

VSS INSTALLATION - 70RFPW24QW8000002

1 Denver Federal Ctr, Denver, CO 80215.

SUBJECT:

Video Surveillance System (VSS) - Product Submittals.

PREPARED FOR

Federal Protective Service
U.S. Department of Homeland Security
Region 8 Headquarters
1 Denver Federal Center, BLDG 25 Suite 1500,
Door W4 Denver, CO 80225.

PREPARED BY

SYSTEC101
11871 E 33rd Ave
Unit B Street Aurora,
CO 80010.

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H5A MULTISENSOR CAMERA

9 MP

12 MP

15 MP

20 MP

24 MP

32 MP

The Avigilon H5A Multisensor camera helps ensure your site is covered from all angles by combining Next-Generation Video Analytics and three or four adjustable sensors into one powerful solution. Monitor virtually any area in all lighting conditions with up to 360-degree views from a single camera. This makes the H5A Multisensor perfect for securing wide areas, including outdoor building corners, parking lots, crossroads, as well as indoor areas with high ceilings, long corridors and hallway intersections.



FEATURES



NEXT-GENERATION VIDEO ANALYTICS

Detects more objects with expanded object classifications and greater accuracy for faster responses, even in crowded scenes.



IMPACT, WATER, DUST & CORROSION PROTECTION

Protects against impact, water, windblown dust and a degree of corrosion with IK10, IP66/67, NEMA Type 4X and TS2 ratings.



ONVIF® COMPLIANT

ONVIF Profile S and T compliance enables easy integration with existing ONVIF infrastructures. Profile G compliance supports search, playback and retrieval of recordings on the edge, while Profile M allows for cross-functionality with third-party analytic solutions.



VARIFOCAL LENSES

Enables you to customize the field of view to optimally protect your site, while lens distortion correction provides a seamless viewing experience.



FIPS 140-2 COMPLIANT WITH INTEGRATED TPM

Meets the high data security standards required by federal government agencies and heavily regulated enterprises with FIPS-compliant cryptography support, integrated TPM and Secure Boot.



HIGH-QUALITY IMAGES IN ALL LIGHTING

Sees clearly in the most challenging lighting conditions with faster frame rates, improved Wide Dynamic Range and optional IR illumination.

ONVIF is a trademark of Onvif, Inc.



Preliminary Specifications - Subject to Change

AVIGILON™

SPECIFICATIONS

IMAGE PERFORMANCE		3.0 MP	5.0 MP	4K (8.0 MP)
Image Sensor		1/2.8" CMOS		1/2.8" CMOS
Active Pixels		1920 (H) x 1080 (V) (16:9) 2048 (H) x 1536 (V) (4:3)	2560 x 1440 (16:9) 2592 x 1944 (4:3)	3840 x 2160 (16:9) 2880 x 2160 (4:3)
3 x Image Sensor, Max Resolution (per image sensor)		5760 (H) x 1080 (V) (16:9) 6144 (H) x 1536 (V) (4:3)	7680 x 1440 (16:9) 7776 x 1944 (4:3)	11520 x 2160 (16:9) 8640 x 2160 (4:3)
4 x Image Sensor, Max Resolution (per image sensor)		7680 (H) x 1080 (V) (16:9) 8192 (H) x 1536 (V) (4:3)	10240 x 1440 (16:9) 10368 x 1944 (4:3)	15360 x 2160 (16:9) 11520 x 2160 (4:3)
Sensor Aspect Ratio		4:3	4:3	16:9
IR Illumination - Optional (high power 850 nm LEDs) ¹		30 m (98 ft) maximum distance at 0 lux when camera is mounted at 4 m (13 ft) off the ground, full tele TBD m, full wide TBD m		
Minimum Illumination		0.020 lux (F1.5) in color mode 0.018 lux (F1.5) in mono mode 0 lux with optional IR illuminator		0.020 lux (F1.5) in color mode 0.016 lux (F1.5) in mono mode 0 lux with optional IR illuminator
Dynamic Range	WDR On	120 dB, true WDR, dual exposure		
	WDR Off	80 dB		
3D Noise Reduction Filter		Yes		
Image Rate-Analytics Enabled on All Sensors²:				
3 x Image Sensor (60 Hz, 50 Hz)		30 / 25 fps	30 / 25 fps	24 / 20 fps
4 x Image Sensor (60 Hz, 50 Hz)		30 / 25 fps	24 / 25 fps	17 / 16 fps
Image Rate-High Framerate Mode³:				
3 x Image Sensor (60 Hz, 50 Hz)		60 / 50 fps	40 / 33 fps	30 / 25 fps
4 x Image Sensor (60 Hz, 50 Hz)		40 / 33 fps	24 / 25 fps	20 / 20 fps

¹ The IR intensity is based on supplied PoE power.

² Full Feature Mode: Analytics, WDR, and Lens Distortion Correction enabled with H.265. Image Rotation at Edge will result in lower frame rates.

³ High Frame Rate Mode: Analytics and WDR disabled with H.265.

IMAGE CONTROL	
Image Compression Method	H.264 HDSM SmartCodec, H.265 HDSM SmartCodec, Motion JPEG
Streaming	Multi-stream H.264, Multi-stream H.265, Motion JPEG
Motion Detection	Selectable sensitivity and threshold
Electronic Shutter Control	Automatic, Manual (1/7.5 to 1/8000 sec)
Iris Control	Fixed
Day/Night Control	Automatic, Manual
Flicker Control	60 Hz, 50 Hz
White Balance	Automatic, Manual
Backlight Compensation	Adjustable
Privacy Zones	Up to 64 zones
Removable Privacy Zones	Up to 64 zones
Lens Distortion Correction	Fixed
Camera Image Rotation	Each head independent

LENS (PER IMAGE SENSOR)	3.0 MP	5.0 MP	4K (8.0 MP)
Lens and Horizontal Field of View Based on Aspect Ratio	53° - 97° (16:9) 53° - 99° (4:3)		43° - 109° (16:9) 58° - 76° (4:3)

LENS (PER IMAGE SENSOR)	3.0 MP	5.0 MP	4K (8.0 MP)
Lens and Vertical Field of View Based on Aspect Ratio	29° - 50° (16:9) 39° - 69° (4:3)		32° - 55° (16:9) 32° - 55° (4:3)
Aperture Range	F1.5 - F1.9		
Control	Fixed Iris, Remote Focus and Zoom		

NETWORK	
Network	Gigabit Ethernet, 100BASE-TX, 1000BASE-TX
Cabling Type	CAT5E
Connector	RJ-45
API	ONVIF® compliance Profile S, T, M, and G (www.onvif.org)
Security	Signed and encrypted firmware, password protection, HTTPS encryption, digest authentication, WS authentication, user access log, 802.1x port based authentication, TLS1.3, FIPS140-2 Level 3 via onboard TPM
Secure Boot	Yes
Protocol	IPv4, IPv6, HTTP, HTTPS, SOAP, DNS, NTP, RTSP, RTCP, RTP, TCP, UDP, IGMPv2, ICMP, DHCP, Zeroconf, ARP, HSTS
Streaming Protocols	RTP/UDP, RTP/UDP multicast, RTP/RTSP/TCP, RTP/RTSP/HTTP/TCP, RTP/RTSP/HTTPS/TCP, HTTP
Device Management Protocols	SNMP v2c, SNMP v3

PERIPHERALS	
USB Port	USB 2.0
Onboard Storage	Dual MicroSD/microSDHC/microSDXC slot - video speed class card required. Class V10 or better recommended. The dual SD cards will work as one contiguous region of storage.

AUXILIARY I/O	
Audio Compression Method	G.711 PCM 8 kHz, Opus
Audio Input/Output	Line level input and output
External I/O Terminal	Alarm In, Alarm Out

ELECTRICAL	IN-CEILING	SURFACE MOUNT	PENDANT MOUNT
Power Consumption	26 W with 24 VDC 37 VA with 24 VAC 25.5 W with IEE 802.3at Type 2 (PoE+)	With IR: 52 W with 24 VDC 74 VA with 24 VAC 51 W with high power PoE (PoE++) Without IR: 26 W with 24 VDC 37 VA with 24 VAC 25.5 W with IEEE 802.3at Type 2 (PoE+)	With IR: 52 W with 24 VDC 74 VA with 24 VAC 51 W with high power PoE (PoE++) Without IR: 26 W with 24 VDC 37 VA with 24 VAC 25.5 W with IEEE 802.3at Type 2 (PoE+)
External Power	24 VDC ± 10 %; 24 VAC rms ± 10 %, 50 or 60 Hz		
PoE*	30 W IEEE 802.3at Type 2 (PoE+)	With IR: 60 W (PoE++): IEEE 802.3bt Type 3, Cisco® UPoE or legacy high-power PoE* Up to 35% IR Power or without IR: 30 W IEEE 802.3at Type 2 (PoE+)	
Redundant Power	Seamless failover between PoE and Aux and back without interruption in camera operation		

* Supported high power PoE products are listed in the **Optional Injectors and Switches** Section and may require adjusting the PoE mode switch. Contact sales or technical support for more information.

MECHANICAL	IN-CEILING	SURFACE MOUNT	PENDANT MOUNT
Dimension	Overall: 298 mm x 161 mm (11.75" x 6.33") Below mounting surface: 298 mm x 64 mm (11.75" x 2.52")	304 mm x 114 mm (11.95" x 4.48")	With wall arm: 385 mm x 262 mm x 299 mm (15.15" x 10.30" x 11.77") With NPT adapter: 299 mm x 248 mm (11.77" x 9.76")
Weight	Mount: 1100 g (2.4 lbs)	Mount: 950 g (2.1 lbs)	Wall Mount: 1190 g (2.6 lbs)

MECHANICAL	IN-CEILING	SURFACE MOUNT	PENDANT MOUNT
	Bezel: 490 g (1.1 lbs) Camera Module (4 lenses): 1590 g (3.5 lbs)	Bezel: 1250 g (2.8 lbs) Camera Module (4 lenses): 1590 g (3.5 lbs) Optional IR Illuminator Ring: 670 g (1.5 lbs)	NPT Adapter Mount: 470 g (1.04 lbs) Pendant: 1680 g (3.7 lbs) Bezel: 1250 g (2.8 lbs) Camera Module (4 lenses): 1590 g (3.5 lbs) Optional IR Illuminator Ring: 670 g (1.5 lbs)
Body	Aluminum, Plastic dome trim	Aluminum	Aluminum
Finish	Plastic, Injection Molded, Pantone 427C	Cast, Anodized and Powder Coated, Pantone 427C	Cast, Anodized and Powder Coated, Pantone 427C
Optional IR Illuminator Ring	Not available	Optional accessory, 30 m (98 ft) IR range	

ENVIRONMENTAL	IN-CEILING	SURFACE MOUNT	PENDANT MOUNT
Operating Temperature	-10 °C to +50 °C (14 °F to 122 °F)		-40 °C to +60 °C (-40 °F to 140 °F)
Storage Temperature	-30 °C to +70 °C (-22 °F to 158 °F)		
Humidity	0 - 95% non-condensing		
IR Illumination Behavior	Not available	<p>The IR illuminator will operate at 100% power from -40 °C to 44 °C (-40 °F to 111 °F). The IR power will reduce to 60% from 44 °C to 53 °C (111 °F to 127 °F). The IR illuminator will turn off when the temperature is greater than 53 °C (127 °F). Hysteresis: 6 °C (10.8 °F).</p> <p>For 25.5 W PoE+, the IR illuminator will operate at only 35% power and will turn off if the temperature is below -26 °C (-15 °F).</p>	

PER SENSOR	
Tilt	+7° to 96° from horizon
Pan	+/-120° (depending on position of image sensors)
Azimuth	+/-180°

CERTIFICATIONS	IN-CEILING	SURFACE MOUNT	PENDANT MOUNT
Certifications/Approvals	UL, cUL, CE, ROHS, RCM, UKCA		
Safety Standards	UL 62368-1, CSA 62368-1, IEC/EN 62368-1		
	UL 2043 (Plenum)	IEC/EN 62471	
Environmental Standards/Ratings	IEC 60529 IP5X rating (dust only)	IEC 60529 IP66, IP67 rating IEC/EN 62262 Impact (IK 10) IEC/EN 60068-2-6 Product Vibration IEC/EN 60068-2-27 Product Shock Type 4X	
Electromagnetic Emissions Standards	FCC Part 15 Subpart B (Class A) ICES-003 (Class A) EN 55032 (Class A) EN 61000-3-2 EN 61000-3-3		
Electromagnetic Immunity Standards	EN 55035 EN 61000-6-1 EN 50121-4 EN 50130-4		
NEMA TS2	Not applicable	NEMA TS2 paragraph 2.2.7 - 2.2.9	

SUPPORTED ANALYTICS EVENTS	
Objects in Area	The event is triggered when the selected object type moves into the region of interest.
Object Loitering	The event is triggered when the selected object type stays within the region of interest for an extended amount of time.
Objects Crossing Beam	The event is triggered when the specified number of objects have crossed the directional beam that is configured over the camera's field of view. The beam can be unidirectional or bidirectional.
Object Appears or Enters Area	The event is triggered by each object that enters the region of interest. This event can be used to count objects.

ORDERING INFORMATION

The variety of mounting options for the H5A Multisensor provides maximum flexibility. All the available camera modules can be used in any of the mounting options.

MOUNTING SCENARIO		ORDERING INFORMATION
PENDANT WALL MOUNT		Order one of: <ul style="list-style-type: none"> Camera module H5AMH-AD-PEND1 H5AMH-DO-COVR1 or H5AMH-DO-COVR1-SMOKE WLMT-1001 Optional, H4AMH-AD-IRIL1
PENDANT NPT MOUNT		Order one of: <ul style="list-style-type: none"> Camera module H5AMH-AD-PEND1 H5AMH-DO-COVR1 or H5AMH-DO-COVR1-SMOKE NPTA-1001 Optional, H4AMH-AD-IRIL1
SURFACE MOUNT		Order one of: <ul style="list-style-type: none"> Camera module H5AMH-AD-DOME1 H5AMH-DO-COVR1 or H5AMH-DO-COVR1-SMOKE Optional, H4AMH-AD-IRIL1
IN-CEILING MOUNT		Order one of: <ul style="list-style-type: none"> Camera module H4AMH-AD-CEIL1 H5AMH-DC-COVR1 or H5AMH-DC-COVR1-SMOKE Optional, CLPNL-1001 if ceiling panel is needed

CAMERA MODULES

With the modular design of the H5A Multisensor, any camera module can be paired with any mounting adapter for maximum versatility and optimal installation. Each camera module must be ordered with a matching mounting adapter and dome cover.

DISPLAY PART NUMBER	DESCRIPTION
9C-H5A-3MH	3X3MP, WDR, 270 degree max field of view, Lightcatcher, 3.3-5.7MM, Camera Only
12C-H5A-4MH	4X3MP, WDR, 360 degree max field of view, Lightcatcher, 3.3-5.7MM, Camera Only
15C-H5A-3MH	3X5MP, WDR, 270 degree max field of view, Lightcatcher, 3.3-5.7MM, Camera Only
20C-H5A-4MH	4X5MP, WDR, 360 degree max field of view, Lightcatcher, 3.3-5.7MM, Camera Only
24C-H5A-3MH	3X8MP, WDR, 270 degree max field of view, Lightcatcher, 3.3-5.7MM, Camera Only
32C-H5A-4MH	4X8MP, WDR, 360 degree max field of view, Lightcatcher, 3.3-5.7MM, Camera Only

MOUNTING ADAPTERS AND DOME COVERS

The H5A Multisensor modular design provides pendant, surface, or in-ceiling mounting adapters and a choice of two dome covers compatible with all the H5A Multisensor camera modules.

DISPLAY PART NUMBER	DESCRIPTION
H5AMH-AD-DOME1	Outdoor surface mount adapter, must order either a H5AMH-DO-COVR1 or H5AMH-DO-COVR1-SMOKE.
H5AMH-AD-PEND1	Outdoor pendant mount adapter, must order one of WLMT-1001 or NPTA-1001 and one of H5AMH-DO-COVR1 or H5AMH-DO-COVR1-SMOKE.
WLMT-1001	Pendant wall arm adapter, for use with H5AMH-AD-PEND1.
NPTA-1001	Pendant NPT adapter for use with H5AMH-AD-PEND1.
PLMT-1001	Aluminum pole mounting bracket, compatible with WLMT-1001.
CRNMT-1001	Aluminum corner mounting bracket, compatible with WLMT-1001.
H4AMH-AD-CEIL1	In-ceiling adapter, must order either a H5AMH-DC-COVR1 or H5AMH-DC-COVR1-SMOKE.
H5AMH-DO-COVR1	Dome bubble and cover, for outdoor surface mount or pendant mount, clear.
H5AMH-DO-COVR1-SMOKE	Dome bubble and cover, for outdoor surface mount or pendant mount, smoked. Not recommended for low light.
H5AMH-DC-COVR1	Dome bubble and cover, for in-ceiling mount, clear.
H5AMH-DC-COVR1-SMOKE	Dome bubble and cover, for in-ceiling mount, smoked. Not recommended for lowlight applications.
CPNL-1001	Metal ceiling panel.

OPTIONAL IR ILLUMINATOR

The optional IR Illuminator is available for the H5A Multisensor when mounted in a pendant or surface mount adapter.

DISPLAY PART NUMBER	DESCRIPTION
H4AMH-AD-IRIL1	Optional IR illuminator ring, for use with H5AMH-DO-COVR1.

OPTIONAL INJECTORS



DISPLAY PART NUMBER	DESCRIPTION
POE60U-1BTE	Gigabit 802.3bt 60 W PoE Injector, single port.
POE-INJ2-PLUS	Indoor single port POE+ injector. Injector operational temperature range -20 °C to +40 °C (-4 °F to 104 °F).

OPTIONAL ACCESSORIES

DISPLAY PART NUMBER	DESCRIPTION
USB-AC56-NA-MSI / USB-AC56-EU-MSI	USB Wi-Fi adapter.
CBLKT-1001	Cable kit replacement for Multi Head cameras.
CAM-FIPS	Camera license to enable FIPS cryptographic mode on the H5A Multisensor or any H5A camera.

ORDERING INFORMATION

The variety of mounting options for the H5A Multisensor provides maximum flexibility. All the available camera modules can be used in any of the mounting options.

MOUNTING SCENARIO		ORDERING INFORMATION
PENDANT WALL MOUNT		Order one of: <ul style="list-style-type: none"> Camera module H5AMH-AD-PEND1 H5AMH-DO-COVR1 or H5AMH-DO-COVR1-SMOKE WLMT-1001 Optional, H4AMH-AD-IRIL1
PENDANT NPT MOUNT		Order one of: <ul style="list-style-type: none"> Camera module H5AMH-AD-PEND1 H5AMH-DO-COVR1 or H5AMH-DO-COVR1-SMOKE NPTA-1001 Optional, H4AMH-AD-IRIL1
SURFACE MOUNT		Order one of: <ul style="list-style-type: none"> Camera module H5AMH-AD-DOME1 H5AMH-DO-COVR1 or H5AMH-DO-COVR1-SMOKE Optional, H4AMH-AD-IRIL1
IN-CEILING MOUNT		Order one of: <ul style="list-style-type: none"> Camera module H4AMH-AD-CEIL1 H5AMH-DC-COVR1 or H5AMH-DC-COVR1-SMOKE Optional, CLPNL-1001 if ceiling panel is needed

CAMERA MODULES

With the modular design of the H5A Multisensor, any camera module can be paired with any mounting adapter for maximum versatility and optimal installation. Each camera module must be ordered with a matching mounting adapter and dome cover.

