1x HDMI output, 1x 3G-SDI output, convert to USB using certified adapter

Specifier Note:

*The IV‑CAMHK‑12 camera includes integrated circuits produced by HiSilicon (part numbers HI3516ARBCV100 and HI3516ARFCV200), a subsidiary of Huawei Technologies Company.*

##### Signal Formats (HD): 1080p60/50/30/25, 1080i60/50, 720p60/50

##### IP Video Compression: H.265, H.264 (Four Streams)

##### Streaming: RTSP, RTMP

##### Streaming Resolution: Up to 1080p60, User-selectable framesize/framerate/bitrate

#### IP Audio Compression: AAC

#### Audio Input: 2x Line In (one with echo cancellation), 1x line out

### Power

#### Power Input: 12 VDC <50 W

## Switch Type 1

Specifier Note:

*The IV-SAM-VXS-1B Automate™ VX is a voice-activated camera switching solution that brings the full multi-camera studio experience to meetings, town halls, and classrooms.*

### Basis of Design

#### Crestron IV-SAM-VXS-1B

Specifier Note:

IV-SAM-VXS-1B  
https://www.crestron.com/Products/Workspace-Solutions/Intelligent-Video/1-Beyond-Intelligent-Video/IV-SAM-VXS-1B

### Device Definition

#### Voice-activated, multi-camera switching solution

##### Camera switching and movement is done automatically based on the location of the active speaking participant, using data from room microphones

##### Support for up to twelve (12) cameras

##### NDI® Compatible (IP video over the network)

##### Three (3) HD-SDI inputs

#### Connected cameras can be positioned in room as needed, and room configurations can be set to accommodate different furniture layouts

#### Support for combining multiple sources, title superimposition, and custom graphics and layouts.

#### Compatible with control modules from same manufacturer, API available for custom user interfaces and control systems from third-party manufacturers

#### Built-in encoder and recorder to enable multiple live streams and over one hundred (100) hours of recording

#### Design and configuration through proprietary web interface program

#### Accepts AC power input

### Device Architecture

#### Physical Form factor

##### Dimensions

###### Height: 3.5 in. (89 mm)

###### Width: 16.75 in. (425 mm)

###### Depth: 14.5 in. (368 mm)

###### Weight: 14 lb. (6.35 kg)

### Functions

#### Device Capabilities

##### Titles, Graphics, Layouts: Titles, logos, backgrounds can be added; graphic designer to create any multi-source layout

##### Program Record: MP4 file (H.264 codec). User-selectable bitrate up to 10 Mbps

##### Recording Capacity: Records to internal 500 GB SSD storage

##### Streaming Encoder: Can stream to any RTMP server. Presets included for popular CDNs

##### NDI Support: For inputs and program output

##### Camera Control: Can control proprietary PTZ and tracking cameras over IP

##### System Control: RESTful API over Network (TCP) for third party control

##### Compatible Codecs: Output via HD-SDI for connection to external conferencing codec or via USB adapter to external systems running Microsoft Teams® software, Zoom Rooms™ software, etc.

##### Configuration: Browser-based configuration with secure log-in and user administration. Customizable preset options for sleep, wake, and scenario actions.

#### Connectivity

##### Network Ports: Two (2) RJ45 Gigabit Ethernet

#### Video

##### Video Inputs: Three (3) HD-SDI Inputs

##### Video Output: Up to 1080p60; one (1) HD-SDI (SDI to HDMI® converter included), NDI|HX®, virtual webcam

##### Desktop Output: Four (4) DisplayPort™ outputs for setup and maintenance

#### Audio

##### Audio Input: 3.5 mm line in, USB, Dante® input

##### Refer to manufacturer website for lists of compatible Mic Systems and DSPs.

#### Power: 400 W, 100-240 VAC

## Switch Type 2

Specifier Note:

*The IV‑SAM‑VXP‑1B Automate™ VX Pro is a voice-activated camera switching solution that brings the full multi-camera studio experience to meetings, town halls, and classrooms.*

### Basis of Design

#### Crestron IV-SAM-VXP-1B

Specifier Note:

IV-SAM-VXP-1B  
https://www.crestron.com/Products/Workspace-Solutions/Intelligent-Video/1-Beyond-Intelligent-Video/IV-SAM-VXP-1B

### Device Definition

#### Voice-activated, multi-camera switching solution

##### Camera switching and movement is done automatically based on the location of the active speaking participant, using data from room microphones

##### Support for up to twelve (12) cameras

##### NDI® Compatible (IP video over the network)

##### Seven (7) HD-SDI inputs

#### Connected cameras can be positioned in room as needed, and room configurations can be set to accommodate different furniture layouts

#### Support for combining multiple sources, title superimposition, and custom graphics and layouts.

#### Compatible with control modules from same manufacturer, API available for custom user interfaces and control systems from third-party manufacturers

#### Built-in encoder and recorder to enable multiple live streams and over one hundred (100) hours of recording

#### Design and configuration through proprietary web interface program

#### Accepts AC power input

### Device Architecture

#### Physical Form factor

##### Dimensions

###### Height: 3.5 in. (89 mm)

###### Width: 16.75 in. (425 mm)

###### Depth: 14.5 in. (368 mm)

###### Weight: 14 lb. (6.35 kg)

### Functions

#### Device Capabilities

##### Titles, Graphics, Layouts: Titles, logos, backgrounds can be added; graphic designer to create any multi-source layout

