SECTION 27 41 16

INTEGRATED AUDIO-VIDEO SYSTEMS AND EQUIPMENT

GUIDE SPECIFICATION

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

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# GENERAL

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

## Description: Managed Audio Video Network Switches

# PRODUCTS

## Switch Type 1

Specifier Note:

*The CEN-SWPOE-10 is a 10 port managed Ethernet switch that provides PoE+ from eight of its ports. The two 10 Gigabit Base-X SFP+ ports enable use of transceiver modules to connect to a fiber network.*

### Basis of Design

#### Crestron CEN-SWPOE-10

### Device Architecture

#### Physical Form factor

##### Construction

###### Chassis: Metal, black finish, fan-cooled, vented sides

###### Mounting: Freestanding, or mountable on a flat surface

##### Dimensions

###### Height: 1.57 in. (40 mm)

###### Width: 8.26 in. (210 mm)

###### Depth: 5.51 in. (140 mm)

##### Device weight: 2.13 lb. (9.67 kg)

#### Environmental Operating Conditions

##### 32° to 122° F (0° to 50° C)

##### 10% to 90% RH (non-condensing)

##### Ambient Noise: 3 dB at 77° F (25° C)

####

### Functions

#### Ethernet

##### Ports

###### (8) 10/100/1000Base-T auto-sensing Gigabit Ethernet w/PoE+

###### (2) 10 Gigabit Base-X SFP+

##### Network Standards: IEEE 802.3af, 802.3at

##### MAC Addresses: Up to 16K

##### Switch Fabric: 56 Gbps non-blocking

#### Lite Layer 3 Package

##### Management

###### Out-of-band, IT Web GUI (main), HTTPs, CLI, Telnet, SSH, SNMP, MIBs, RSPAN, Radius users, TACACS+

##### IPv4/IPv6 ACL and QoS

###### Ingress/egress, 1 Kbps shaping, time-based, Single rate policing

##### IPv4/IPv6 Multicast Filtering

###### Automated IGMP between switches, IGMPv3 MLDv2 snooping, proxy ASM and SSM, IGMPv1, v2 querier (compatible with v3), Control packet flooding

##### IPv4/IPv6 Policing and Convergence

###### Auto-VoIP, Policy-based routing, LLDP-MED, IEEE 1588 PTPv2

##### IPv4/IPv6 Authentication Security

###### Successive tiering (DOT1X, MAB, Captive portal), DHCP snooping, Dynamic ARP inspection, IP source guard

##### IPv4/IPv6 Static Routing

###### Port, subnet, VLAN routing, Multicast static routes, DHCPv4 server, DHCP relay, Stateful DHCPv6 Server

##### IPv4/IPv6 Dynamic Routing

###### IPv4: RIP

###### IPv4/IPv6: PIM-SM, PIM-DM, SSM

##### Spanning Tree Green Ethernet

###### STP, MTP, RSTP, PV(R)STP, BPDU/STRG, EEE 802.3az

##### VLANs

###### Static, dynamic, voice, MAC, GVRP/GMRP, Double VLAN mode, Private VLANs

### Controls and Indicators

#### Indicators

##### POWER: (1) green LED, indicates operating power supplied via main power input

##### FAN: (1) green LED, indicates fan is in operation

##### PoE MAX: (1) green LED, indicates the unit is supplying the maximum amount of PoE

##### OOB: (2) green LEDs for Ethernet port, indicates Ethernet link status for out-of-band (service) port

##### 1-8: (2) LEDs per each (8) Ethernet port, left (green) LEDs indicate Ethernet link status for each corresponding port, right (blue) LEDs indicate PoE for each corresponding port

##### 9-10: (1) green LED per SFP+ port, indicates active connection

###  Connectors

#### OOB: (1) 8-wire RJ45, female; 10/100/1000Base-T Ethernet port

#### CONSOLE: USB-C® port, female

#### USB Storage: USB Type B, female

#### 54V - 4.7A: (1) power connector

#### 1-8: (8) 8-wire RJ45, female

##### 10/100/1000Base-T Ethernet ports and PoE Power Sourcing Equipment (PSE) outputs

##### Supports IEEE 802.3at Type 2 PoE+ power sourcing from any ports up to the maximum specified power capabilities

###### Maximum 30 Watts per port, 220 Watts total

#### 9-10: (2) SFP+ ports, female; 10 Gigabit Base-X SFP+

### Power Requirements

#### Main Power: 4.7 Amps @ 100-240 Volts AC, 50/60 Hz

#### Power Consumption

##### Max PoE: 257.7 W

##### No PoE: 18.14 W

##### Standby: 9.51 W

## Switch Type 2

Specifier Note:

*The CEN-SWPOE-ULTRA-12 is a 12 port managed Ethernet switch that provides PoE++ from eight of its ports. The two 10 Gigabit Base-X SFP+ ports enable use of transceiver modules to connect to a fiber network.*

### Basis of Design

#### Crestron CEN-SWPOE-ULTRA-12

### Device Architecture

#### Physical Form factor

##### Construction

###### Chassis: Metal, black finish, fan-cooled, vented sides

###### Mounting: Freestanding or 1U 19-inch rack-mountable with reversible rack ears

##### Dimensions

###### Height: 1.7 in. (43.2 mm)

###### Width: 17.32 in. (440 mm)

###### Depth: 10.11 in. (257 mm)

##### Device weight: 8.44 lb. (3.83 kg)

#### Environmental Operating Conditions

##### 32° to 122° F (0° to 50° C)

##### 10% to 90% RH (non-condensing)

##### Ambient Noise: 50.5 dB at 77° F (25° C)

####

### Functions

#### Ethernet

##### Ports

###### (2) 10/100/1000Base-T auto-sensing Gigabit ethernet

###### (8) 10/100/1000Base-T auto-sensing Gigabit Ethernet w/PoE++

###### (2) 10 Gigabit Base-X SFP+

##### Network Standards: IEEE 802.3af, 802.3at, 802.3bt

##### MAC Addresses: Up to 16K

##### Switch Fabric: 60 Gbps non-blocking

#### Lite Layer 3 Package

##### Management

###### Out-of-band, IT Web GUI (main), HTTPs, CLI, Telnet, SSH, SNMP, MIBs, RSPAN, Radius users, TACACS+

##### IPv4/IPv6 ACL and QoS

###### Ingress/egress, 1 Kbps shaping, time-based, Single rate policing

##### IPv4/IPv6 Multicast Filtering

###### Automated IGMP between switches, IGMPv3 MLDv2 snooping, proxy ASM and SSM, IGMPv1, v2 querier (compatible with v3), Control packet flooding

##### IPv4/IPv6 Policing and Convergence

###### Auto-VoIP, Policy-based routing, LLDP-MED, IEEE 1588 PTPv2

##### IPv4/IPv6 Authentication Security

###### Successive tiering (DOT1X, MAB, Captive portal), DHCP snooping, Dynamic ARP inspection, IP source guard

##### IPv4/IPv6 Static Routing

###### Port, subnet, VLAN routing, Multicast static routes, DHCPv4 server, DHCP relay, Stateful DHCPv6 Server

##### IPv4/IPv6 Dynamic Routing

###### IPv4: RIP

###### IPv4/IPv6: PIM-SM, PIM-DM, SSM

##### Spanning Tree Green Ethernet

###### STP, MTP, RSTP, PV(R)STP, BPDU/STRG, EEE 802.3az

##### VLANs

###### Static, dynamic, voice, MAC, GVRP/GMRP, Double VLAN mode, Private VLANs

### Controls and Indicators

#### Indicators

##### POWER: (1) green LED, indicates operating power supplied via main power input

##### FAN: (1) green LED, indicates fan is in operation

##### PoE MAX: (1) green LED, indicates the unit is supplying the maximum amount of PoE

##### OOB: (2) green LEDs for Ethernet port, indicates Ethernet link status for out-of-band (service) port

##### 1-8: (2) LEDs per each (8) Ethernet port, left (green) LEDs indicate Ethernet link status for each corresponding port, right (blue) LEDs indicate PoE for each corresponding port

##### 9-10: (1) green LED per each (2) Ethernet port, indicates Ethernet link status for each corresponding port.

##### 11-12: (1) green LED per SFP+ port, indicates active connection

### Connectors

#### OOB: (1) 8-wire RJ45, female; 10/100/1000Base-T Ethernet port

#### CONSOLE: USB-C® port, female

#### USB-C: USB-C® port, female

#### 100-240V: (1) power connector

#### USB: USB Type B, female

#### LED EXT: USB-C® port, female

#### 1-8: (8) 8-wire RJ45, female

##### 10/100/1000Base-T Ethernet ports and PoE Power Sourcing Equipment (PSE) outputs

##### Supports IEEE 802.3bt Type 3 PoE++ power sourcing from any ports up to the maximum specified power capabilities

###### Maximum 90 Watts per port, 720 Watts total

#### 9-10: (2) 8-wire RJ45, female; 10/100/1000Base-T Ethernet Ports

#### 11-12: (2) SFP+ ports, female; 10 Gigabit Base-X SFP+

### Power Requirements

#### Main Power: 10 Amps @ 100-240 Volts AC, 50/60 Hz

#### Power Consumption

##### Max PoE: 837.7 W

##### No PoE: 26.3 W

##### Standby: 18 W

## Switch Type 3

Specifier Note:

*The CEN-SWPOE-30 is a 30 port managed Ethernet switch that provides PoE+ from 24 of its ports. The four 10 Gigabit Base-X SFP+ ports enable use of transceiver modules to connect to a fiber network.*

### Basis of Design

#### Crestron CEN-SWPOE-30

### Device Architecture

#### Physical Form factor

##### Construction

###### Chassis: Metal, black finish, fan-cooled, vented sides

###### Mounting: Freestanding or 1U 19-inch rack-mountable with reversible rack ears

##### Dimensions

###### Height: 1.7 in. (43.2 mm)

###### Width: 17.32 in. (440 mm)

###### Depth: 15.74 in. (400 mm)

##### Device weight: 12.02 lb. (5.45 kg)

#### Environmental Operating Conditions

##### 32° to 122° F (0° to 50° C)

##### 10% to 90% RH (non-condensing)

##### Ambient Noise: 42 dB at 77° F (25° C)

####

### Functions

#### Ethernet

##### Ports

###### (2) 10/100/1000Base-T auto-sensing Gigabit ethernet

###### (24) 10/100/1000Base-T auto-sensing Gigabit Ethernet w/PoE+

###### (4) 10 Gigabit Base-X SFP+

##### Network Standards: IEEE 802.3af, 802.3at

##### MAC Addresses: Up to 16K

##### Switch Fabric: 132 Gbps non-blocking

#### Lite Layer 3 Package

##### Management

###### Out-of-band, IT Web GUI (main), HTTPs, CLI, Telnet, SSH, SNMP, MIBs, RSPAN, Radius users, TACACS+

##### IPv4/IPv6 ACL and QoS

###### Ingress/egress, 1 Kbps shaping, time-based, Single rate policing

##### IPv4/IPv6 Multicast Filtering

###### Automated IGMP between switches, IGMPv3 MLDv2 snooping, proxy ASM and SSM, IGMPv1, v2 querier (compatible with v3), Control packet flooding

##### IPv4/IPv6 Policing and Convergence

###### Auto-VoIP, Policy-based routing, LLDP-MED, IEEE 1588 PTPv2

##### IPv4/IPv6 Authentication Security

###### Successive tiering (DOT1X, MAB, Captive portal), DHCP snooping, Dynamic ARP inspection, IP source guard

##### IPv4/IPv6 Static Routing

###### Port, subnet, VLAN routing, Multicast static routes, DHCPv4 server, DHCP relay, Stateful DHCPv6 Server

##### IPv4/IPv6 Dynamic Routing

###### IPv4: RIP

###### IPv4/IPv6: PIM-SM, PIM-DM, SSM

##### Spanning Tree Green Ethernet

###### STP, MTP, RSTP, PV(R)STP, BPDU/STRG, EEE 802.3az

##### VLANs

###### Static, dynamic, voice, MAC, GVRP/GMRP, Double VLAN mode, Private VLANs

### Controls and Indicators

#### Indicators

##### POWER: (1) green LED, indicates operating power supplied via main power input

##### FAN: (1) green LED, indicates fan is in operation

##### PoE MAX: (1) green LED, indicates the unit is supplying the maximum amount of PoE

##### OOB: (2) green LEDs for Ethernet port, indicates Ethernet link status for out-of-band (service) port

##### 1-24: (2) LEDs per each (24) Ethernet port, left (green) LEDs indicate Ethernet link status for each corresponding port, right (blue) LEDs indicate PoE for each corresponding port

##### 25-26: (1) green LED per each (2) Ethernet port, indicates Ethernet link status for each corresponding port.

##### 27-30: (1) green LED per SFP+ port, indicates active connection

### Connectors

#### OOB: (1) 8-wire RJ45, female; 10/100/1000Base-T Ethernet port

#### CONSOLE: USB-C® port, female

#### 100-240V: (1) power connector

#### USB: USB Type B, female

#### LED EXT: USB-C® port, female

#### 1-24: (24) 8-wire RJ45, female

##### 10/100/1000Base-T Ethernet ports and PoE Power Sourcing Equipment (PSE) outputs

##### Supports IEEE 802.3at Type 2 PoE+ power sourcing from any ports up to the maximum specified power capabilities

###### Maximum 30 Watts per port, 480 Watts total

#### 25-26: (2) 8-wire RJ45, female; 10/100/1000Base-T Ethernet Ports

#### 27-30: (4) SFP+ ports, female; 10 Gigabit Base-X SFP+

### Power Requirements

#### Main Power: 6.4-2.5 Amps @ 100-240 Volts AC, 50/60 Hz

#### Power Consumption

##### Max PoE: 614 W

##### No PoE: 46.8 W

##### Standby: 33.90 W

## Switch Type 4

Specifier Note:

*The CEN-SWPOE-48 is a 48 port managed Ethernet switch that provides PoE+ from 40 of its ports. The eight 10 Gigabit Base-X SFP+ ports enable use of transceiver modules to connect to a fiber network.*

### Basis of Design

#### Crestron CEN-SWPOE-48

### Device Architecture

#### Physical Form factor

##### Construction

###### Chassis: Metal, black finish, fan-cooled, vented sides

###### Mounting: Freestanding or 1U 19-inch rack-mountable with reversible rack ears

##### Dimensions

###### Height: 1.7 in. (43.2 mm)

###### Width: 17.32 in. (440 mm)

###### Depth: 15.74 in. (400 mm)

##### Device weight: 13.91 lb. (6.31 kg)

#### Environmental Operating Conditions

##### 32° to 122° F (0° to 50° C)

##### 10% to 90% RH (non-condensing)

##### Ambient Noise: 59 dB at 77° F (25° C)

####

### Functions

#### Ethernet

##### Ports

###### (40) 10/100/1000Base-T auto-sensing Gigabit Ethernet w/PoE+

###### (8) 10 Gigabit Base-X SFP+

##### Network Standards: IEEE 802.3af, 802.3at

##### MAC Addresses: Up to 16K

##### Switch Fabric: 240 Gbps non-blocking

#### Lite Layer 3 Package

##### Management

###### Out-of-band, IT Web GUI (main), HTTPs, CLI, Telnet, SSH, SNMP, MIBs, RSPAN, Radius users, TACACS+

##### IPv4/IPv6 ACL and QoS

###### Ingress/egress, 1 Kbps shaping, time-based, Single rate policing

##### IPv4/IPv6 Multicast Filtering

###### Automated IGMP between switches, IGMPv3 MLDv2 snooping, proxy ASM and SSM, IGMPv1, v2 querier (compatible with v3), Control packet flooding

##### IPv4/IPv6 Policing and Convergence

###### Auto-VoIP, Policy-based routing, LLDP-MED, IEEE 1588 PTPv2

##### IPv4/IPv6 Authentication Security

###### Successive tiering (DOT1X, MAB, Captive portal), DHCP snooping, Dynamic ARP inspection, IP source guard

##### IPv4/IPv6 Static Routing

###### Port, subnet, VLAN routing, Multicast static routes, DHCPv4 server, DHCP relay, Stateful DHCPv6 Server

##### IPv4/IPv6 Dynamic Routing

###### IPv4: RIP

###### IPv4/IPv6: PIM-SM, PIM-DM, SSM

##### Spanning Tree Green Ethernet

###### STP, MTP, RSTP, PV(R)STP, BPDU/STRG, EEE 802.3az

##### VLANs

###### Static, dynamic, voice, MAC, GVRP/GMRP, Double VLAN mode, Private VLANs

### Controls and Indicators

#### Indicators

##### POWER: (1) green LED, indicates operating power supplied via main power input

##### FAN: (1) green LED, indicates fan is in operation

##### PoE MAX: (1) green LED, indicates the unit is supplying the maximum amount of PoE

##### OOB: (2) green LEDs for Ethernet port, indicates Ethernet link status for out-of-band (service) port

##### 1-40: (2) LEDs per each (40) Ethernet port, left (green) LEDs indicate Ethernet link status for each corresponding port, right (blue) LEDs indicate PoE for each corresponding port

##### 41-48: (1) green LED per SFP+ port, indicates active connection

### Connectors

#### OOB: (1) 8-wire RJ45, female; 10/100/1000Base-T Ethernet port

#### CONSOLE: USB-C® port, female

#### 100-240V: (1) power connector

#### USB: USB Type B, female

#### LED EXT: USB-C® port, female

#### 1-40: (40) 8-wire RJ45, female

##### 10/100/1000Base-T Ethernet ports and PoE Power Sourcing Equipment (PSE) outputs

##### Supports IEEE 802.3at Type 2 PoE+ power sourcing from any ports up to the maximum specified power capabilities

###### Maximum 30 Watts per port, 960 Watts total

#### 41-48: (8) SFP+ ports, female; 10 Gigabit Base-X SFP+

### Power Requirements

#### Main Power: 12 Amps @ 100-240 Volts AC, 50/60 Hz

#### Power Consumption

##### Max PoE: 1197 W

##### No PoE: 89.2 W

##### Standby: 74.5 W

# EXECUTION

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

# APPENDICES

## SPECIFIED PRODUCTS

### Crestron CEN-SWPOE-10

### Crestron CEN-SWPOE-ULTRA-12

### Crestron CEN-SWPOE-30

### Crestron CEN-SWPOE-48

## Input / Output Connection Diagrams

### CEN-SWPOE-10



### CEN-SWPOE-ULTRA-12



### CEN-SWPOE-30



### CEN-SWPOE-48