DISPLAY PART NUMBER	DESCRIPTION
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15C-H5A-3MH	3X5MP, WDR, 270 degree max field of view, Lightcatcher, 3.3-5.7MM, Camera Only
20C-H5A-4MH	4X5MP, WDR, 360 degree max field of view, Lightcatcher, 3.3-5.7MM, Camera Only
24C-H5A-3MH	3X8MP, WDR, 270 degree max field of view, Lightcatcher, 3.3-5.7MM, Camera Only
32C-H5A-4MH	4X8MP, WDR, 360 degree max field of view, Lightcatcher, 3.3-5.7MM, Camera Only

MOUNTING ADAPTERS AND DOME COVERS

The H5A Multisensor modular design provides pendant, surface, or in-ceiling mounting adapters and a choice of two dome covers compatible with all the H5A Multisensor camera modules.

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H5AMH-AD-PEND1	Outdoor pendant mount adapter, must order one of WLMT-1001 or NPTA-1001 and one of H5AMH-DO-COVR1 or H5AMH-DO-COVR1-SMOKE.
WLMT-1001	Pendant wall arm adapter, for use with H5AMH-AD-PEND1.
NPTA-1001	Pendant NPT adapter for use with H5AMH-AD-PEND1.
PLMT-1001	Aluminum pole mounting bracket, compatible with WLMT-1001.
CRNMT-1001	Aluminum corner mounting bracket, compatible with WLMT-1001.
H4AMH-AD-CEIL1	In-ceiling adapter, must order either a H5AMH-DC-COVR1 or H5AMH-DC-COVR1-SMOKE.
H5AMH-DO-COVR1	Dome bubble and cover, for outdoor surface mount or pendant mount, clear.
H5AMH-DO-COVR1-SMOKE	Dome bubble and cover, for outdoor surface mount or pendant mount, smoked. Not recommended for low light.
H5AMH-DC-COVR1	Dome bubble and cover, for in-ceiling mount, clear.
H5AMH-DC-COVR1-SMOKE	Dome bubble and cover, for in-ceiling mount, smoked. Not recommended for lowlight applications.
CPNL-1001	Metal ceiling panel.

OPTIONAL IR ILLUMINATOR

The optional IR Illuminator is available for the H5A Multisensor when mounted in a pendant or surface mount adapter.

DISPLAY PART NUMBER	DESCRIPTION
H4AMH-AD-IRIL1	Optional IR illuminator ring, for use with H5AMH-DO-COVR1.

OPTIONAL INJECTORS

DISPLAY PART NUMBER	DESCRIPTION
POE60U-1BTE	Gigabit 802.3bt 60 W PoE Injector, single port.
POE-INJ2-PLUS	Indoor single port POE+ injector. Injector operational temperature range -20 °C to +40 °C (-4 °F to 104 °F).

OPTIONAL ACCESSORIES

DISPLAY PART NUMBER	DESCRIPTION
USB-AC56-NA-MSI / USB-AC56-EU-MSI	USB Wi-Fi adapter.
CBLKT-1001	Cable kit replacement for Multi Head cameras.
CAM-FIPS	Camera license to enable FIPS cryptographic mode on the H5A Multisensor or any H5A camera.

H5A Fisheye Camera

8 MP

12 MP

The Avigilon H5A Fisheye Camera is a cost-effective and easy-to-install solution that provides 360° panoramic views of large areas from a single vantage point, bringing superior situational awareness without any blind spots. Facilities such as schools, retailers, offices, hospitals and manufacturing plants can leverage the camera's high-resolution video to monitor processes and optimize operational efficiencies, along with its analytics and AI capabilities to proactively detect critical events and enhance the productivity of security teams.



Features



360° Panoramic Views

Provides 360° coverage from a single vantage point to help lower overall video security deployment costs.



H.264 and H.265 with HDSM SmartCodec™ Technology

Optimizes compression levels for regions in a scene to help maximize bandwidth savings and keep internet connectivity costs down.



Low-profile & Easy-to-install Design

Offers unobtrusive monitoring with a paintable front plate¹ that can be customized to fit in with interior aesthetics, backed by an easy installation.



FIPS 140-2 Compliant

Brings increased data security with FIPS-compliant cryptography enabled on cameras².



ONVIF® Compliant

ONVIF Profile S, T, G, and M compliance allows easy integration with existing ONVIF infrastructures.



Next-Generation Video Analytics

Detects more people with greater accuracy, even in crowded scenes, to support faster responses.



Water & Impact Rated³

IP66/67 rating for water resistance and IK10 impact rating for vandal resistance.



Wide Dynamic Range

Captures details in scenes with both very bright and very dark areas.



Adaptive IR Technology³

Provides optimal brightness in scenes with low-light for high-resolution image detail.



Audio Recording Capabilities

Built-in microphone offers an optional audio recording capability for additional evidentiary detail.

ONVIF is a trademark of Onvif, Inc.

¹ Available on in-ceiling mount only.

² Optional purchase of FIPS Level 1 camera license.

³ Available on surface mount only.

Specifications

Image Performance		8.0 MP	12.0 MP
Image Sensor		1/1.8" progressive scan CMOS	1/2.3" progressive scan CMOS
Active Pixels (H x V)		2048 x 2048	3008 x 3008
Imaging Area (H x V)		4,096 mm x 4,096 mm	4,662 mm x 4,662 mm
Warped 360° Video Streaming Resolutions	Primary Stream	2048 x 2048	3008 x 3008
	Secondary Stream	512 x 512; 384 x 384	512 x 512; 384 x 384
	Tertiary Stream	320 x 320	320 x 320
Dewarped Video Streaming Resolutions	Primary Stream	180° x 2 (2304 x 928); 120° x 3 (1536 x 928); 90° x 4 (1152 x 928)	180° x 2 (3072 x 1232); 120° x 3 (2048 x 1232); 90° x 4 (1536 x 1232)
	Secondary Stream	180° x 2 (576 x 232); 120° x 3 (384 x 232); 90° x 4 (288 x 232)	180° x 2 (768 x 304); 120° x 3 (512 x 304); 90° x 4 (384 x 304)
Horizontal Angle of View (HFOV)		180°	
Max Image Rate		(50 Hz/60 Hz): 25 fps/30 fps	(30 Hz/60 Hz): 15 fps/30 fps ¹
Dynamic Range	WDR Off:	Up to 83 dB	
	WDR On:	Up to 120 dB	
Camera Operating Mode		Full feature or Dewarped video mode (Analytics disabled in Dewarped video mode)	Full feature, High framerate, or Dewarped video mode (Analytics disabled in High framerate and Dewarped video modes)
Bandwidth Management		HDSM SmartCodec technology; Idle scene mode	
3D Noise Reduction Filter		Yes	

¹ Max Frame Rate of 30 fps is only achievable with High Frame Rate mode enabled. High Frame Rate mode will disable analytics.

Lens and IR Illumination		8.0 MP	12.0 MP
Lens		1.4 mm	1.6 mm
IR Illumination Max Distance (high power 850 nm LEDs)		17 m (55 ft) max distance at 0 lux	12 m (39 ft) max distance at 0 lux
Minimum Illumination	With IR	0 lux	0 lux
	Without IR	0.10 lux in monochrome mode; 0.20 lux in color mode	0.19 lux in monochrome mode; 0.38 lux in color mode
Field of View		360°	
Max Aperture		F2.0	
Control		Fixed iris	

Image Control	
Image Compression Method	H.264 HDSM SmartCodec, H.265 HDSM SmartCodec, Motion JPEG
Streaming	Multi-stream H.264, Multi-stream H.265, Motion JPEG
Motion Detection	Pixel motion and classified object detection
Tamper Detection	Yes
Electronic Shutter Control	Automatic, Manual (1/6 to 1/8000 sec)
Iris Control	Fixed
Day/Night Control	Automatic, Manual
Flicker Control	60 Hz, 50 Hz
White Balance	Automatic, Manual
Backlight Compensation	Adjustable
Privacy Zones	Up to 64 zones

Network	
Network	100BASE-TX, RJ45 Connector, CAT5e Cabling
ONVIF	ONVIF compliance Profile S, Profile T, Profile G, and Profile M (www.onvif.org)
Security	Password protection, HTTPS encryption, digest authentication, WS authentication, user access log, 802.1x port based authentication, FIPS 140-2 L1 (with optional camera license)
Protocols	IPv6, IPv4, HTTP, HTTPS, SOAP, DNS, NTP, RTSP, RTCP, RTP, TCP, UDP, IGMPv3, ICMP, DHCP, Zeroconf, ARP, HSTS, QoS, DSCP
Streaming Protocols	RTP/UDP, RTP/UDP multicast, RTP/RTSP/TCP, RTP/RTSP/HTTP/TCP, RTP/RTSP/HTTPS/TCP, HTTP
Device Management Protocols	SNMP v2c, SNMP v3

Peripherals	
Onboard Storage	2 x microSD/microSDHC/microSDXC slots - video speed class card required. Class V10 or better recommended. Currently one of the two SD card slots is available for onboard storage.

Auxiliary I/O	
Audio Compression Method	Opus, G.711 PCM 8 kHz
Audio Input/Output	Line level I/O and built-in microphone (can be enabled)
External I/O Terminals	Alarm In, Alarm Out

Mechanical		Surface Mount	In-Ceiling Mount
Dimensions (LxWxH)	Camera	145.5 mm x 145.5 mm x 62 mm; 5.72" x 5.72" x 2.44"	200.6 mm x 200.6 mm x 14.2 mm; 7.9" x 7.9" x 0.56"
	With Mounting Plate	145.5 mm x 145.5 mm x 62 mm; 5.72" x 5.72" x 2.44"	N/A
	With NPT Adapter	158 mm x 158 mm x 103 mm; 6.2" x 6.2" x 4.1"	N/A
Weight	Camera	0.52 kg (1.15 lbs)	0.595 kg (1.31 lbs)
	With Mounting Plate	0.605 kg (1.33 lbs)	N/A
	With NPT Adapter	0.838 kg (1.83 lbs)	N/A
Max. Ceiling Thickness		N/A	31.75 mm; 1.25"
Dome Bubble		Polycarbonate, clear	N/A
Body		Aluminum	Polycarbonate
Housing		Aluminum	Polycarbonate
Finish		Cast, powder coated, close to RAL9002	Plastic, injection molded, close to RAL9002

Electrical		Surface Mount	In-Ceiling Mount
Power Consumption		With IR: 26 W Without IR: 11 W	11 W
Power Source		VDC: 12 V +/-10%, 26 W min PoE: IEEE 802.3af Class 3 PoE+: IEEE 802.3at Class 4	VDC: 12 V +/-10%, 11 W min PoE: IEEE 802.3af Class 3
Power Connector		2-pin terminal block	
RTC Battery Backup		3V manganese lithium	
Memory		2 GB RAM, 512 MB Flash	

Environmental		Surface Mount	In-Ceiling Mount
Operating Temperature		-40 °C to +60 °C (-40 °F to 140 °F)	-10 °C to +60 °C (14 °F to 140 °F)
IR Illuminator Behavior		IR illuminator will turn off if the temperature is 55 °C (131 °F) or higher. The illuminator will operate at 75% power if the temperature is between 27 °C (80 °F) and 39 °C (102 °F) and will operate at 40% power if the	N/A

Environmental	Surface Mount	In-Ceiling Mount
	temperature is between 39 °C (102 °F) and 55 °C (131 °F). Hysteresis: 2 °C (3.6 °F).	
Storage Temperature	-10 °C to +70 °C (14 °F to 158 °F)	
Humidity	0 - 95% non-condensing	

Certifications	Surface Mount	In-Ceiling Mount
Certifications/Approvals	UL, cUL, CE, ROHS, RCM, EAC, UKCA, KC, BIS, NOM	
Safety	UL 62368-1, CSA 62368-1, IEC/EN 62368-1, IEC 62471	
Environmental	IK10 Impact Rating, IP66 and IP67 Weather Rating	IP5X Ingress Rating
Electromagnetic Emissions	FCC Part 15 Subpart B Class B, IC ICES-003 Class B, EN 55032 Class B, EN 50121-4, EN 50130-4, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3	
Electromagnetic Immunity	EN 50121-4, EN 50130-4, EN 55035, EN 61000-6-1	

Analytics Specifications

Supported Analytics Events ¹	
Objects in Area	The event is triggered when the selected object type moves into the region of interest.
Object Loitering	The event is triggered when the selected object type moves into the region of interest and then stays for an extended amount of time.
Objects Crossing Beam	The event is triggered when the specified number of objects have crossed the directional beam that is configured over the camera's field of view. The beam can be unidirectional or bidirectional.
Object Appears or Enters Area	The event is triggered by each object that enters the region of interest. This event can be used to count objects.
Object Not Present in Area	The event is triggered when no objects are present in the region of interest.
Objects Enter Area	The event is triggered when the specified number of objects have entered the region of interest.
Objects Leave Area	The event is triggered when the specified number of objects have left the region of interest.
Object Stops in Area	The event is triggered when an object moves into a region of interest and then stops moving for the specified threshold time.
Direction Violated	The event is triggered when an object moves in the prohibited direction of travel.
Tamper Detection	The event is triggered when the scene unexpectedly changes.

Supported Classified Object Types ¹	
Object Types	Person

¹ Analytics are supported when the camera is installed in the ceiling-mounted orientation mode. There is an analytics blind spot in the middle 20% of the fisheye field of view. Objects will be detected moving in and out of the blind spot, but will not be detected when they are inside the blind spot.

Avigilon Control Center (ACC) Versions Supported Features	
ACC Version 6.14.24 or higher	H.265 supported. Fisheye dewarping is not supported on ACC versions earlier than 6.14.24. Analytics are only supported on ACC 7 systems.
ACC Version 7.12.4 or higher	All supported analytic events with people as classified objects. H.265 supported. Fisheye dewarping is not supported on ACC versions earlier than 7.12.2.

Ordering Information

Surface Mount Camera

	MP	WDR	Analytics ¹	Lens	IR	IP66/IP67	HDSM SmartCodec	Lightcatcher Technology
8.0C-H5A-FE-DO1	8.0	✓	✓	Fisheye 1.4 mm		✓	✓	✓
8.0C-H5A-FE-DO1-IR	8.0	✓	✓	Fisheye 1.4 mm	✓	✓	✓	✓
12.0W-H5A-FE-DO1	12.0	✓	✓	Fisheye 1.6 mm		✓	✓	
12.0W-H5A-FE-DO1-IR	12.0	✓	✓	Fisheye 1.6 mm	✓	✓	✓	

¹ Analytics are supported when the camera is installed in the ceiling-mounted orientation mode.

In-Ceiling Mount Camera

	MP	WDR	Analytics ²	Lens	IR	IP66/IP67	HDSM SmartCodec	Lightcatcher Technology
8.0C-H5A-FE-DC1	8.0	✓	✓	Fisheye 1.4 mm			✓	✓
12.0W-H5A-FE-DC1	12.0	✓	✓	Fisheye 1.6 mm			✓	

² Analytics are supported when the camera is installed in the ceiling-mounted orientation mode.

Optional Camera Licenses and Accessories

H5A-FE-MT-NPTA1	NPT adapter for the H5A Fisheye surface mount camera
CM-MT-WALL1	Pendant wall mount, compatible with H5A-FE-MT-NPTA1
H4-MT-POLE1	Pole mount, compatible with CM-MT-WALL1
CRNMT-1001	Aluminum corner mounting bracket, compatible with CM-MT-WALL1
H5A-FE-DC-CPNL1	Metal ceiling panel to reinforce the existing ceiling tile in suspended ceiling installations
H5A-FE-DD-CLER1	Package of 3 dome replacement parts for H5A fisheye surface mount camera
CAM-FIPS	Camera license to enable FIPS Level 1 cryptographic mode on any H5A camera

¹ Excludes H5A Explosion-Protected camera line.

Support

Learn more and find additional documentation at [avigilon.com](https://www.avigilon.com) or email sales@avigilon.com for specific product support.



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H5SL CAMERA LINE

1.3 MP

2 MP

3 MP

5 MP

The H5SL camera is a versatile and cost-effective security solution that is backed by an industry-leading warranty. With value and simplicity at the heart of this camera line, you will enjoy the ease of installation, flexible design features and various lens options the H5SL offers. Built on the H5 platform, it combines our patented LightCatcher and Wide Dynamic Range (WDR) technologies to provide exceptional image quality in complex lighting.



FEATURES



UNUSUAL MOTION DETECTION

Uses AI to notify you of unusual events that might otherwise have been missed, offering increased situational awareness and helping you effectively monitor more cameras.



LIGHTCATCHER™ TECHNOLOGY

Offers excellent image detail in low-light settings.



DUAL EXPOSURE WIDE DYNAMIC RANGE

Capture details in scenes with both very bright and dark areas.



ONVIF® COMPLIANT

Built on an open platform to allow integration with other security solutions.



MULTIPLE LENS OPTIONS

Choose from various lens types, including long zoom, for flexible coverage options.



H.265 WITH HDSM SMARTCODEC™ TECHNOLOGY

Optimizes compression levels for regions in a scene to help maximize bandwidth savings, helping to keep internet connectivity costs down.



ADAPTIVE INFRARED (IR)

Automatically adjusts IR beam width and exposure settings based on scene conditions to help maximize image quality.



RELAY I/O CONNECTIONS

Incorporate and configure input/output actions and alarms for fast event response.



MADE IN NORTH AMERICA AND 5 YEAR WARRANTY

Manufactured in North America* using globally-sourced materials and North American expertise, Avigilon stands behind the quality of its products. Backed by a 5 year warranty.

ONVIF is a trademark of Onvif, Inc.

* With manufacturing facilities in both the United States and Canada, our "Made In North America" claim only applies to products from our Texas and British Columbia facilities.