##### Program Record: MP4 file (H.264 codec). User-selectable bitrate up to 10 Mbps

##### Recording Capacity: Records to internal 1 TB SSD storage

##### Streaming Encoder: Can stream to any RTMP server. Presets included for popular CDNs

##### NDI Support: For inputs and program output

##### Camera Control: Can control proprietary PTZ and tracking cameras over IP

##### System Control: RESTful API over Network (TCP) for third party control

##### Compatible Codecs: Output via HD-SDI for connection to external conferencing codec or via USB adapter to external systems running Microsoft Teams® software, Zoom Rooms™ software, etc.

##### Configuration: Browser-based configuration with secure log-in and user administration. Customizable preset options for sleep, wake, and scenario actions.

#### Connectivity

##### Network Ports: Two (2) RJ45 Gigabit Ethernet

#### Video

##### Video Inputs: Seven (7) HD-SDI Inputs; Up to twelve (12) cameras with NDI|HX® interface

##### Video Output: Up to 1080p60; one (1) HD-SDI (SDI to HDMI® converter included), NDI|HX®, virtual webcam

##### Desktop Output: Four (4) DisplayPort™ outputs for setup and maintenance

#### Audio

##### Audio Input: 3.5 mm line in, USB, Dante® input

##### Refer to manufacturer website for lists of compatible Mic Systems and DSPs.

#### Power: 400 W, 100-240 VAC

## Switch Type 3

Specifier Note:

*The IV‑SAM‑VXP‑1B Automate™ VX Plus is a voice-activated camera switching solution that brings the full multi-camera studio experience to meetings, town halls, and classrooms.*

### Basis of Design

#### Crestron IV-SAM-VXN-1B

Specifier Note:

IV-SAM-VXN-1B  
https://www.crestron.com/Products/Workspace-Solutions/Intelligent-Video/1-Beyond-Intelligent-Video/IV-SAM-VXN-1B

### Device Definition

#### Voice-activated, multi-camera switching solution

##### Camera switching and movement is done automatically based on the location of the active speaking participant, using data from room microphones

##### NDI® Compatible (IP video over the network)

##### Support for up to twelve (12) NDI sources

##### Support for Three (3) HD-SDI inputs

#### Connected cameras can be positioned in room as needed, and room configurations can be set to accommodate different furniture layouts

#### Support for combining multiple sources, title superimposition, and custom graphics and layouts.

#### Compatible with control modules from same manufacturer, API available for custom user interfaces and control systems from third-party manufacturers

#### Built-in encoder and recorder to enable multiple live streams and over one hundred (100) hours of recording

#### Design and configuration through proprietary web interface program

#### Accepts AC power input

### Device Architecture

#### Physical Form factor

##### Dimensions

###### Height: 3.5 in. (89 mm)

###### Width: 16.75 in. (425 mm)

###### Depth: 14.5 in. (368 mm)

###### Weight: 14 lb. (6.35 kg)

### Functions

#### Device Capabilities

##### Titles, Graphics, Layouts: Titles, logos, backgrounds can be added; graphic designer to create any multi-source layout

##### Program Record: MP4 file (H.264 codec). User-selectable bitrate up to 10 Mbps

##### Recording Capacity: Records to internal 500 GB SSD storage

##### Streaming Encoder: Can stream to any RTMP server. Presets included for popular CDNs

##### NDI Support: For inputs and program output

##### Camera Control: Can control proprietary PTZ and tracking cameras over IP

##### System Control: RESTful API over Network (TCP) for third party control

##### Compatible Codecs: Output via HD-SDI for connection to external conferencing codec or via USB adapter to external systems running Microsoft Teams® software, Zoom Rooms™ software, etc.

##### Configuration: Browser-based configuration with secure log-in and user administration. Customizable preset options for sleep, wake, and scenario actions

#### Connectivity

##### Network Ports: Two (2) RJ45 Gigabit Ethernet

#### Video

##### Video Inputs: 3x HD-SDI Inputs, 12x NDI Inputs, 1x USB Type-A Input

##### Video Output: Up to 1080p60; one (1) HD-SDI (SDI to HDMI® converter included); NDI|HX® and virtual webcam

##### Desktop Output: Four (4) DisplayPort™ outputs for setup and maintenance

#### Audio

##### Audio Input: 3.5 mm line in, USB, Dante® input

##### Refer to manufacturer website for lists of compatible Mic Systems and DSPs.

#### Power: 400 W, 100-240 VAC

# EXECUTION

NOT USED in this Guide Specification. Specifier shall Specify PART 3 On-Site work as needed.

# APPENDICES

## SPECIFIED PRODUCTS

### Crestron IV-CAM-P12

### Crestron IV-CAM-I12

### Crestron IV-CAM-P20

### Crestron IV-CAM-I20

### Crestron IV-CAMHK-12

### Crestron IV-SAM-VXS-1B

### Crestron IV-SAM-VXP-1B

### Crestron IV-SAM-VXN-1B