SPECIFICATIONS

IMAGE PERFORMANCE		1.3 MP	2.0 MP	3.0 MP	5.0 MP
Image Sensor		1/2.8" progressive scan CMOS			
Aspect Ratio		5:4	16:9	4:3	4:3
Active Pixels (H x V)		1280 x 1024	1920 x 1080	2048 x 1536	2592 x 1944
Imaging Area (H x V)		3.2 mm x 2.56 mm; 0.126" x 0.101"	4.8 mm x 2.7 mm; 0.189" x 0.106"	5.12 mm x 3.84 mm; 0.202" x 0.151"	5.18 mm x 3.89 mm; 0.204" x 0.153"
Max Image Rate		(50 Hz/60 Hz): 25 fps/30 fps			(50 Hz/60 Hz): 25 fps/24 fps
Dynamic Range	WDR Off	100 dB			
	WDR On	120 dB (dual exposure)			110 dB (dual exposure)
Bandwidth Management		HDSM SmartCodec technology; Idle scene mode			
3D Noise Reduction Filter		Yes			

LENS AND IR ILLUMINATION		3 – 9 MM	3.1 – 8.4 MM	9.5 – 31 MM
IR Illumination Max Distance (high power 850 nm LEDs)	Dome	30 m (100 ft), full tele 20 m (65 ft), full wide	30 m (100 ft), full tele 20 m (65 ft), full wide	N/A
	Bullet	N/A	50 m (165 ft), full tele 30 m (100 ft), full wide	70 m (230 ft), full tele 30 m (100 ft), full wide
Minimum Illumination	1.3 MP	With IR: 0 lux in monochrome mode Without IR: 0.03 lux in color mode; 0.015 lux in monochrome mode	With IR: 0 lux in monochrome mode Without IR: 0.04 lux in color mode; 0.02 lux in monochrome mode	N/A
	2.0 MP			N/A
	3.0 MP			With IR: 0 lux monochrome mode Without IR: 0.03 lux in color mode; 0.015 lux in monochrome mode
	5.0 MP	N/A	With IR: 0 lux in monochrome mode Without IR: 0.02 lux in color mode; 0.01 lux in monochrome mode	With IR: 0 lux in monochrome mode Without IR: 0.015 lux in color mode; 0.007 lux in monochrome mode
Horizontal Angle of View Based on Aspect Ratio	1.3 MP	(16:9)(4:3) 35° – 90° (5:4) 33° – 85°	(16:9)(4:3) 35° – 90° (5:4) 33° – 85°	N/A
	2.0 MP			N/A
	3.0 MP			(16:9) 10° – 32°; (5:4) 9.5° – 32°; (4:3) 9.5° – 30°
	5.0 MP	N/A	(16:9)(4:3) 35° – 90°	(16:9)(4:3) 9.5° – 30°
Vertical Angle of View Based on Aspect Ratio	1.3 MP	(16:9) 20° – 49° (5:4)(4:3) 26° – 66°	(16:9) 20° – 49° (5:4)(4:3) 26° – 66°	N/A
	2.0 MP			N/A
	3.0 MP			(16:9) 6° – 17°; (5:4)(4:3) 7° – 23°
	5.0 MP	N/A	(16:9) 20° – 49°; (4:3) 26° – 66°	(16:9) 6° – 17°; (4:3) 7° – 23°
Max Aperture		F1.4	F1.6	F1.4
Control		P-Iris, Remote Focus and Zoom		

IMAGE CONTROL	
Image Compression Method	H.264 HDSM SmartCodec, H.265 HDSM SmartCodec, Motion JPEG
Streaming	Multi-stream H.264, Multi-stream H.265, Motion JPEG
Motion Detection	Pixel and Unusual Motion Detection (UMD)
Tamper Detection	Yes
Electronic Shutter Control	Automatic, Manual (1/6 to 1/8000 sec)
Iris Control	Automatic, Manual
Day/Night Control	Automatic, Manual

IMAGE CONTROL	
Flicker Control	50 Hz, 60 Hz
White Balance	Automatic, Manual
Backlight Compensation	Adjustable
Privacy Zones	Up to 64 zones

AUXILIARY I/O	
Audio Compression Method	Opus, G.711 PCM 8 kHz
Audio Input/Output	Line level input and output
External I/O Terminals	Alarm In, Alarm Out

NETWORK	
Network	100BASE-TX
Cabling Type	CAT5
Connector	RJ-45
ONVIF	ONVIF compliance version 1.02, 2.00, Profile S, Profile T, Profile G (www.onvif.org)
Security	Password protection, HTTPS encryption, digest authentication, WS authentication, user access log, 802.1x port based authentication
Protocols	IPv6, IPv4, HTTP, HTTPS, SOAP, DNS, NTP, RTSP, RTCP, RTP, TCP, UDP, IGMPv2, ICMP, DHCP, Zeroconf, ARP, HSTS
Streaming Protocols	RTP/UDP, RTP/UDP multicast, RTP/RTSP/TCP, RTP/RTSP/HTTP/TCP, RTP/RTSP/HTTPS/TCP, HTTP
Device Management Protocols	SNMP v2c, SNMP v3

PERIPHERALS	
USB Port	USB 2.0
Onboard Storage	microSD/microSDHC/microSDXC slot – video speed class card required. Class V10 or better recommended.

MECHANICAL (DOME)	SURFACE MOUNT	IN-CEILING MOUNT	PENDANT MOUNT	
			NPT ADAPTER	NPT + WALL MOUNT
Dimensions (LxWxH)	147 mm x 147 mm x 119 mm; 5.8" x 5.8" x 4.7"	174 mm x 174 mm x 162 mm; 6.9" x 6.9" x 6.4"	153 mm x 153 mm x 166 mm; 6.0" x 6.0" x 6.5"	269 mm x 153 mm x 214 mm; 10.6" x 6.0" x 8.4"
Max. Ceiling Thickness	N/A	32 mm (1.25")	N/A	N/A
Weight	Indoor Dome — 0.76 kg; 1.68 lbs Outdoor Dome — 0.78 kg; 1.72 lbs	Indoor Dome — 0.75 kg; 1.65 lbs Outdoor Dome — 0.77 kg; 1.69 lbs	Indoor Dome — 0.75 kg; 1.65 lbs Outdoor Dome — 0.77 kg; 1.69 lbs	Indoor Dome — 2.02 kg; 4.45 lbs Outdoor Dome — 2.04 kg; 4.49 lbs
Dome Bubble	Polycarbonate, clear			
Body	Polycarbonate			Polycarbonate/aluminum
Housing	Vandal resistant			
Finish	Plastic, injection molded, close to RAL9002			Close to RAL9003
Adjustment Range	360° pan, ±180° azimuth, 30° – 95° tilt (recommended), 10° – 95° tilt (maximum)			

MECHANICAL (BULLET)		
Dimensions (LxWxH)		285 mm x 131 mm x 97 mm; 11.2" x 5.1" x 3.8" (including mounting bracket)
Weight	Camera	1.29 kg (2.84 lbs)
	Mounting Bracket	0.21 kg (0.46 lbs)
Body		Aluminum
Housing		Surface mount, tamper resistant, vandal resistant
Finish		Cast, powder coated, close to RAL9002

ORDERING INFORMATION

BULLET

	MP	WDR	LIGHTCATCHER TECHNOLOGY	LENS	IR	IP66/IP67	HDSM SMARTCODEC
1.3C-H5SL-B01-IR	1.3	✓	✓	3.1 - 8.4 mm	✓	✓	✓
2.0C-H5SL-B01-IR	2.0	✓	✓	3.1 - 8.4 mm	✓	✓	✓
3.0C-H5SL-B01-IR	3.0	✓	✓	3.1 - 8.4 mm	✓	✓	✓
3.0C-H5SL-B02-IR	3.0	✓	✓	9.5 - 31 mm	✓	✓	✓
5.0C-H5SL-B01-IR	5.0	✓	✓	3.1 - 8.4 mm	✓	✓	✓
5.0C-H5SL-B02-IR	5.0	✓	✓	9.5 - 31 mm	✓	✓	✓

H4-B0-JBOX1	Junction box for H5SL, H4SL, and H4 HD bullet cameras
H4-MT-POLE1	Aluminum pole mounting bracket, compatible with H4-B0-JBOX1.
H4-MT-CRNR1	Aluminum corner mounting bracket, compatible with H4-B0-JBOX1.
H4-AC-WIFI2-NA / H4-AC-WIFI2-EU	USB Wi-Fi adapter

ORDERING INFORMATION

DOME

The variety of mounting options for the H5SL dome camera provides maximum flexibility. All the available camera modules can be used in any of the mounting options.

MOUNTING SCENARIO		ORDERING INFORMATION
SURFACE MOUNT		Order one of: <ul style="list-style-type: none"> Camera
IN-CEILING MOUNT		Order one of: <ul style="list-style-type: none"> Camera H4SL-MT-DCIL1 Optional, H4-DC-CPNL1 if ceiling panel needed
PENDANT NPT MOUNT		Order one of: <ul style="list-style-type: none"> Camera H4SL-MT-NPTA1
PENDANT WALL MOUNT		Order one of: <ul style="list-style-type: none"> Camera H4SL-MT-NPTA1 CM-MT-WALL1 Optional, H4-MT-POLE1 or H4-MT-CRNR1 if pole or corner mount needed

	MP	WDR	LIGHTCATCHER TECHNOLOGY	LENS	IR	IP66/IP67	HDSM SMARTCODEC
1.3C-H5SL-D1	1.3	✓	✓	3 - 9 mm			✓
1.3C-H5SL-D1-IR	1.3	✓	✓	3 - 9 mm	✓		✓
1.3C-H5SL-D01-IR	1.3	✓	✓	3.1 - 8.4 mm	✓	✓	✓
2.0C-H5SL-D1	2.0	✓	✓	3 - 9 mm			✓
2.0C-H5SL-D1-IR	2.0	✓	✓	3 - 9 mm	✓		✓
2.0C-H5SL-D01-IR	2.0	✓	✓	3.1 - 8.4 mm	✓	✓	✓
3.0C-H5SL-D1	3.0	✓	✓	3 - 9 mm			✓
3.0C-H5SL-D1-IR	3.0	✓	✓	3 - 9 mm	✓		✓
3.0C-H5SL-D01-IR	3.0	✓	✓	3.1 - 8.4 mm	✓	✓	✓
5.0C-H5SL-D1	5.0	✓	✓	3.1 - 8.4 mm			✓
5.0C-H5SL-D1-IR	5.0	✓	✓	3.1 - 8.4 mm	✓		✓
5.0C-H5SL-D01-IR	5.0	✓	✓	3.1 - 8.4 mm	✓	✓	✓

H4SL-MT-DCIL1	In-ceiling mounting adapter for the H5SL and H4SL dome camera
H4SL-MT-NPTA1	NPT adapter for the H5SL and H4SL dome camera
CM-MT-WALL1	Pendant wall mount, compatible with H4SL-MT-NPTA1.
H4-DC-CPNL1	Metal ceiling panel
H4-MT-POLE1	Aluminum pole mounting bracket, compatible with CM-MT-WALL1.
H4-MT-CRNR1	Aluminum corner mounting bracket, compatible with CM-MT-WALL1.
H4-AC-WIFI2-NA / H4-AC-WIFI2-EU	USB Wi-Fi adapter
H4SL-DD-SMOK1	Replacement outdoor smoke dome cover
H4SL-DD-CLER1	Replacement outdoor clear dome cover
H4SL-DI-SMOK1	Replacement indoor smoke dome cover
H4SL-DI-CLER1	Replacement indoor clear dome cover
H4SL-D01-BASE	Replacement outdoor surface mount adapter
H4SL-D1-BASE	Replacement indoor surface mount adapter

SUPPORT

Learn more and find additional documentation at [avigilon.com](https://www.avigilon.com) or email sales@avigilon.com for specific product support.



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MOUNTING ADAPTERS AND DOME COVERS

The H5A Multisensor modular design provides pendant, surface, or in-ceiling mounting adapters and a choice of two dome covers compatible with all the H5A Multisensor camera modules.

DISPLAY PART NUMBER	DESCRIPTION
H5AMH-AD-DOME1	Outdoor surface mount adapter, must order either a H5AMH-DO-COVR1 or H5AMH-DO-COVR1-SMOKE.
H5AMH-AD-PEND1	Outdoor pendant mount adapter, must order one of WLMT-1001 or NPTA-1001 and one of H5AMH-DO-COVR1 or H5AMH-DO-COVR1-SMOKE.
WLMT-1001	Pendant wall arm adapter, for use with H5AMH-AD-PEND1.
NPTA-1001	Pendant NPT adapter for use with H5AMH-AD-PEND1.
PLMT-1001	Aluminum pole mounting bracket, compatible with WLMT-1001.
CRNMT-1001	Aluminum corner mounting bracket, compatible with WLMT-1001.
H4AMH-AD-CEIL1	In-ceiling adapter, must order either a H5AMH-DC-COVR1 or H5AMH-DC-COVR1-SMOKE.
H5AMH-DO-COVR1	Dome bubble and cover, for outdoor surface mount or pendant mount, clear.
H5AMH-DO-COVR1-SMOKE	Dome bubble and cover, for outdoor surface mount or pendant mount, smoked. Not recommended for low light.
H5AMH-DC-COVR1	Dome bubble and cover, for in-ceiling mount, clear.
H5AMH-DC-COVR1-SMOKE	Dome bubble and cover, for in-ceiling mount, smoked. Not recommended for lowlight applications.
CPNL-1001	Metal ceiling panel.

OPTIONAL IR ILLUMINATOR

The optional IR Illuminator is available for the H5A Multisensor when mounted in a pendant or surface mount adapter.

DISPLAY PART NUMBER	DESCRIPTION
H4AMH-AD-IRIL1	Optional IR illuminator ring, for use with H5AMH-DO-COVR1.

OPTIONAL INJECTORS

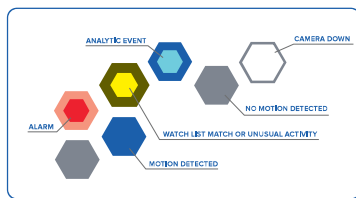
DISPLAY PART NUMBER	DESCRIPTION
POE60U-1BTE	Gigabit 802.3bt 60 W PoE Injector, single port.
POE-INJ2-PLUS	Indoor single port POE+ injector. Injector operational temperature range -20 °C to +40 °C (-4 °F to 104 °F).

OPTIONAL ACCESSORIES

DISPLAY PART NUMBER	DESCRIPTION
USB-AC56-NA-MSI / USB-AC56-EU-MSI	USB Wi-Fi adapter.
CBLKT-1001	Cable kit replacement for Multi Head cameras.
CAM-FIPS	Camera license to enable FIPS cryptographic mode on the H5A Multisensor or any H5A camera.

Avigilon Control Center™ 7 Software

Avigilon Control Center (ACC) software is an easy-to-use video management software that is designed to optimize the way security professionals manage and interact with high-definition video. It efficiently captures and stores HD video, while intelligently managing bandwidth and storage using our patented High Definition Stream Management (HDSM) technology. Version 7 of the software introduces an entirely new way to monitor live video through its Focus of Attention interface, enabling operators to see at a glance what is happening across the entire site and more effectively triage and respond to the most important events.



Focus of Attention Interface

Redefining live video monitoring, Focus of Attention helps increase operator effectiveness by providing an overview of events across all cameras in the site, including Avigilon analytic events, face and license plate watch list matches, Unusual Activity Detection (UAD) events, Unusual Motion Detection (UMD) events, motion events, and alarms. Operators can triage the most important events, reviewing associated video to determine if a response is required.



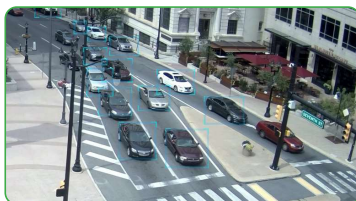
Facial Recognition Technology

Accelerate response times using AI-powered facial recognition technology to detect people of interest based on secure watch lists managed by authorized users at the organization. Populate watch lists by uploading an image or finding a face from recorded video. Robust controls govern the accessibility and retention of watch list data. Start an Avigilon Appearance Search™ query for watch list entries, or receive alerts for potential watch list matches through the Focus of Attention interface. For added security, create alarms that trigger when any individual on the watch list is detected.



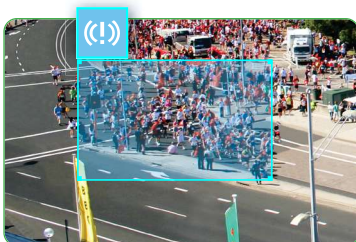
Avigilon Appearance Search Technology

A sophisticated AI search engine that enables investigators to sort through hours of recorded video with ease and quickly locate a person or vehicle of interest across an entire site. Search for a person or vehicle of interest by entering a physical description, by uploading a photo, or by finding an example in recorded video.



Next-Generation Analytics and Self-Learning Video Analytics

ACC™ video management software enables analytic events and alarms to be viewed and searched through an intuitive user interface. Real-time events and forensic capabilities detect and notify operators of scene changes and rules violations.



Unusual Activity and Unusual Motion Detection (UAD & UMD)

Advanced AI technology highlights the unanticipated by automatically flagging unusual activity and motion. Without any configuration, UMD detects atypical movement while UAD is object-aware and detects anomalous behavior (speed and location) of people and vehicles.

UAD **H5A** UMD **H5SL** **H5M** **H4A** **H4SL** **H4 MINI DOME**

Preinstalled on Avigilon Recorders and Appliances

ACC software is pre-installed and configured on Avigilon HD Video Appliances, Network Video Recorders (NVRs), NVR Workstations, ACC ES Recorders, ACC ES Analytics Appliances, ACC ES 8-Port Appliances and the H4ES camera line. You can also install the stand-alone ACC software to meet the needs of a wide variety of projects. Our NVRs come pre-installed with the NVR Analytics Kit to enable our patented Avigilon Appearance Search technology.



Software Editions

The Avigilon Control Center software is offered in three editions: Core, Standard and Enterprise. The Core edition is an entry-level version of our award-winning software that delivers advanced high definition video security capabilities, ease of use, and superior image quality to smaller implementations. The Standard edition is a cost-effective security solution that meets the vital and focused needs of mid-size operations. The Enterprise edition includes all of the Core and Standard features, plus advanced features to make it a powerful, open platform for large-scale video security needs.

SYSTEM	CORE	STANDARD	ENTERPRISE
Cameras per server	24	75	300+*
Cameras per site	24	75	10 000+*
Servers per site	1	1	100+*
Client licenses per server	2	10	Unlimited
Maximum bookmarks	10 000	10 000	10 000
Rule triggers	0	51	Unlimited
HDSM technology support	Yes	Yes	Yes
HDSM SmartCodec technology support	Yes	Yes	Yes
Dual Streaming for ONVIF compliant cameras	Yes	Yes	Yes
H.265, H.264, MPEG4, MJPEG, JPEG2000 video compression	Yes	Yes	Yes
* Actual limits will depend on the hardware environment. Please review Avigilon server and appliance datasheets for applicable limits.			
DEVICE SUPPORT	CORE	STANDARD	ENTERPRISE
Automatic device discovery	Yes	Yes	Yes
Third-party IP cameras and encoders	Yes	Yes	Yes
ONVIF compliant cameras and encoders	Yes	Yes	Yes
H5A cameras with Next-Generation Video Analytics	Yes	Yes	Yes
H4A cameras with Self-Learning Video Analytics	Yes	Yes	Yes
H5SL, H5M, H4SL, H4 Multisensor, H4 PTZ, H4 IR PTZ, H4 Fisheye, H4 Mini Dome, H4ES, and H4 Thermal cameras	Yes	Yes	Yes
H4 Thermal Elevated Temperature Detection (ETD) cameras	Yes	Yes	Yes
Avigilon H3, HD and earlier cameras	Yes	Yes	Yes
Fisheye dewarping	Yes	Yes	Yes
Avigilon analog video encoder	Yes	Yes	Yes
Avigilon Presence Detector (APD) sensor	No	Yes	Yes
H4 Video Intercom	No	Yes	Yes
H4 Pro cameras	No	No	Yes
Avigilon AI Appliance	No	No	Yes
CLIENT	CORE	STANDARD	ENTERPRISE
Video Analytics overlays <i>(Next-Generation Video Analytics, Self-Learning Video Analytics, UAD and UMD)</i>	Yes	Yes	Yes
Joystick support	Yes	Yes	Yes
ACC Mobile 3 app / Web Endpoint including mobile alarm notifications	Yes	Yes	Yes
Avigilon Cloud Services Web Client	Yes	Yes	Yes
FIPS 140-2 Encryption	Yes	Yes	Yes
Certificate management between ACC Client and Server	Yes	Yes	Yes
Emergency privilege override	Yes	Yes	Yes
Two-factor authentication	Yes	Yes	Yes
Password strength meter	Yes	Yes	Yes
Light and dark interface themes	Yes	Yes	Yes
Editable Site View	Yes	Yes	Yes
Multi-camera export with optional password protection	Yes	Yes	Yes
Hourly configurable recording schedule	Yes	Yes	Yes
Saved views	No	Yes	Yes
Maps with configurable icons and camera thumbnail previews	No	Yes	Yes
Integrated web page bookmarking and display	No	Yes	Yes
Focus of Attention interface	No	No	Yes
Active Directory integration	No	No	Yes
Intelligent Virtual Matrix	No	No	Yes
Collaborative investigations	No	No	Yes
Multi-camera privacy blurred export from Avigilon Appearance Search results	No	No	Yes

SEARCH	CORE	STANDARD	ENTERPRISE
UAD and UMD timeline filtering with Skip Play	Yes	Yes	Yes
Intelligent motion search	Yes	Yes	Yes
Thumbnail search	Yes	Yes	Yes
Event search	Yes	Yes	Yes
Point-of-sale (POS) transaction search	No	Yes	Yes
Avigilon Appearance Search technology	No	No	Yes
Alarm search	No	No	Yes
License plate event search	No	No	Yes
ACC INTEROPERABILITY WITH ACM SYSTEMS	CORE	STANDARD	ENTERPRISE
Door and panel input event triggers	No	Yes	Yes
Door access grants	No	Yes	Yes
Shared operator access	No	Yes	Yes
ACM Identity Verification	No	Yes	Yes
ACM Identity Search	No	Yes	Yes
ADD-ON MODULES AND INTEGRATIONS	CORE	STANDARD	ENTERPRISE
POS transaction engine	No	Yes	Yes
Avigilon developed and supported integrations	No	Yes*	Yes
Third party system integrations	No	Yes	Yes
License Plate Recognition with multiple match lists	No	No	Yes
Face Recognition with multiple watch lists	No	No	Yes
*CommScope® iPatch®, RS2 Access It!®, DDS Amadeus 5 and DSX only			
ADDITIONAL FEATURES	CORE	STANDARD	ENTERPRISE
System and motion event e-mail notifications	Yes	Yes	Yes
Two person authenticated recorded video viewing	Yes	Yes	Yes
Camera replacement	Yes	Yes	Yes
Central station notifications including ANSI/SIA DC-09-2013	No	Yes	Yes
Digital input email trigger	No	Yes	Yes
Manual digital output trigger	No	Yes	Yes
Audio recording and output	No	Yes	Yes
APD™ event trigger	No	Yes	Yes
Next-Generation Video Analytics and Self-Learning Video Analytics event configuration	No	Yes	Yes
Camera standby / privacy mode	No	Yes	Yes
Avigilon AI Appliance analytics configuration	No	No	Yes
Redundant recording	No	No	Yes
Failover connections	No	No	Yes
ACC Client alarm notifications and escalation	No	No	Yes
One-time Video Archive	No	Yes	Yes
Tiered Storage Management with Continuous Archive	No	No	Yes

For the latest list of integrations and add-ons supported by Avigilon Control Center software, visit [avigilon.com](https://www.avigilon.com).

System Requirements

Note:

- Run Windows Update before launching Avigilon Control Center (ACC) software.
- NVR recording throughput and retention times can vary according to the number of cameras, camera resolution, estimated percent of motion, continuous recording settings and predefined retention period.
- For best-in-class performance, choose an **Avigilon Certified Solution**.

ACC Client Software

AVIGILON CERTIFIED SOLUTIONS

	DISPLAY MODEL NUMBER	KEY FEATURES
2 Monitor Professional High Performance Remote Monitoring Workstation	RM6-WKS-2MN	<ul style="list-style-type: none">• Preloaded with ACC Client software.• Supports high resolution monitors.• Includes the adapters and accessories for quick deployment.• Avigilon warranty and support included.
4 Monitor Professional High Performance Remote Monitoring Workstation	RM6-WKS-4MN	

SYSTEM REQUIREMENTS	MINIMUM	RECOMMENDED
Operating System	Windows 8.1 (64-bit) or Windows 10 (64-bit) Microsoft .NET 4.6.2	Windows 10 (64-bit) Microsoft .NET 4.6.2
Processor	Intel® dual-core CPU (2.0 GHz) Streaming SIMD Extensions 2 (SSE2)	8th Generation Intel Celeron® CPU or higher
System RAM	4 GB DDR3	8 GB DDR4
Video Card	PCI Express, DirectX 10.0 compliant with 256 MB RAM	NVIDIA® Quadro P620
Network Interface	1 Gbps	1 Gbps
Hard Disk Space	500 GB	500 GB

ACC Server Software

AVIGILON CERTIFIED SOLUTIONS

	DISPLAY MODEL NUMBER	KEY FEATURES
NVR Premium	NVR4X-PRM-64TB / 96TB / 128TB / 157TB / 192TB / 217TB	<ul style="list-style-type: none">• Optimized for video security applications in a 24/7/365 environment• ACC Server software is preinstalled, configured and enhanced for optimal system compatibility• Certified for the Avigilon video security environment - ACC software, LPR, Web Endpoint, Analytics, HDSM and 1-30MP cameras• High throughputs of up to 1800 Mbps• Documented network architecture for a wide variety of applications• Avigilon warranty and support included• Access to Avigilon System Design Tool (SDT) to calculate storage requirements
NVR Standard	NVR4X-STD-16TB-S16 / 16TB / 24TB-S16 / 24TB / 32TB-S16 / 32TB / 48TB-S16 / 48TB	
NVR Value	NVR4-VAL-6TB / 12TB / 18TB / 24TB	
AI NVR	AINVR-PRM-PLUS-64TB / 96 TB / 128 TB / 160 TB AINVR-PRM-64TB / 96 TB / 128 TB / 160 TB AINVR-STD-24TB / 32 TB / 48TB AINVR-VAL-6TB / 12TB	

SYSTEM REQUIREMENTS	MINIMUM	RECOMMENDED
Operating System	Windows Server 2012 R2, Windows 8.1 (64-bit) or Windows 10 (64-bit), Windows Server 2016, Windows Server 2019	Windows Server 2016 or Windows 10
Processor	x86 64 bit dual-core (1.9 GHz) SSE2	Intel® Xeon® E5 v3 (6 cores, 1.9GHz)
System RAM	4 GB DDR3	16 GB DDR4
Network Interface	1 Gbps	4 x 1 Gbps
Hard Drives	SATA-II 7200 RPM Enterprise Class Hard Drives	SATA-III 7200 RPM Enterprise Class Hard Drives

ACC Server Workstation

AVIGILON CERTIFIED SOLUTIONS

	DISPLAY MODEL NUMBER	KEY FEATURES
HD Video Appliance	VMA-AS3-8P2 / VMA-AS3-8P4 / VMA-AS3-8P8 / VMA-AS3-16P06 VMA-AS3-16P09 / VMA-AS3-16P12 / VMA-AS3-24P12 VMA-AS3-24P18 / VMA-AS3-24P24	<ul style="list-style-type: none"> • Preloaded and configured with ACC software • High-performance recording capacity • Throughputs of up to 400 Mbps • Avigilon warranty and support included • Access to Avigilon System Design Tool (SDT) to calculate storage requirements
ACC ES HD Recorder	VMA-RPO-4P2 / VMA-RPO-4P4	
ACC ES Analytics Appliance	VMA-RPA-4P2 / VMA-RPA-4P4	
ACC ES 8-Port Appliance	VMA-ENVR1-8P4 / VMA-ENVR1-8P8	
NVR4X Workstation	NVR4X-WKS-4TB / NVR4X-WKS-8TB	

SYSTEM REQUIREMENTS	MINIMUM	RECOMMENDED
Operating System	Windows 8.1 (64-bit) or Windows 10 (64-bit)	Windows 10 (64-bit)
Processor	Intel Quad-core CPU (2.0 GHz) SSE2	8th Generation Intel Celeron CPU or higher
System RAM	4 GB DDR3	8 GB DDR4
Network Interface	1 Gbps	1 Gbps
Video Card	PCI Express, DirectX 10.0 compliant with 256 MB RAM	NVIDIA Quadro P620
Hard Drives	SATA-II 7200 RPM Hard Drives	SATA-III 7200 RPM Hard Drives

Avigilon Appearance Search Technology and Face Recognition

Avigilon Appearance Search technology and Face Recognition require the ACC Analytics Service to be installed on the same computer as the ACC Server software and must meet the listed system requirements:

AVIGILON CERTIFIED SOLUTIONS

	DISPLAY MODEL NUMBER	KEY FEATURES
AI NVR	AINVR-PRM-PLUS-64TB / 96TB / 128TB / 160 TB AINVR-PRM-64TB / 96TB / 128TB / 160TB AINVR-STD-24TB / 32 TB / 48TB AINVR-VAL-6TB / 12TB	Security-hardened NVR that provides server-side analytics for connected third-party and non-analytic cameras.
Analytics Kit for Avigilon Appearance Search Software	HD-NVR-ANK2-1	Tested and verified to provide enough processing power to run Avigilon Appearance Search feature.

SOFTWARE SYSTEM REQUIREMENTS	APPEARANCE SEARCH ONLY	APPEARANCE SEARCH AND FACE RECOGNITION
NVIDIA GPU Requirements	<ul style="list-style-type: none"> • 4 GB RAM • NVIDIA Pascal™ or NVIDIA Maxwell™ architecture • CUDA compute capability 5.2 or 6.1 • Windows x86_64 Driver Version 418.39 or above 	<ul style="list-style-type: none"> • 4 GB RAM • NVIDIA Pascal™ architecture or NVIDIA Quadro P1000 video card • CUDA compute capability 6.1 • Windows x86_64 Driver Version 418.39 or above

ACC Mobile 3 Software

ACC Mobile version 3 is available for the listed device platforms and requires the ACC Web Endpoint service. The ACC Web Endpoint service comes pre-installed on the AI NVR, ACC ES HD Recorder, ACC ES Analytics Appliance and ACC ES 8-Port Appliance. For NVR systems and HD Video Appliances, it should be installed on the same server as the ACC Server software.

	ANDROID	IOS
Platforms	Android version 6.0 or later	iPad with iOS 11 or later iPhone with iOS 11 or later iPod touch with iOS 11 or later
Processor	n/a	64-bit (Apple A7 or later)

Some images of the product interface have been simulated for illustrative purposes.

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Aug 2021 — Rev 8

GenSPEED® 10,000 Category 6A U/FTP (STP) Cable

An Individually Shielded 10 Gig Option for Peace of Mind

Features and Benefits

- Individually pair shielded design allows for maximum pair separation, increasing key electrical performance parameters and providing EMI protection
- Typical positive PSACR beyond 500 MHz for increased available bandwidth
- Improved cable temperature rating (90°C Plenum, 75°C Riser) for greater protection against increased operating temperatures
- TRU-Mark® print legend contains footage markings from 1000' to 0'

Applications

- IEEE 802.3: 10G BASE-T, 1000 BASE-T, 100 BASE-TX, 10 BASE-T, PoE, PoE+
- ANSI/TIA 854: 1000 BASE-TX
- Digital Video
- Broadband and Baseband Analog Video
- CDDI, Token Ring, ATM

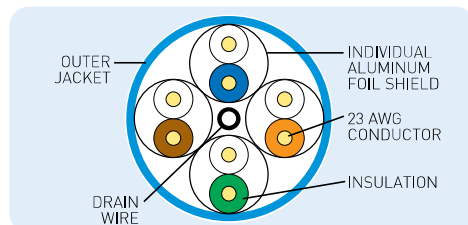
Standard Compliances

- ANSI/TIA 568.2-D
- NEC/CEC Type CMR (UL 1666) for Non-Plenum
- NEC/CEC Type CMP (NFPA 262) for Plenum
- UL 444
- RoHS Compliant Directive 2011/65/EU
- ANSI/TIA 862 (Building Automation)
- ICEA S-116-732
- ISO/IEC 11801 Ed. 2.0 (Class EA)

ELECTRICAL CHARACTERISTICS

	Max.	Nom.
DC Resistance Ohms/100 m (328 ft) @ 20°C	9.38	7.00
DC Resistance Unbalance Individual Pair %	4.00	< 1
Delay Skew ns/100 m	45	20
Nom. Velocity of Propagation % Speed of Light	CMP: 78 CMR: 75	
Characteristic Impedance Frequency (f): 1-600 MHz	Ohms 100 ± 15	

CROSS-SECTION



CONSTRUCTION

Conductors

- 23 AWG solid bare annealed copper

Insulation

- Non-Plenum: Foamed HDPE
- Plenum: Foamed Fluoropolymer

Color Code

- Pair 1: Blue-White
- Pair 2: Orange-White
- Pair 3: Green-White
- Pair 4: Brown-White

Shield

- Each pair is individually shielded with an aluminum foil

Drain Wire

- 24 AWG stranded (7/32) solid tinned copper

Jacket

- Non-Plenum: Flame-Retardant PVC
- Plenum: Low-Smoke, Flame-Retardant PVC

PHYSICAL DATA

	CMR (Non-Plenum)	CMP (Plenum)
Nominal Cable Diameter (in)	0.305	0.295
Nominal Cable Weight (lbs/1000 ft)	43	47
Minimum Bend Radius (in)	2.44	2.36
Maximum Pulling Force (lbs)	32	32
Temperature Rating (°C)		
Installation:	0 to +60	0 to +60
Operation:	-20 to +75	-20 to +90

ELECTRICAL PERFORMANCE

Frequency MHz	Insertion Loss (max)	NEXT (min)	Return Loss (min)	PSANEXT (min)	PSAACRF (min)
1	2.1	74.3	20.0	77.0	77.0
4	3.8	74.3	23.0	77.0	76.2
10	5.9	74.3	25.0	77.0	68.2
16	7.5	74.2	25.0	77.0	64.1
20	8.4	72.8	25.0	77.0	62.2
31.25	10.5	69.9	23.6	77.0	58.3
62.5	15.0	65.4	21.5	75.6	52.3
100	19.1	62.3	20.1	72.5	48.2
200	27.6	57.8	18.0	68.0	42.2
250	31.1	56.3	17.3	66.5	40.2
300	34.3	55.1	16.8	65.3	38.7
350	37.2	54.1	16.3	64.3	37.3
400	40.1	53.3	15.9	63.5	36.2
500	45.3	51.8	15.2	62.0	34.2
600	50.1	50.6	14.7	60.8	32.6

Note: Values are expressed in dB per 100 m (328 ft.) length @ 20°C.

*PSACR & ACR not specified in ANSI/TIA 568-C.2

PART NUMBERS

Standard packaging: 1000' Spool

Jacket Color	Spool		Jacket Color	Spool	
	CMR (Non-Plenum)	CMP (Plenum)		CMR (Non-Plenum)	CMP (Plenum)
Blue	7133786	7131786	Red	7133790	7131790
White	7133787	7131787	Orange	7133791	7131791
Yellow	7133788	7131788	Green	7133792	7131792
Gray	7133789	7131789	Purple	7133730	7133730

Note: Non-stock items may be subject to minimum order quantities. Other colors available.

Data subject to change without notice.



Mini-Com® STP RJ45 Cat 6A TG Jack Module, Blue

CJS6X88TGBUY

The Mini-Com® Cat 6A Shielded RJ45 TG Jack Module is designed to terminate shielded 4-pair, 22-26 AWG twisted pair cable. Each module is 100% factory tested to exceed industry standard performance requirements. TG style termination eliminates the need for a termination tool. Each jack is individually serialized for traceability and is compatible with Mini-Com Modular Patch Panels and Faceplates.

Specifications

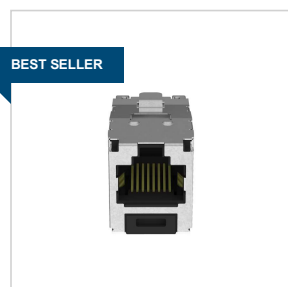
Product Type	Jack Module
Performance Level	Category 6A
Connector Type	Jack Module - Standard
Termination Style	TG Style
Body Material	Polycarbonate
Contact Material	Plated Phosphor Bronze
Module Type	Mini-Com®
Wiring Scheme	T568A/T568B
Shield Type	Shielded (STP)
Sub Brand	Pan-Net®
Maximum Operating Temperature (°C)	75
Maximum Operating Temperature (°F)	167
Minimum Operating Temperature (°C)	-10
Minimum Operating Temperature (°F)	14
Maximum Storage Temperature (°C)	75
Maximum Storage Temperature (°F)	167
Minimum Storage Temperature (°C)	-40
Minimum Storage Temperature (°F)	-40
Resistance Properties	Heat-Resistant
Color	Blue
Standards Met	Exceeds Channel and Component Requirements of ANSI/TIA-568.2-D and ISO 11801 Standards for the Respective Category, Meets IEC 60603-7, Supports 2500 Connection Cycles with IEEE 802.3af / 802.3at and 802.3bt Type 3 and Type 4, UL 1863 and UL 2043 and RoHS Compliant.
Overall Depth (In.)	1.5
Overall Depth (mm)	38.1

Specifications (continued)

Overall Height (In.)	0.74
Overall Height (mm)	18.8
Overall Length (In.)	1.5
Overall Length (mm)	38.1
Overall Width (In.)	0.62
Overall Width (mm)	15.7

Packaging Detail

UPC	07498394522
Std. Pkg. Qty.	1
Std. Pkg. Volume (cf)	0.0032
Std. Ctn. Qty.	50
Std. Ctn. Volume (cf)	0.1604



Shielded RJ45 Cat 6A TG Jack Module, Black

CJS6X88TGY

The Mini-Com® Cat 6A Shielded RJ45 TG Jack Module is designed to terminate 4-pair, 22-26 AWG twisted pair cable. Each module is 100% factory tested to exceed industry standard performance requirements. TG style termination eliminates the need for a termination tool. Each jack is individually serialized for traceability and is compatible with Mini-Com Shielded Modular Patch Panels and Faceplates. The jack module is black.

Specifications

Product Type	Jack Module
Performance Level	Category 6A
Connector Type	Jack Module - Standard
Termination Style	TG Style
Body Material	Polycarbonate
Contact Material	Plated Phosphor Bronze
Module Type	Mini-Com®
Wiring Scheme	T568A/T568B
Shield Type	Shielded (STP)
Sub Brand	Pan-Net®
Maximum Operating Temperature (°C)	75
Maximum Operating Temperature (°F)	167
Minimum Operating Temperature (°C)	-10
Minimum Operating Temperature (°F)	14
Maximum Storage Temperature (°C)	75
Maximum Storage Temperature (°F)	167
Minimum Storage Temperature (°C)	-40
Minimum Storage Temperature (°F)	-40
Resistance Properties	Heat-Resistant
Color	Black

Specifications (continued)

Standards Met	Exceeds ANSI/TIA-568-C.2 Category 6A and ISO 11801 Class EA Channel Requirements for Supporting 10GBASE-T Transmission Over Twisted Pair Cabling Systems in a 4-Connector Configuration up to 100 meters at Swept Frequencies 1 to 500 MHz. Meets ANSI/TIA-568-C.2 and ISO 11801 Category 6A Component Requirements at Swept Frequencies up to 500 MHz, Complies with ANSI/TIA-1096A, Meets IEC 60603-7 and IEC 60512-99-001, Rated for 2500 Cycles with IEEE 802.3af / 802.3at and Proposed 802.3bt Type 3 and Type 4 for up to 100W, UL 1863 and RoHS Compliant
Overall Depth (In.)	1.5
Overall Depth (mm)	38.1
Overall Height (In.)	0.74
Overall Height (mm)	18.8
Overall Length (In.)	1.5
Overall Length (mm)	38.1
Overall Width (In.)	0.62
Overall Width (mm)	15.7

Packaging Detail

UPC	07498303565
Std. Pkg. Qty.	1
Std. Pkg. Volume (cf)	0.0032
Std. Ctn. Qty.	50
Std. Ctn. Volume (cf)	0.1604

Mini-Com® Surface Mount Boxes

specifications

Surface Mount Boxes shall have a low profile design and be available in a variety of port densities. Boxes shall accept most Mini-Com® Modules for fiber, copper, and audio/video applications. The boxes shall mount with screws, adhesive, or optional magnets. The box covers include breakouts for use with surface raceway. Cable tie slots shall be included to provide strain relief on incoming cables. Select boxes shall include a cover with a quick release feature.



technical information

Mounting option:	Mounts easily with screws, adhesive tape or optional magnet
Material:	Box is made of ABS
UL rated:	UL 1863; UL 2043 for select products [^]

Compatible raceway, magnets, and packaging:

Part Number	Breakout Suitable for:	No. of Adhesive Strips	No. of Cable Ties	Label/Label Cover Included	Mounting Screws Included	Screw Cover Included	Magnet Pockets
CBXQ1**-A	LD3/LDPH3	1	1	No	No	No	1
CBXQ2**-A	LD3/LDPH3	2	1	Yes	No	Yes	1
	LD5/LDPH5						
CBXQ4**-A	LD3/LDPH3	2	2	Yes	No	Yes	2
	LD5/LDPH5						
	LD10/LDPH10						
CBXQ6**-A	LD3/LDPH3	2	2	Yes	No	Yes	2
	LD5/LDPH5						
	LD10/LDPH10						
CBX1**-A*	LD3/LDPH3	1	0	No	No	No	0
CBX2**-A	LD3/LDPH3	1	1	No	Yes	No	1
	LD5/LDPH5						
CBX4**-A	LD3/LDPH3	2	2	Yes	Yes	Yes	2
	LD5/LDPH5						

*Raceway does not enter box.

key features and benefits

Quick release cover	Can be removed by hand, does not require tool
Modular	Accepts most Mini-Com® Modules, for easy moves, adds, and changes
Low profile design	Smaller profile offers a less conspicuous look
Raceway breakouts	Compatible with specific raceway, conceals cable entering the box
Cover screw	Boxes with label pocket provide a screw that secures the cover to the base
Labels and label covers	Select boxes include a label pocket to meet TIA/EIA-606B labeling standards
Magnet pockets	Magnet can be used with magnet pocket for optional mounting (CBX1**-A does not include a magnet pocket); CBM-X for use with standard boxes
Shuttered feature	Achieved by installing jack modules with spring shuttered door
UL 2043	Select products [^] are suitable for installations in air handling spaces

applications

Mini-Com® Surface Mount Boxes offer a variety of mounting options, allowing Mini-Com® Modules to be mounted on a variety of surfaces, such as standard walls, metal surfaces, office furniture, etc. Surface mount boxes include breakouts compatible with Panduit's raceway system to conceal and allow cable to run into the box providing a point of connection for voice, video, and data applications.

Mini-Com® Blanks can be used to reserve space for future expansion.

Quick cover removal provides easy access for moves, adds and changes with the ability to secure cover to base if needed.

Select products[^] comply with UL 2043 making them suitable for air handling spaces.

Mini-Com® Surface Mount Boxes with Quick Release Cover

1-port:	CBXQ1*-A [^]
2-port:	CBXQ2*-A [^]
4-port:	CBXQ4*-A [^]
6-port:	CBXQ6*-A [^]

Elongated Surface Mount Boxes

One module space:	CBX1**-A [^]
Two module space:	CBX2**-AY [^]
Four module space:	CBX4**-AY

Accessories

Blank module:	CMB**-X
----------------------	---------

Magnet (quick release boxes): CQBM-X
(elongated boxes): CBM-X

Category 5e, 6, and 6A couplers are not compatible with surface mount boxes.

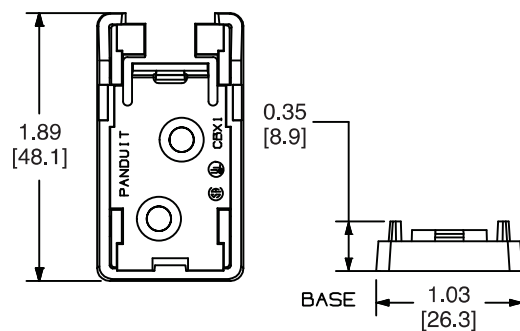
*To designate color, add suffix
EI (Electric Ivory), IW (Off White),
WH (White).

**To designate color, add suffix
EI (Electric Ivory), IW (Off White),
IG (International Gray), WH (White),
BL (Black), AW (Arctic White).

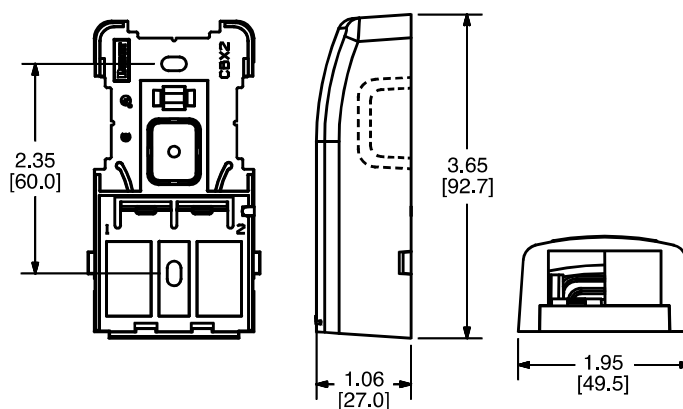
[^] Suitable for air handling spaces

Mini-Com® Surface Mount Boxes

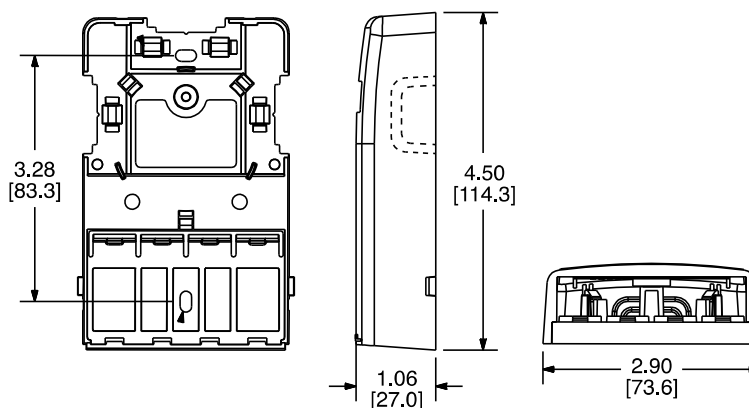
CBX1



CBX2



CBX4



Dimensions are in inches. [Dimensions in brackets are metric].

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or by phone: 800.777.3300

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OTSP27--WW-ENG
2/2021

BEST SELLER



Mini-Com® Blank Module, 1 Port, White

CMBWH-X

The Mini-Com® Blank Module reserves a one module space for future use in Mini-Com Patch Panels, Faceplates, and Surface Mount Boxes. The blank is white.

Specifications

Sub Brand	Pan-Net®
Material	ABS
Product Type	Blank Module
Module Type	Mini-Com®
Color	White
Overall Depth (In.)	1.37
Overall Depth (mm)	34.8
Overall Height (In.)	0.72
Overall Height (mm)	18.3
Overall Width (In.)	0.61
Overall Width (mm)	15.4
Standards Met	RoHS Compliant

Packaging Detail

UPC	07498358692
Std. Pkg. Qty.	10
Std. Pkg. Volume (cf)	0.0100
Std. Ctn. Qty.	50
Std. Ctn. Volume (cf)	0.0501



Pan-Net® Patch Cord

STP6X3BL

This TX6A™ 10Gig Cat 6A STP Patch Cord is a 3-Foot, Black cord constructed of 26 AWG, shielded, twisted pair, stranded, CM/LSZH cable and with high-performance modular plugs. Its tangle-free latch prevents snags and ensures a fast release, streamlining moves, adds, and changes. The slender strain relief boot provides easy access in high-density applications. Enabled with RapidID, the product has pre-installed barcodes for simple port mapping using RapidID software.

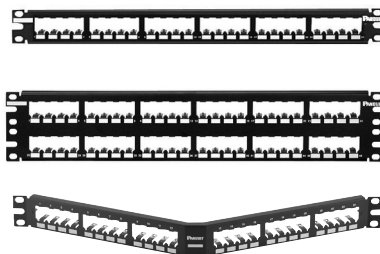
Specifications

Application	(1) Stacking switched and switch-to-switch links (2) Aggregation of Gigabit Ethernet channels (3) Streaming video (4) Scientific modeling (5) Storage area networks (6) Real-time intensive financial transactions (7) Animation (8) Medical imaging
Product Type	Patch Cord
Conductor Gauge (AWG)	26
Conductor Gauge (kcmil)	0.2
Performance Level	Category 6A
Conductor Type	Stranded
Cable Construction	S/FTP
Patch Cord Type	Shielded
Plug Housing Material	Polycarbonate
Jacket Material	LSZH Material
Connector 1 Type	Modular Plug
Connector 2 Type	Modular Plug
Overall Length (ft.)	3
Sub Brand	Pan-Net®
Nominal Cable Outside Diameter (In.)	0.24
Wiring Scheme	T568B
Maximum Operating Temperature (°F)	140
Minimum Operating Temperature (°F)	14
Maximum Storage Temperature (°F)	158
Minimum Storage Temperature (°F)	-40
Boot Color	Black
Color	Black
Flammability Rating	Dual Rated (CM/LSZH)

Mini-Com® All Metal Shielded Modular Patch Panels

SPECIFICATIONS

All metal modular patch panels shall be made of stainless steel and mount to standard racks and cabinets. All metal patch panels shall accept all Mini-Com Shielded Jack Modules for shielded installations. Patch panel write-on areas and optional adhesive labels shall identify each port and panel. Angled all metal modular patch panels shall be available in standard density 24- and 48-ports. Flat all metal modular patch panels shall be available in standard density 24- and 48-port. Flat design in 24 and 48-ports shall also be available with built-in strain relief bar with unique features to support individual cables.



TECHNICAL INFORMATION

Mounting option:	Mounts to standard EIA 19" rack, or 23" rack when used with extender brackets (PEB1 or PEB2) or cabinet
Packaging:	Includes mounting screws (#12-24) and CPT tool for easy removal of Mini-Com Modules
Material:	Stainless steel

KEY FEATURES AND BENEFITS

Modular:	Mini-Com Shielded Jack Modules snap in and out of all Mini-Com All Metal Shielded Modular Patch Panels for easy moves, adds, and changes
Identification:	Dedicated areas allow for port and panel identification with optional adhesive labels
Built-in strain relief bar:	Secures individual cables and provides proper cable support (CP24WSBLY and CP48WSBLY)
Patented angled design:	Allows cable to flow to each side of the rack and minimizes the need for horizontal cable managers; increase risk and closet density
Strain relief bars (optional)	Different styles available to help manage and route rear cables
Angled filler panels (optional)	Reserves space for future use and promotes proper airflow and cooling

APPLICATIONS

Mini-Com All Metal Shielded Modular Patch Panels and Mini-Com Shielded Jack Modules are ideal for use in shielded cabling installations. Angled patch panels minimize the use of horizontal cable managers by allowing the cables to flow directly into vertical cable managers, thus increasing rack density. Selected flat patch panels include a built-in strain relief bar that offers integrated cable tie slots and a 1.46" surface to manage and support individual cables. Mini-Com Shielded Jack Modules bond to the panel when snapped into a Mini-Com All Metal Shielded Modular Patch Panel. When installing the patch panel on the rack, the use of patentpending thread-forming bonding screws bond the shielded panel to the rack. The combination of all-metal patch panels, shielded jack modules and accessories provide a properly grounded system.

Angled Shielded Patch Panels

24-port, 1 RU:	CPA24*
4 8-port, 2 RU:	CPA48**

Flat Shielded Patch Panels

24-port, 1 RU:	CP24*
48-port, 2 RU:	CP48*

Flat Shielded Patch Panels with Strain Relief Bar

24-port, 1 RU:	CP24WSBLY
48-port, 2 RU:	CP48WSBLY

Mini-Com Shielded Jack Modules

Category 6A:	CJS6X88TGY
Category 6:	CJS688TGY
Category 5e:	CJS5E88TGY

Patch Panel Accessories

1 RU angled:	CPAF1*
2 RU angled:	CPAF2*
1 RU flat:	DPFP1^
2 RU flat:	DPFP2^
Transitional covers:	CPATC*

Strain Relief Bars and Accessories

Strain relief bar with clips:	SRBWCY
Strain relief bar (straight):	SRBS19BL-XY
Strain relief bar (U-shaped):	SRB19BLY
High-density strain relief bar manager:	SRBM19BLY
Strain relief bar brackets:	SRBBRKT

Thread Forming Bonding Screws

#12-24 English:	RGTBSG-C
M6 Metric:	RGTBSM6G-C

*Colors: BLY (Black) or WH (White)

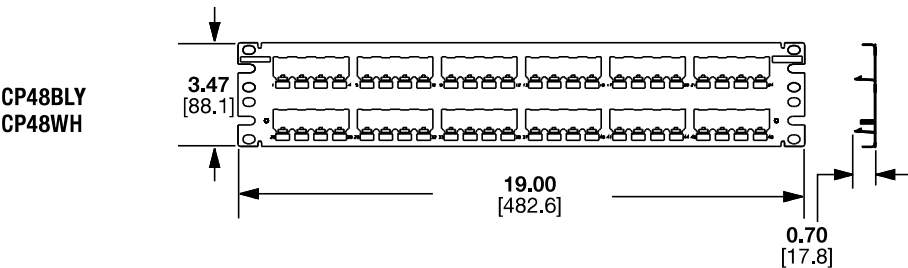
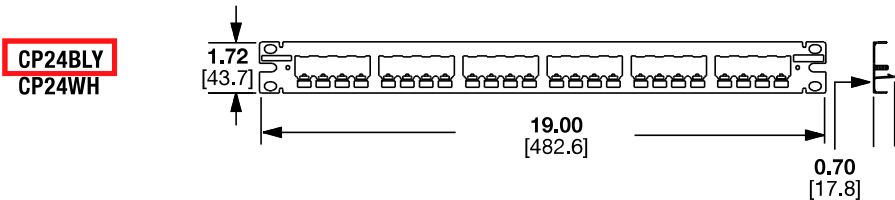
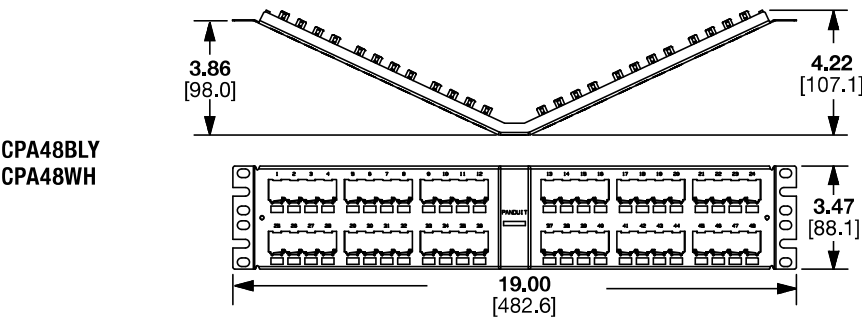
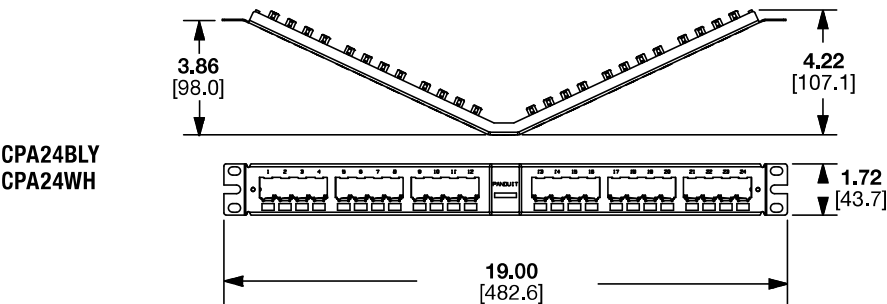
^Colors other than Black: WH (White)

Mini-Com® High Density Modular Patch Panels

LABEL CHART

Part numbers with labeling options:	Label Type	Laser/Ink	Laser/InkJet
CP24BLY	Adhesive	C252X030YPT	C252X030FJJ
CPA24BLY			
CP48BLY			
CPA48BLY			
CP24WH			
CPA24WH			
CP48WH			
CPA24WH			
CP24WSBLY			
CP48WSBLY			

ENGINEERING DRAWING



PatchLink™ Horizontal Cable Managers

SPECIFICATIONS

Horizontal cable managers shall be capable of managing cables on the front and rear of any 19" EIA rack. The manager shall consist of a 1-piece construction that is molded out of plastic. Horizontal managers shall have pass through holes that incorporate integral bend radius control as well as fingers with rounded edges. The manager shall have rigid end fingers that incorporate integral bend radius control. Hinged covers shall allow access to the cable pathway without having to completely remove the cover from the manager.



TECHNICAL INFORMATION

Attributes:		Part Number	RU	Manger Height in. (mm)	Width in. (mm)	Depth in. (mm)
	WMP1E	2	3.5 (88)	19.0 (483)	8.9 (225)	
	WMPF1E				3.7 (94)	
	WMPH2E				8.9 (225)	
	WMPHF2E				3.7 (94)	
	WMPSE	1	1.7 (44)		8.9 (225)	
	WMPFSE				3.7 (94)	
	WMPLSE				7.9 (200)	
	WMPLFSE				2.7 (69)	
Temperature rating:		Max storage temperature: 149°F (65°C) Max operating temperature: 140°F (60°C)				
Packaging:		Cable managers include hinged cover(s), mounting hardware				

KEY FEATURES AND BENEFITS

Integral bend radius control:	Maintains bend radii as cables transition to and from horizontal and vertical pathway
Dual hinged cover:	Opens upward or downward to provide easy access to cables in horizontal pathway without having to completely remove cover
Increased finger spacing:	Provides larger area for high performance Category 6 cables
One piece, plastic construction:	Provides durability and easy installation
Rounded edges on fingers:	Protect cables from snags and damage to cable
Cable pass through holes:	Provide ease of installation and cable maintenance

APPLICATIONS

PatchLink Horizontal Cable Managers provide a neat and efficient way to manage patch cables on any EIA 19" rack. They can be used in multimedia applications to manage copper, fiber optic, and coax cables. Flexible fingers organize the patch cords simplifying moves, adds, and changes while the integral bend radius control and closed design protects the patch cables in the pathway. All of these features combine to provide the user with a horizontal cable management solution that simplifies cable routing in a finished, professional appearance. When used with the Mini-Com® patch panels, patch cords, vertical cable managers, and racks, the user receives a total system that satisfies functional and aesthetic requirements for telecommunications rooms.

PatchLink Horizontal Cable 2 RU Managers

Front and Rear, with bend radius clips: WMPH2E

Front and Rear: WMP1E

Front only, with bend radius clips: WMPHF2E

Front only: WMPF1E

PatchLink Horizontal Cable 1 RU Managers

Front and Rear: WMPSE

Front and Rear, short depth: WMPLSE

Front only: WMPFSE

Front only, short depth: WMPLFSE

Rack Systems

2-Post Rack with threaded rails, 3" deep: R2P^+

4-Post Rack with #12-24 threaded rails: R4P***+

Panel Extender Brackets

Brackets: PEB^^

Radius Control Clip: CMBRC1

**Depth other than 30 in.: 23, 36, 42

^Height, in.: 79, 96

^^RU: 1 or 2

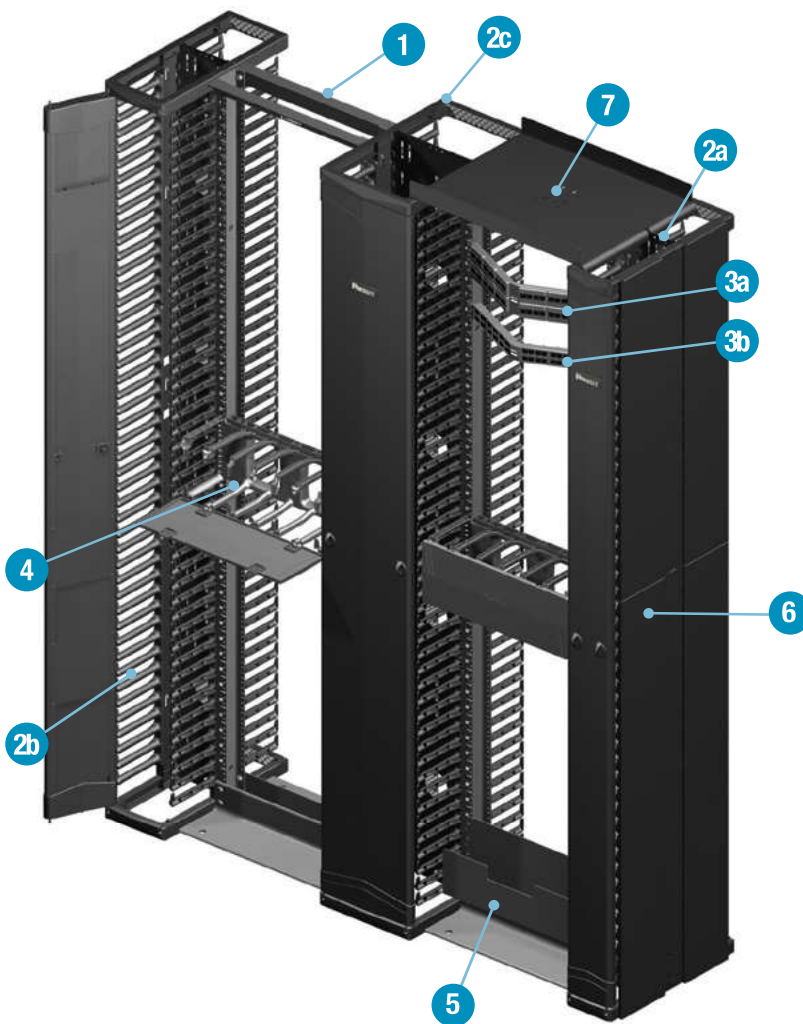
+Color: WH (White)



All Part Numbers Compliant with the U.S. Trade Agreements Act (TAA) for purchases shipped to the United States.

PatchLink Horizontal™ Cable Managers

Part Number	Front					Rear				
	Chanel Area (in. ²)	Cat. 6A (28 AWG - 0.185 in.)	Cat. 6A (24 AWG - 0.275 in.)	Cat. 6 (28 AWG - 0.150 in.)	Cat. 6 (24 AWG - 0.235 in.)	Chanel Area (in. ²)	Cat. 6A (28 AWG - 0.185 in.)	Cat. 6A (24 AWG - 0.275 in.)	Cat. 6 (28 AWG - 0.150 in.)	Cat. 6 (24 AWG - 0.235 in.)
WMP1E	6.8	101	45	153	62	9.1	134	60	204	83
WMPF1E						-	-	-	-	-
WMPH2E						9.1	134	60	204	83
WMPHF2E						-	-	-	-	-
WMPSE	2.7	40	18	61	25	4.6	68	30	104	42
WMPFSE						-	-	-	-	-
WMPLSE	1.7	25	11	38	15	4.6	68	30	104	42
WMPLFSE						-	-	-	-	-



1 R2P – 19" Standard EIA Rack 19" x 7", 45 RU

PatchRunner™ 2 Vertical Cable Managers and Doors

- 2a** PR2VD06 – 6" wide
- 2b** PR2VD08 – 8" wide
- 2c** PR2VD12 – 12" wide

Angled Modular Patch Panels

- 3a** CPPLA48WBLY – 2 RU, 48-Port
- 3b** CPPA48HDWBLY – 1 RU, High Density 48 – Port

Cable Management Accessories

- 4** PR2HF4 – Cable Manager, 4 RU
- 5** CMT4 – Trough, 4 RU
- 6** PR2VEP – End Panel
- 7** PR2VWF – Waterfall

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RKSP154-WW-ENG
6/2024

Strain Relief Bars

SPECIFICATIONS

Strain relief bars shall consist of a metal bar that mounts to the rear of a standard EIA 19" rack to support a minimum of 24 cables exiting from the back of a patch panel. Cables shall be secured with integrated adjustable clips or hook and loop strips. Optional quick release brackets shall provide an easy way to remove the strain relief bar without the use of tools.



TECHNICAL INFORMATION

Mounting options:	All strain relief bars mount to standard EA 19" racks, or a standard 23" rack using an optional extender bracket
Packaging:	#12-24 screws included SRBS19BL-XY includes 10 bars per package

KEY FEATURES AND BENEFITS

Optional quick release brackets:	Enables strain relief bars to be removed and re-installed without the use of tools
Optional mounting hardware kit:	For cage nut and threaded rails, kit includes 1" screw and hex nut that provides a location where a standard strain relief bar can be securely mounted behind a patch panel
Deep strain relief bars:	Offer additional cable support and management, ideal for heavier cables; extend 5 in. - 7 in.
Quick removal:	Select bars can be easily removed for easier access to connections
Inward mounting tabs:	Offer clearance for deeper equipment
SRBWCY integrated adjustable clips:	12 clips provide enhanced cable management; organize cables individually for optimum finished appearance; accommodates multiple sizes and shapes of copper, fiber and coaxial cables for a wide variety of applications (cable diameter: 0.17 in. - 0.33 in. (4.3mm - 8.4mm)); includes easy-release mounting feature
SRBM19BLY built-in cascade:	Provides a smooth contoured surface for cable routing and provides bend radius control to help maintain network integrity; includes easy-release mounting feature

APPLICATIONS

Strain relief bars are used to support and manage cables in telecommunication rooms. Panduit offers a full line of strain relief bars to fit a variety of applications, offering end users the flexibility, convenience, and ability to support up to 72 copper cables. Strain relief bars can be used with standard 19" rack mountable patch panels and can also be mounted to 23" racks using optional extender brackets.

Each bar occupies 1/3 to 2/3 of a rack space. Multi-depth bars are designed for installations that require additional features to support, organize, and secure heavier cables. Optional quick release brackets mount to a rack or behind a patch panel allowing the strain relief bar to be removed quickly. Choice of mounting hardware recommended for single rail installations, it provides a mounting location for most strain relief bars.

Strain Relief Bars with Cable Management and Easy Release Features

With clips:	SRBWCY
With integrated tie mounts:	SRBM19BLY

Strain Relief Bars

Straight:	SRBS19BL-XY
2" offset:	SRB19BLY
5" offset (inward mounting*):	SRB19D5BL
5" offset (standard mounting):	SRB19ED5BL
7" offset (inward mounting*):	SRB19D7BL
7" offset (standard mounting):	SRB19ED7BL
7" offset multi-depth:	SRB19MDBL

Quick Release Brackets

Set of two:	SRBBRKT
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Mounting Hardware

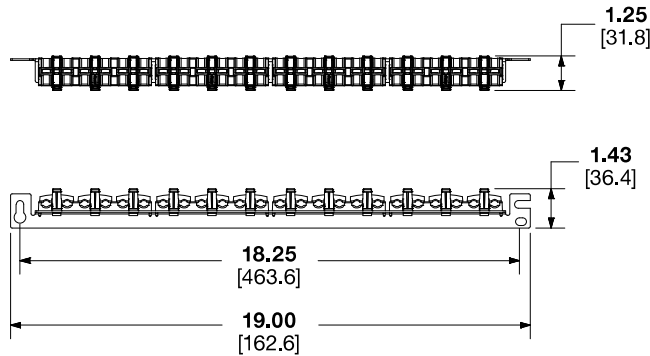
Cage nut rail kit:	CNSRBKIT-C
Threaded rail kit:	TRSRBKIT-C

*Bars with inward mounting feature require 19.75 in. clearance between rails or cabinet walls.

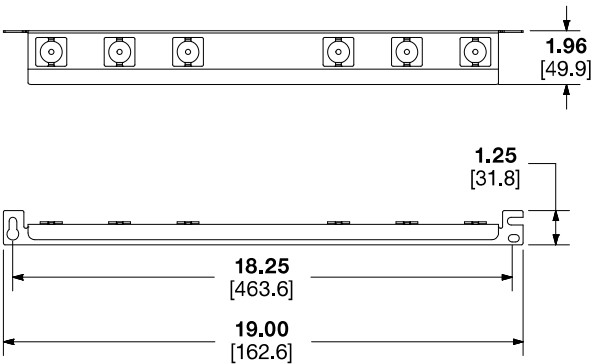
Strain relief bars are compatible with all patch panels. See www.panduit.com for the complete selection.

Strain Relief Bars

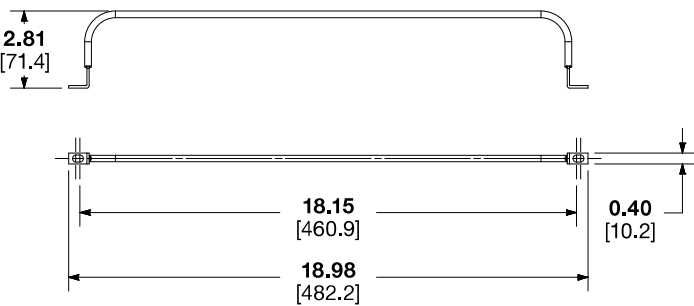
SRBWCY



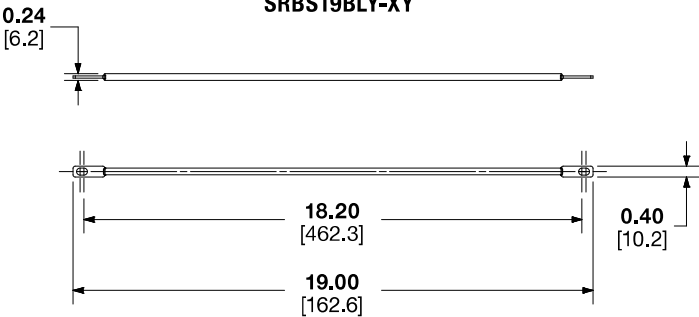
SRBM19BLY



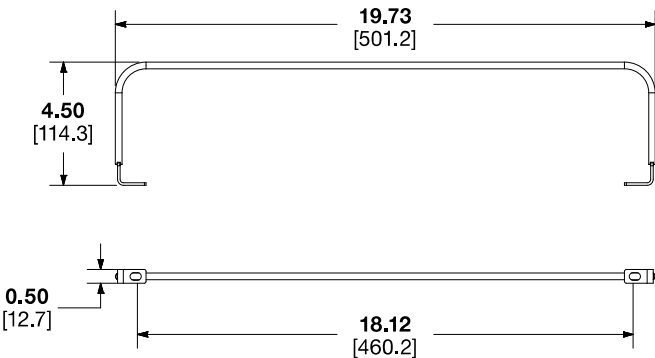
SRB19BLY



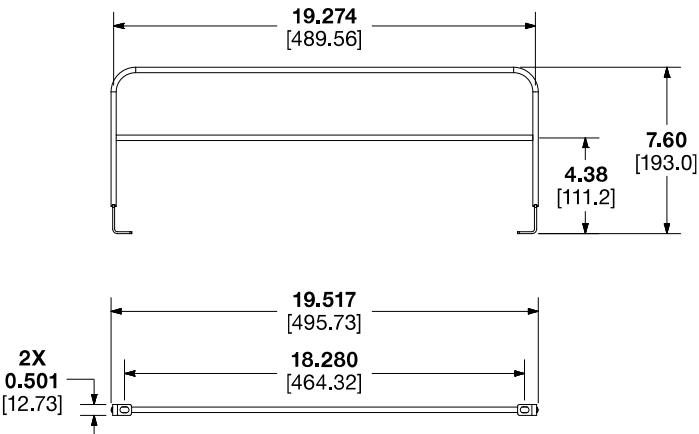
SRBS19BLY-XY



SRB19D5BL



SRB19D7BL



Dimensions are in inches. [Dimensions in brackets are metric].

SmartRack 24U Mid-Depth Half-Height Rack Enclosure Cabinet

MODEL NUMBER: **SR24UB**



Houses, organizes and secures standard-depth 19 in. rack equipment in edge micro data centers and other mission-critical IT applications.

Features

Mid-Depth 24U Server Cabinet Accommodates 19 in. Rack Equipment

This SmartRack® 24U rack enclosure is designed for server rooms, IT closets, micro data centers, edge computing applications and other environments with essential rack-mount IT equipment. Constructed from heavy-duty steel with a durable black powder-coated finish, the SR42UB has a maximum stationary and rolling load capacity of 1,000 pounds (453 kilograms).

Keeps Important Equipment Secure

The reversible front and back doors and removable side panels lock securely to help prevent damage, tampering or theft. The doors and side panels are designed for quick release, making it simple to access connected equipment and cabling with little effort. Convenient top and bottom access panels allow easy cable routing through the cabinet. The vented doors and sides, as well as vents on the top and bottom, allow generous airflow from front to rear and top to bottom to keep your equipment cool and functioning at its peak.

Easy Enclosure and Equipment Installation

This 24U server rack comes fully assembled for quick and easy deployment. Front and rear vertical rails with square mounting holes accept standard rack equipment up to 32.5 inches (826 millimeters) deep. The top and bottom panels support installation of standard user-supplied case fans (such as SRFANWM, sold separately). Four metal casters with installation hardware allow you to maneuver the SR24UB over a level surface and through a standard doorway into position, where it can be stabilized by adjusting the included levelers. **Note:** The casters are intended for minor position adjustments within the final installation area only and are not designed for moving the enclosure over long distances.

Meets Payment Card Industry Standards

The SR24UB provides physical equipment and media security required for PCI DSS (Payment Card Industry Data Security Standard) compliance. This is essential for companies that process, store and/or transmit credit card information.

Highlights

- 24U rack constructed from powder-coated steel that stands up to tough environments
- Maximum capacity: 1,000 lb. (453 kg) stationary and rolling load
- Doors and side panels lock securely to help prevent damage, tampering or theft
- Ships fully assembled for immediate deployment and equipment mounting
- Provides physical equipment and media security required for PCI DSS compliance

Package Includes

- SR24UB 24U Server Rack
- (50) M6 screws
- (50) M6 cage nuts
- (50) M6 washers
- (4) Casters
- (4) Levelers
- (2) Keys
- Owner's manual

Specifications

OVERVIEW



Powering Business Worldwide

TRIPP LITE
SERIES

UPC Code	037332185228
Device Compatibility	Patch Panel; Network Switch; UPS; Server
Rack Type	Half-Height Enclosure
PHYSICAL	
Color	Black
Rack Height	24U
Rack Depth	Mid
Factory Preset Rack Depth (in.)	28.31
Factory Preset Rack Depth (cm)	71.9
Factory Preset Rack Depth (mm)	719
Maximum Device Depth (cm)	82.55
Maximum Device Depth (in.)	32.5
Maximum Device Depth (mm)	826
Minimum Device Depth (cm)	7.62
Minimum Device Depth (in.)	3
Minimum Device Depth (mm)	76
Cable Access Hole Measurement (inches)	9.812 x 2.35 (l x w)
Shipping Dimensions (hwd / in.)	52.00 x 26.00 x 35.00
Shipping Dimensions (hwd / cm)	132.08 x 66.04 x 88.90
Shipping Weight (lbs.)	172.00
Shipping Weight (kg)	78.02
Unit Dimensions (hwd / in.)	46.060 x 24.200 x 34.060
Unit Dimensions (hwd / cm)	115.82 x 60 x 85.09
Unit Weight (lbs.)	123
Unit Weight (kg)	55.79
Weight Capacity - Rolling (kg)	454
Weight Capacity - Rolling (lbs.)	1000
Weight Capacity - Stationary (kg)	454
Weight Capacity - Stationary (lbs.)	1000
Number of Vertical Mounting Rails	4
FEATURES & SPECIFICATIONS	
Grounding Details	Front and Back door frames
Built-in Cable Management	Yes
Extra Wide	No

SmartRack 12U Low-Profile Switch-Depth Wall-Mount Small Rack Enclosure, Hinged Back

MODEL NUMBER: **SRW12US**



Wall-mount cabinet secures and organizes 12U of 19-inch rack equipment in network closets, classrooms and other locations with limited floor space. Houses network switches and patch panels up to 20.5 inches deep.

Description

The **SRW12US** SmartRack® 12U Low-Profile Switch-Depth Wall-Mount Rack Enclosure Cabinet is designed to house EIA-standard 19-inch rack equipment in network wiring closets, retail locations, classrooms, back offices and other areas with limited floor space where you need equipment to be secure, organized and out of the way. Constructed from heavy-duty steel with a durable black powder-coated finish, the cabinet has a maximum load capacity of 200 pounds (90.7 kilograms).

The cabinet swings away from the wall on a sturdy hinge, allowing easy back-door access to equipment and cabling during installation and maintenance. The doors and side panels lock securely to help prevent damage, tampering or theft. The front, top, bottom and removable side panels are vented, which allows air to flow freely and keep equipment cool. The reversible doors can open left or right by rotating the cabinet 180 degrees before mounting. Convenient top and bottom ports allow easy cable routing.

The SRW12US comes fully assembled and ready to mount to the wall, or use the optional SRCASTER rolling caster kit (sold separately) to make it a mobile rack. Square and 12-24 threaded mounting holes and numbered rack spaces make equipment installation easy. The vertical mounting rails adjust in 7/8-inch increments to accommodate equipment up to 20.5 inches deep, such as network switches and patch panels.

Features

Saves Valuable Workspace

- Perfect for network wiring closets, retail locations, classrooms, back offices and other areas with limited floor space where you need equipment to be secure, organized and out of the way
- Houses EIA-standard 19 in. rack equipment in 12U of space
- Maximum load capacity of 200 pounds (90.7 kg)

Hinged Cabinet for Convenient Access

- Swings away from the wall to allow easy back-door access to equipment and cabling during installation and maintenance
- Rotate cabinet 180° before mounting to open reversible doors left or right

Keeps Important Equipment Secure

- Side panels and doors lock securely to help prevent damage, tampering or theft

Highlights

- Maximum load capacity of 200 lbs (90.7 kgs)
- Swings away from wall on hinge for easy back-door access
- Locking steel cabinet vented at sides, front, top and bottom
- Flow-through ventilation keeps equipment cool
- Secures 12U of 19 in. rack equipment up to 20.5 in. deep

Package Includes

- SRW12US SmartRack 12U Low-Profile Switch-Depth Wall-Mount Rack Enclosure Cabinet
- (20) M6 screws
- (20) M6 cage nuts
- (20) M6 washers
- (20) 12-24 screws
- (2) Keys
- Owner's manual



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- Vented panels allow generous airflow that keeps equipment cool
- Convenient ports with removable covers allow cable routing through top and bottom

Easy Enclosure and Equipment Installation

- Ships fully assembled for quick installation
- Mounts to wall or rolls on floor with optional SRCASTER caster kit
- Wall-mounting holes spaced 16 in. apart for standard wall stud placement
- Vertical mounting rails adjust in 7/8 in. increments to accommodate equipment up to 20.5 in. deep, such as network switches and patch panels
- Rails support square-hole or 12-24 threaded-hole mounting
- Rack spaces numbered for easy reference

Meets Payment Card Industry Standards

- Provides physical equipment and media security required for PCI DSS (Payment Card Industry Data Security Standard) compliance

Specifications

OVERVIEW	
UPC Code	037332148674
Device Compatibility	Patch Panel; Network Switch; UPS
Rack Type	Small Enclosure
PHYSICAL	
Color	Black
Rack Height	12U
Rack Depth	Shallow
Factory Preset Rack Depth (in.)	10.42
Factory Preset Rack Depth (cm)	26.5
Factory Preset Rack Depth (mm)	265
Maximum Device Depth (cm)	52.07
Maximum Device Depth (in.)	20.5
Maximum Device Depth (mm)	521
Minimum Device Depth (cm)	7.62
Minimum Device Depth (in.)	3
Minimum Device Depth (mm)	76
Cable Access Hole Measurement (inches)	9.812 x 2.35 (l x w)
Shipping Dimensions (hwd / in.)	24.30 x 26.00 x 27.80
Shipping Dimensions (hwd / cm)	61.72 x 66.04 x 70.61



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TRIPP LITE
SERIES

Shipping Weight (lbs.)	64.00
Shipping Weight (kg)	29.03
Unit Dimensions (hwd / in.)	24.625 x 23.500 x 21.625
Unit Dimensions (hwd / cm)	63.5 x 60 x 54.86
Unit Weight (lbs.)	60
Unit Weight (kg)	27.22
Weight Capacity - Stationary (kg)	91
Weight Capacity - Stationary (lbs.)	200
Number of Vertical Mounting Rails	4
FEATURES & SPECIFICATIONS	
Grounding Details	Front and Back door frames
Pre-Installed Casters	No
STANDARDS & COMPLIANCE	
Product Compliance	RoHS; EIA/ECA-310-E; UKCA
WARRANTY & SUPPORT	
Product Warranty Period (Worldwide)	5-year limited warranty

1000 Eaton Boulevard
Cleveland, OH 44122
United States
<https://tripplite.eaton.com>

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SmartPro 208/120V 5kVA 4kW Line-Interactive Sine Wave UPS, 6U, Extended Run, Network Card Option, USB, DB9, EPO

MODEL NUMBER: **SM5000RT3UTAA**



Provides complete battery backup and pure sine wave power output for servers, network switches and other high-end distributed IT equipment.

Features

- 5kVA/4kW/208V/120V Battery Backup for Distributed IT, Telecom or Enterprise Deployments**
 This line-interactive UPS system provides reliable battery backup and AC power protection against blackouts, brownouts, surges and line noise that can damage your valuable IT equipment. The SM5000RT3UTAA is ideal for large and small network devices, storage and security equipment in labs, network closets, server rooms and data centers. **Reliable, Expandable Battery Backup Keeps You Operational Through Power Outages**
 The field-replaceable, hot-swappable VRLA battery modules allow you to work through short power failures and give you enough time to safely save files and shut down your system in case of a prolonged blackout. Switchover from line to battery power happens within milliseconds to maintain continuous operation of connected equipment without interruption or rebooting. Extra runtime is available by connecting optional extended battery modules (BP48V60RT3UTAA, sold separately). **Automatic Voltage Regulation (AVR) Corrects Low- and High-Voltage Conditions**
 Built-in AVR corrects abnormal voltage conditions without using the battery. The SM5000RT3UTAA maintains regulated 208/120V nominal output during brownouts and over-voltages from 151V to 260V while keeping the battery fully charged and ready to take over in case of power failure. **Pure Sine Wave Output**
 Pure sine wave output power ensures maximum stability with sensitive equipment. **Optional LX Network Management Card Allows Remote Control and Access 24/7**
 The WEBCARDLXE (sold separately) enables access to advanced features like switchable load banks, automatic email messaging on power events, and full remote control of the UPS. The IP-based Auto Probe feature ensures network uptime by communicating with other network devices and automatically rebooting IT equipment when a loss of connectivity is detected. **Managed NEMA Outlets Protect Your Connected Components**
 One L14-30R, one L6-30R, two 5-20R, and ten 5-15R outlets provide connected equipment with pure sine wave AC output and allow you to monitor total power consumption. Power provided by these outlets is filtered to protect connected equipment against damaging surges and line noise. Eight 5-15R outlets are individually programmable load banks that let you shed non-critical loads to extend runtime for critical loads. Rear cooling fans help protect the UPS from overheating. **Premium Protection from EMI/RFI Line Noise Helps Your Equipment Perform Better**
 This UPS system filters out disruptive electromagnetic and radio frequency interference that can inflict hardware damage or data loss. This EMI/RFI filtering also helps your connected components perform better and last longer. **Front-Panel LED Interface for Convenient UPS Operation and Monitoring**
 The LED front-panel monitoring display features 5 LEDs that allow quick view of UPS and site power information. LEDs show UPS status: a green light means utility power is on and flashes in Standby Mode when charging the battery without AC output. When the AVR LED (Green) is on it means the UPS is automatically boosting or reducing incoming AC voltage to nominal values. The tri-color Load status

Highlights

- Federal Trade Agreements Act / TAA Compliant for GSA Schedule purchases
- 5kVA / 5000VA / 4000W line interactive 6U rack/tower UPS, Sine wave output
- 208 and 120V output during brownouts to 151V and overvoltages to 260V
- USB, RS232, EPO and slot for network communication card options
- Expandable runtime, 8 single-outlet switched output load banks
- NEMA L6-30P input, 10 5-15R, 2 5-15/20R, 1 L6-30R and 1 L14-30R outlets
- To use the Auto Probe feature, this product requires a WEBCARDLX network interface (sold separately) running LX firmware update 15.5.2 or later

Package Includes

- SM5000RT3UTAA UPS System
- SM5000RT3UPMTAA power module
- BP48V60RT3UTAA external battery pack
- USB, DB9, and EPO Cabling
- Mounting hardware
- Instruction manual with warranty information



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LED indicates low levels and flashes red when UPS is overloaded. The tri-color Battery Charge Level LED indicates battery charge level in Line Mode and battery capacity remaining in Battery Mode. The red Battery Replace/Fault LED indicates an active alarm or fault. The control panel rotates to accommodate both rack-mount and tower configurations. **Advanced Communications Ports Allow for Automatic Saves and Shutdowns**

RS-232 and USB ports connect to a device for a variety of communication options (cables are included). The EPO port permits emergency shutdown of all connected equipment. **Versatile Installation Options** You can mount the SM5000RT3UTAA in just 6U of space in an EIA-standard 19-inch rack using the included hardware. You can also adapt it for tower installation using the optional 2-9USTAND (sold separately). The 10-foot power cord with NEMA L6-30P plug connects to a compatible AC outlet (Supports 4800W output capacity with a user-supplied 50A connection). **TAA-Compliant for GSA Schedule Purchases**

The SM5000RT3UTAA is compliant with the Federal Trade Agreements Act (TAA), which makes it eligible for GSA (General Services Administration) Schedule and other federal procurement contracts.

Specifications

OVERVIEW	
UPC Code	037332161475
UPS Type	Line-Interactive
INPUT	
Input Phase	Single-Phase
Nominal Input Voltage(s) Supported	208V AC
UPS Input Connection Type	L6-30P
Input Circuit Breakers	30A double-pole
UPS Input Cord Length (ft.)	10
UPS Input Cord Length (m)	3.1
Recommended Electrical Service	30A 208V
OUTPUT	
Output Capacity (VA)	5000
Output Capacity (kVA)	5
Output Capacity (Watts)	4000
Output Capacity (kW)	4
Output Capacity Details	Maximum output increases to 4800W when hardwired or a user supplied 50A rated input plug is used
Power Factor	0.8
Nominal Voltage Details	208/120V nominal output in battery mode
Frequency Compatibility	60 Hz
Output Voltage Regulation (Line Mode)	208 & 120V (-10%, +20%)
Output Voltage Regulation (Battery Mode)	+/- 5%
Load Management Receptacles	Eight switchable single-outlet 5-15R load banks

Output Circuit Breakers	15A branch rated (x3) - 2 breakers support 5 5-15R outlets each, one breaker supports 2 5-20R outlets, L6-30R and L14-30R outlets are unbreakered
Output AC Waveform (AC Mode)	Sine wave
Output AC Waveform (Battery Mode)	Pure Sine wave
Nominal Output Voltage(s) Supported	110V; 115V; 120V; 208V
Output Receptacles	(10) 5-15R; (2) 5-15/20R; (1) L14-30R; (1) L6-30R
Individually Controllable Load Banks	Yes
BATTERY	
Battery Type	Valve Regulated Lead Acid (VRLA)
Runtime Full Load (min.)	16 min. (4000W)
Runtime Half Load (min.)	38 min. (2000W)
Expandable Runtime	Yes
External Battery Pack Compatibility	 BP48V60RT3UTAA BP48V60RT3UTAA (multi-pack compatible)
DC System Voltage (VDC)	48
Battery Recharge Rate (Included Batteries)	3 hours
Battery Replacement Description	Hot-swappable, user replaceable batteries
VOLTAGE REGULATION	
Voltage Regulation Description	Automatic voltage regulation (AVR) maintains line power operation with an input voltage range of 151V to 260V
Overvoltage Correction	Input voltages between 240V and 260V are reduced by 12%
Undervoltage Correction	Input voltages between 180V and 199 are boosted by 12%
Severe Undervoltage Correction	Input voltages between 151V and 179 are boosted by 24%
USER INTERFACE, ALERTS & CONTROLS	
Switches	2 Switches control off/on power status and alarm-cancel/self-test operation
Alarm Cancel Operation	Power-fail alarm can be silenced using alarm-cancel switch; once silenced, alarm will re-sound to indicate low-battery status
Audible Alarm	Audible alarm indicates power-failure, overload and low-battery conditions
LED Indicators	5 LEDs indicate line power, battery power, load state, voltage regulation, and battery replace/fault status
SURGE / NOISE SUPPRESSION	
UPS AC Suppression Joule Rating	1020
UPS AC Suppression Response Time	Instantaneous
EMI / RFI AC Noise Suppression	Yes
PHYSICAL	

Primary Form Factor	Rackmount
Rack Height	6U
Cooling Method	Fans
Included Battery Pack Dimensions (hwd / in.)	5.2 x 17.5 x 22.8
Included Battery Pack Weight (lbs.)	163.140
Included Battery Pack Weight (kg)	74.00
Installation Form Factors Supported with Included Accessories	4 post 19 inch rackmount
Installation Form Factors Supported with Optional Accessories	2 post rackmount (2 post rackmount); Tower (2U-9U-Tower-Stand-Kit-select-Rack-Mount-UPS-Systems~2-9USTAND)
Minimum Required Rack Depth (cm)	7.62
Minimum Required Rack Depth (inches)	3
Minimum Required Rack Depth with External Battery Pack (cm)	75
Minimum Required Rack Depth with External Battery Pack (in.)	29.5
Minimum Required Rack Depth without External Battery Pack (cm)	72
Minimum Required Rack Depth without External Battery Pack (in.)	28.25
Optional Mounting Accessory Notes	2 sets of 2 sets of required for 2 post rackmount installation of separate power module and battery pack
Primary UPS Depth (mm)	572
Primary UPS Height (mm)	132
Primary UPS Width (mm)	445
Shipping Dimensions (hwd / in.)	24.50 x 35.00 x 24.00
Shipping Dimensions (hwd / cm)	62.23 x 88.90 x 60.96
Shipping Weight (lbs.)	321.62
Shipping Weight (kg)	145.88
Unit Dimension Details	Includes 3U UPS/power module and 3U external battery pack
UPS Housing Material	Steel
UPS Power Module Dimensions (hwd, cm)	13.21 x 44.45 x 57.15
UPS Power Module Dimensions (hwd, in.)	5.2 x 17.5 x 22.5
UPS Power Module Weight (kg)	42.18
UPS Power Module Weight (lbs.)	93
Unit Dimensions (hwd / in.)	10.500 x 17.530 x 22.500



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TRIPP-LITE
by **EATON**

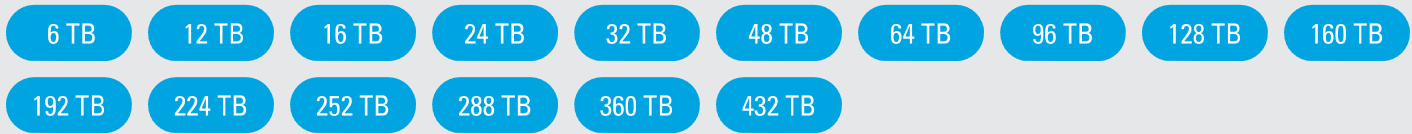
Unit Weight (lbs.)	93
Unit Weight (kg)	42.18
ENVIRONMENTAL	
Operating Temperature Range	32° to 104°F (0° to 40°C)
Storage Temperature Range	5° to 122°F (-15° to 50°C)
Relative Humidity	0 to 95%, non-condensing
AC Mode Efficiency Rating (100% Load)	94%
Battery Mode Heat Dissipation (BTU/Hr) @ Full Load	1518
Audible Noise	45 dBA maximum, front side 1m
COMMUNICATIONS	
Network Management Cards	 WEBCARDLXE
Network Monitoring Port Description	Supports detailed monitoring of UPS and site power conditions; 2 USB ports, 1 DB9 serial and 1 DB9 contact closure port (4 total)
PowerAlert Software	For local monitoring via the UPS's built-in communication ports, download PowerAlert software at https://tripplite.eaton.com/products/power-alert
Communications Cable	USB and DB9 cabling included
EPO Port	RJ-11 style 4-wire connection jack with included 4-wire cable to connect to facility/room EPO system
Network Management Card Description	Network management card optional
Communications Interface	DB9 Serial; Slot for SNMP/Web interface; USB
LINE / BATTERY TRANSFER	
Transfer Time	2-4 milliseconds
Low Voltage Transfer to Battery Power (Setpoint)	151V
High Voltage Transfer to Battery Power (Setpoint)	282V
FEATURES & SPECIFICATIONS	
Cold Start (Startup in Battery Mode During a Power Failure)	Cold-start operation supported
High Availability UPS Features	Auto Probe Monitoring (requires WEBCARDLXE); Automatic Voltage Regulation (AVR); Expandable battery backup; Hot swappable batteries; Sine wave output; Surge/noise protection
Grounding Details	Back panel grounding lug
APPLICATIONS	
UPS Applications	Computer/Peripherals; High-End Desktop/Small Network; Large Network
STANDARDS & COMPLIANCE	

Product Certifications	CSA (Canada); UL 1778
Product Compliance	RoHS; FCC Part 15 Class A (USA); Trade Agreements Act (TAA)
WARRANTY & SUPPORT	
Product Warranty Period (Worldwide)	2-year limited warranty
Connected Equipment Insurance (U.S., Canada & Puerto Rico)	\$250,000 Ultimate Lifetime Insurance

1000 Eaton Boulevard
Cleveland, OH 44122
United States
<https://tripplite.eaton.com>

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5TH GENERATION NETWORK VIDEO RECORDERS



The fifth-generation Avigilon Network Video Recorder (NVR5) delivers unparalleled, high-performance recording, throughput, data availability, and protection for your Avigilon video security system. Featuring the densest storage capacity Avigilon has to offer on a single NVR, security teams can scale up to petabytes of storage at a single location, with up to 432 TB in storage per NVR. All NVR models come optimized with RAID technology, hot-swappable drives, and up to five-year Avigilon warranty with dedicated support to increase system uptime and availability.



NVR5 PRM (252-432 TB)



NVR5 STD (16-64 TB) and
NVR5 PRM (96-224 TB)



NVR5 VAL (6-24 TB)

FEATURES



FLEXIBLE & SCALABLE TIER-1 STORAGE

NVR5 offers flexible configurations for security teams to cost-effectively scale up to 432 TB in tier 1 storage capacity and tailor it to their unique retention requirements.



HIGH DATA AVAILABILITY

Reliable storage with RAID-configured redundancy offers a highly available and resilient system that protects your data. All our VAL, STD & PRM models include reliable hard drives with RAID 5/6/60 redundancy to tolerate up to 1/2/4 hard drive failures.



LOWER DEPLOYMENT COSTS WITH QUICK & SIMPLE DEPLOYMENT WITH ACC PRE-CONFIGURED

The NVR5 comes pre-configured with ACC software for secure network video recording and management of Avigilon cameras up to 61 MP resolution.



INCREASE SYSTEM UPTIME & PRODUCTIVITY

Sites that have connected to the cloud and subscribed to advanced system health¹ can take advantage of system health monitoring to increase system availability, streamline maintenance time and minimize on-site service calls.



RESPOND FASTER WITH AI-POWERED ANALYTICS SUPPORT

Security teams can respond faster to critical events with the NVR5's seamless support for Avigilon Appearance Search, Facial Recognition, and LPR technologies.



RESOLVE TECHNICAL ISSUES EXPEDIENTLY WITH A SINGLE-POINT-OF-CONTACT

In addition to lifetime 24/7 Avigilon telephone technical support for the Avigilon End-to-End solution, five-year onsite parts and repair service is also included with 24/7 4-hour response SLA² for NVR5 PRM, or Next Business Day for NVR5 STD.



STRENGTHEN CYBERSECURITY

Designed with cybersecurity in mind, the NVR5 comes with a TPM 2.0 module built-in to support hardware Root of Trust authentication and data encryption.



EASY RECOVERY SOLUTION

Designed with a separate and redundant array of Solid-State Drives for the operating system (PRM and STD), with a built-in recovery partition to simplify the recovery process, if needed.

¹ On NVR5 PRM 252-432 TB, ACC 7.14.8 or later is required for full advanced system health functionality.

² NVR5 VAL includes a 3-year warranty. Warranty coverage and support Service Level Agreement is subject to end user's geographic location. Please refer to <https://www.avigilon.com/support/warranty/avigilon> for more information.

ANALYTICS AND SPECIFICATIONS



AVIGILON APPEARANCE SEARCH™

Quickly locates a specific person or vehicle of interest across an entire site using a sophisticated deep learning AI search engine.
ACC Enterprise required.



FACIAL RECOGNITION

Detects matches from managed watchlists to alert operators of people of interest. Requires Appearance Search and an additional license.
ACC7-FACE license required



LICENSE PLATE RECOGNITION (LPR)

Significant improvements² in LPR performance compared to the previous generations of NVRs. Works with ACC software for accurate license plate capture at a range of distances and speeds. Requires an additional license.
ACC7-LPR license per channel required.



ACC™ VIDEO MANAGEMENT SOFTWARE

Pre-installed and pre-configured solution for managing multi-megapixel digital IP and analog cameras.

MODEL	ACCESSORY KIT	MAXIMUM SUPPORTED CAMERAS BY FEATURE ¹		NUMBER OF LPR LANES ²			
		APPEARANCE SEARCH ONLY ³	FACE RECOGNITION + APPEARANCE SEARCH ³	5 FPS (<16 KM/H)	10 FPS (<48 KM/H)	20 FPS (<100 KM/H)	30 FPS (<150 KM/H)
NVR5 PRM (252 288 360 432 TB)	—	200	50	20	10	5	3
	2 × NVR5-RAM-16GB-B			20	10	5	3
NVR5 PRM (192 224 TB)	—			18	9	4	3
	1 × NVR5-PRM-2NDCPU			24	12	6	4
NVR5 PRM (96 128 160 TB)	—			15	7	3	2
	2 × NVR5-RAM-16GB-A			20	10	5	3
NVR5 STD (16 24 32 48 64 TB)	—			12	6	3	2
	1 × NVR5-RAM-16GB-A			15	7	3	2
NVR5 VAL (6 12 16 24 TB)	—	—	—	15	7	3	2
	1 × NVR5-VAL-ANK	46	31 ⁴	15	7	3	2
	1 × NVR5-VAL-ANK-PLUS	46	46	15	7	3	2

¹ These performance figures are based on validation testing by Avigilon. Assumes appliance-wide average per camera rates of classified objects leaving field of view:

- H5A Cameras - One every second;
- H4A Cameras - One every two seconds.

Additional licenses may be required. For more information, contact Avigilon Sales.

² Assumes a 3 MP camera with 1 MP license plate scan area and Frames Per Second (FPS) to recognize license plates up to vehicle speeds in Kilometers Per Hour (KM/H) . Results may vary according to camera mounting parameters. ACC 7.14.10 or later is required.

³ Requires H5A or H4A cameras. The Avigilon Appearance Search camera support limit does not affect any NVR throughputs for simultaneous recording, playback and live streaming.

⁴ Requires ACC 7.14.20 or later.

NVR5 STD (16 24 32 48 64 TB) & NVR5 PRM (96 128 160 TB)

FORM FACTOR

2U rack mount chassis

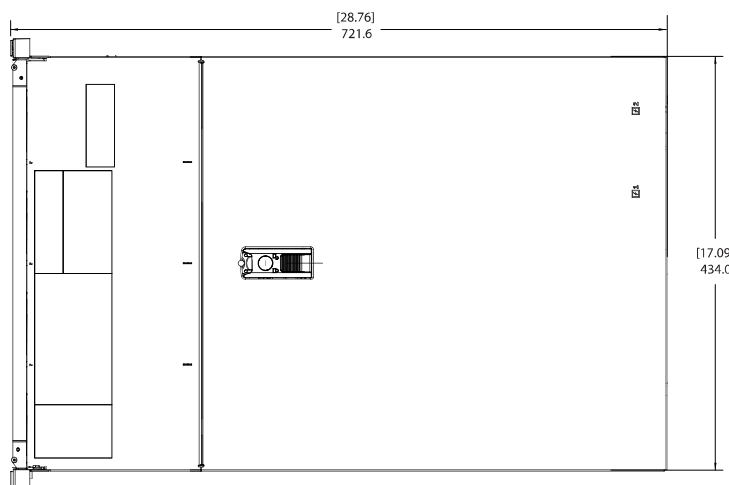
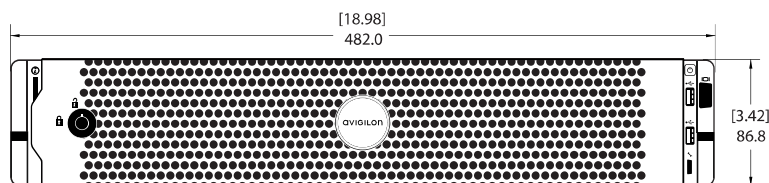
DIMENSIONS (L × W × H)

721.6 mm × 482.0 mm × 86.8 mm

28.4" × 18.98" × 3.42"

WEIGHT (WHEN FULLY POPULATED WITH HARD DRIVES)

28.76 kg [63.40 lbs]



NVR5 VAL (6 12 16 24 TB)

FORM FACTOR

1U rack mount chassis

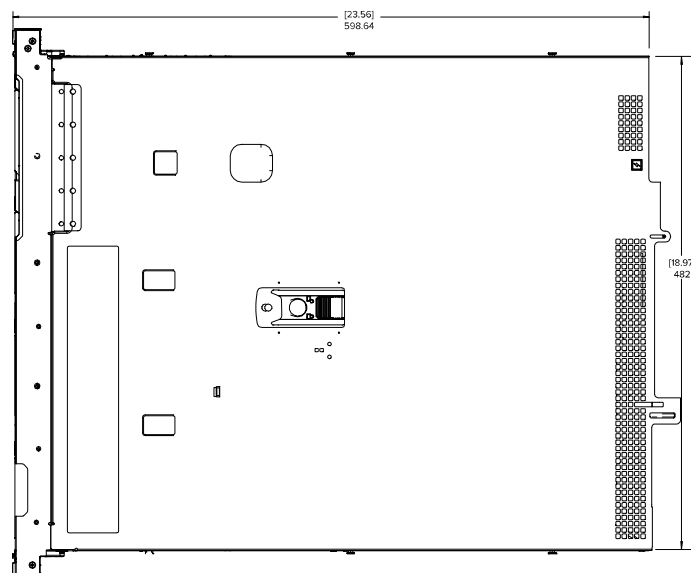
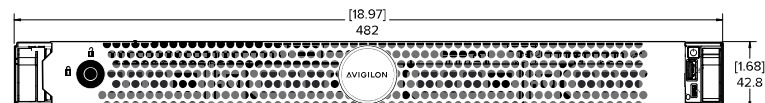
DIMENSIONS (L × W × H)

598.6 mm × 482.0 mm × 42.8 mm

23.56" × 18.97" × 1.68"

WEIGHT (WHEN FULLY POPULATED WITH HARD DRIVES)

12.5 kg [27.5 lbs]



ORDERING INFORMATION

NVR5	
NVR5-VAL-6TB	6 TB (8 TB Raw) NVR5 Value with Microsoft Windows 10 Enterprise 21H2 LTSC and Avigilon Control Center, 3 Year Next Business Day Warranty
NVR5-VAL-12TB	12 TB (16 TB Raw) NVR5 Value with Microsoft Windows 10 Enterprise 21H2 LTSC and Avigilon Control Center, 3 Year Next Business Day Warranty
NVR5-VAL-16TB	16 TB (24 TB Raw) NVR5 Value with Microsoft Windows 10 Enterprise 21H2 LTSC and Avigilon Control Center, 3 Year Next Business Day Warranty
NVR5-VAL-24TB	24 TB (32 TB Raw) NVR5 Value with Microsoft Windows 10 Enterprise 21H2 LTSC and Avigilon Control Center, 3 Year Next Business Day Warranty
NVR5-STD-16TB-W10	16 TB (24 TB Raw) NVR5 Standard with Microsoft Windows 10 v1809 LTSC and Avigilon Control Center
NVR5-STD-16TB-S19	16 TB (24 TB Raw) NVR5 Standard with Microsoft Windows Server 2019 LTSC and Avigilon Control Center
NVR5-STD-24TB-W10	24 TB (32 TB Raw) NVR5 Standard with Microsoft Windows 10 v1809 LTSC and Avigilon Control Center
NVR5-STD-24TB-S19	24 TB (32 TB Raw) NVR5 Standard with Microsoft Windows Server 2019 LTSC and Avigilon Control Center
NVR5-STD-32TB-W10	32 TB (48 TB Raw) NVR5 Standard with Microsoft Windows 10 v1809 LTSC and Avigilon Control Center
NVR5-STD-32TB-S19	32 TB (48 TB Raw) NVR5 Standard with Microsoft Windows Server 2019 LTSC and Avigilon Control Center
NVR5-STD-48TB-W10	48 TB (64 TB Raw) NVR5 Standard with Microsoft Windows 10 v1809 LTSC and Avigilon Control Center
NVR5-STD-48TB-S19	48 TB (64 TB Raw) NVR5 Standard with Microsoft Windows Server 2019 LTSC and Avigilon Control Center
NVR5-STD-64TB-W10	64 TB (80 TB Raw) NVR5 Standard with Microsoft Windows 10 v1809 LTSC and Avigilon Control Center
NVR5-STD-64TB-S19	64 TB (80 TB Raw) NVR5 Standard with Microsoft Windows Server 2019 LTSC and Avigilon Control Center
NVR5-PRM-96TB-S19	96 TB (120 TB Raw) NVR5 Premium with Microsoft Windows Server 2019 LTSC and Avigilon Control Center
NVR5-PRM-128TB-S19	128 TB (160 TB Raw) NVR5 Premium with Microsoft Windows Server 2019 LTSC and Avigilon Control Center
NVR5-PRM-160TB-S19	160 TB (192 TB Raw) NVR5 Premium with Microsoft Windows Server 2019 LTSC and Avigilon Control Center
NVR5-PRM-192TB-S19	192 TB (256 TB Raw) NVR5 Premium with Microsoft Windows Server 2019 LTSC and Avigilon Control Center
NVR5-PRM-224TB-S19	224 TB (288 TB Raw) NVR5 Premium with Microsoft Windows Server 2019 LTSC and Avigilon Control Center
NVR5-PRM-252TB-S19	252 TB (324 TB Raw) NVR5 Premium with Microsoft Windows Server 2019 LTSC and Avigilon Control Center
NVR5-PRM-288TB-S19	288 TB (360 TB Raw) NVR5 Premium with Microsoft Windows Server 2019 LTSC and Avigilon Control Center
NVR5-PRM-360TB-S19	360 TB (432 TB Raw) NVR5 Premium with Microsoft Windows Server 2019 LTSC and Avigilon Control Center
NVR5-PRM-432TB-S19	432 TB (504 TB Raw) NVR5 Premium with Microsoft Windows Server 2019 LTSC and Avigilon Control Center
Avigilon Control Center licenses must be purchased separately. Avigilon Appearance Search and facial recognition requires Enterprise version of the ACC software.	

ACCESSORIES (NVR5 PRM 252-432 TB)	
NVR5-SFPPLUS-DA	3 m (10 ft) SFP+ 10 GbE Twinax Direct Attach cable
HD-NVR4-SFPPLUS-DA	3 m (10 ft) SFP+ 10 GbE Twinax Direct Attach cable
NVR5-SFPPLUS-SR-B	SFP+ Transceivers for Short Range (Multi-mode) on server side, NVR5 >= 252 TB
NVR5-SFPPLUS-LR-B	SFP+ Transceivers for Long Range (Single-mode) between SAN switches, NVR5 >= 252 TB
NVR5-10GBASET-B	Network Card, QP 10 G-Base-T NVR5 PRM >= 252 TB
NVR5-RAM-16GB-B	RAM Upgrade Kit for 1 CPU Processor Only, 2 x 8 GB DDR4 3200 MT/s DIMMs, NVR5 PRM >= 252 TB
NVR5-PSU-1000W	1000 W Flex Slot Titanium Hot Plug/Swappable Power Supply Kit, NVR5 PRM >= 252 TB
NVR5-HDDS-INT-18TB	Spare hard drive, 18 TB, internal bay, compatible with NVR5 PRM >= 252 TB
NVR5-HDDS-HOT-18TB	Spare hard drive, 18 TB, front/rear bay, compatible with NVR5 PRM >= 252 TB
AVA-HED1-NVR5-CONNECT-B	AVA Connectivity Kit for Direct Attachment of a NVR5 PRM >= 252 TB
AVA-SAN-CONNECT-1	AVA Head Unit Connectivity Kit, includes 1 x transceiver and fiber optic cable for SAN networking

HPE Aruba Networking 2930M Switch Series



Key features

- HPE Aruba Networking Layer 3 Switch with 10 chassis backplane stacking, static, RIP and access OSPF routing, Dynamic Segmentation, ACLs, SDN, and robust QoS
- Advanced security and network management via HPE Aruba Networking NAC, HPE Aruba Networking AirWave and HPE Aruba Networking Central
- Modular 10GbE or 40GbE uplinks and HPE Smart Rate (IEEE 802.3bz), with up to 1440W PoE
- Models with 24 ports of HPE Smart Rate with IEEE 802.3bz
- Up to 60W PoE per port (IEEE 802.3bt Class 6) for high power devices
- Software defined ready with REST APIs and OpenFlow support

Product overview

The HPE Aruba Networking 2930M Switch Series is designed for customers creating smart digital workplaces that are optimized for mobile users with an integrated wired and wireless approach. These Layer 3 network switches are easy to deploy and manage with advanced security and network management tools like HPE Aruba Networking NAC and HPE Aruba Networking AirWave and cloud based HPE Aruba Networking Central.

A powerful HPE Aruba Networking ProVision ASIC delivers performance, robust feature support, and value with flexible programmability for the latest applications. High performance modular stacking for up to 10 switches provides pay as you grow scalability and simplicity. The flexible 2930M supports wire speed 10GbE and 40GbE uplinks, redundant dual modular power supplies for up to 1440 Watts of PoE, and new models with industry standard IEEE 802.3bt Class 6 that provide up to 60W of PoE per port. HPE Smart Rate

multi-gigabit Ethernet models paves the way for high-speed APs and IoT devices by delivering fast connectivity and PoE power using existing campus cabling.

The feature rich 2930M supports a robust QoS, RIP, Access OSPF routing, PIM, VRRP, IPv6 and Dynamic Segmentation for unified and secure access.

The HPE Aruba Networking 2930M Switch Series provides a simple and powerful access layer solution that can be quickly set up at branch offices with little or no IT support using Zero Touch Deployment. The switches include a Limited Lifetime Warranty.

Enhanced capabilities

Software-defined networks

- Supports multiple programmatic interfaces, including REST APIs and OpenFlow 1.0 and 1.3, to enable automation of network operations, monitoring, and troubleshooting

Specifications

	JL319A HPE Aruba Networking 2930M 24G 1-slot Switch	JL320A HPE Aruba Networking 2930M 24G PoE+ 1-slot Switch	JL321A HPE Aruba Networking 2930M 48G 1-slot Switch
I/O ports and slots			
	20 Autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASETX, IEEE 802.3ab Type 1000Base-T); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only	20 Autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASETX, IEEE 802.3ab Type 1000Base-T, IEEE 802.3at PoE+); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only	44 Autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASETX, IEEE 802.3ab Type 1000Base-T); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only
	4 Combo 10/100/1000BASE-T or 100/1000Mbps SFP Ports	4 Combo 10/100/1000BASE-T PoE+ or 100/1000Mbps SFP Ports	4 Combo 10/100/1000BASE-T or 100/1000Mbps SFP Ports
Additional ports and slots			
	1 Dual Personality (RJ-45 or USB Micro-B) serial console port	1 Dual Personality (RJ-45 or USB Micro-B) serial console port	1 Dual Personality (RJ-45 or USB Micro-B) serial console port
	1 USB A port for uploading/downloading files	1 USB A port for uploading/downloading files	1 USB A port for uploading/downloading files
	1 100BASE-T Out of Band Management Port	1 100BASE-T Out of Band Management Port	1 100BASE-T Out of Band Management Port
	1 Uplink Slot	1 Uplink Slot	1 Uplink Slot
	1 Stacking Module Slot	1 Stacking Module Slot	1 Stacking Module Slot
	2 Power Supply Slots (power supplies not included)	2 Power Supply Slots (power supplies not included)	2 Power Supply Slots (power supplies not included)
Physical characteristics			
Dimensions	1.73" (Height) x 17.42" (Width) x 12.77" (Depth) (4.39cm x 44.25cm x 32.43cm)	1.73" (Height) x 17.42" (Width) x 12.77" (Depth) (4.39cm x 44.25cm x 32.43cm)	1.73" (Height) x 17.42" (Width) x 12.77" (Depth) (4.39cm x 44.25cm x 32.43cm)
Weight	9.81 lbs 4.45 kg	9.92 lbs 4.50 kg	10.14 lbs 4.60 kg
Memory and processor			
	Dual Core ARM Cortex A9 @ 1016 MHz	Dual Core ARM Cortex A9 @ 1016 MHz	Dual Core ARM Cortex A9 @ 1016 MHz
	1 GB DDR3 SDRAM	1 GB DDR3 SDRAM	1 GB DDR3 SDRAM
	Packet Buffer Size: 12.38 MB and 4.5 MB Ingress/7.875 MB Egress	Packet Buffer Size: 12.38 MB and 4.5 MB Ingress/7.875 MB Egress	Packet Buffer Size: 12.38 MB and 4.5 MB Ingress/7.875 MB Egress
	4 GB eMMC	4 GB eMMC	4 GB eMMC
Performance			
	IPv6 Ready Certified	IPv6 Ready Certified	IPv6 Ready Certified
10 Mbps latency	<98.5µs (FIFO 64 byte packets)	<98.5µs (FIFO 64 byte packets)	<98.5µs (FIFO 64 byte packets)
100 Mbps latency	<11.8µs (FIFO 64-byte Packets)	<11.8µs (FIFO 64-byte Packets)	<11.8µs (FIFO 64-byte Packets)
1000 Mbps latency	<3.1µs (FIFO 64-byte packets)	<3.1µs (FIFO 64-byte packets)	<3.1µs (FIFO 64-byte packets)
10 Gbps latency	<3.4µs (FIFO 64-byte packets)	<3.4µs (FIFO 64-byte packets)	<3.4µs (FIFO 64-byte packets)
Throughput	95.2 Mpps	95.2 Mpps	112 Mpps
Stacking performance	100 Gbps	100 Gbps	100 Gbps
Switching capacity	128 Gbps	128 Gbps	176 Gbps
Switching capacity (Including stacking)	228 Gbps	228 Gbps	276 Gbps



Specifications

	JL319A HPE Aruba Networking 2930M 24G 1-slot Switch	JL320A HPE Aruba Networking 2930M 24G PoE+ 1-slot Switch	JL321A HPE Aruba Networking 2930M 48G 1-slot Switch
Performance			
Routing table size	2,000 IPv4, 1,000 IPv6 in hardware, 200 OSPF, 256 Static, 10,000 RIP	2,000 IPv4, 1,000 IPv6 in hardware, 200 OSPF, 256 Static, 10,000 RIP	2,000 IPv4, 1,000 IPv6 in hardware, 200 OSPF, 256 Static, 10,000 RIP
Mac address table size	32768 entries	32768 entries	32768 entries
Environment			
Operating temperature¹	32°F to 131°F (0°C to 55°C) up to 5000ft, 32°F to 122°F (0°C to 50°C). Derate -1°C for every 1000 ft from 5000 ft to 10000 ft	32°F to 131°F (0°C to 55°C) up to 5000ft, 32°F to 122°F (0°C to 50°C). Derate -1°C for every 1000 ft from 5000 ft to 10000 ft	32°F to 131°F (0°C to 55°C) up to 5000ft, 32°F to 122°F (0°C to 50°C). Derate -1°C for every 1000 ft from 5000 ft to 10000 ft
Operating relative humidity	15% to 95% (non-condensing) 10,000 ft	15% to 95% (non-condensing) 10,000 ft	15% to 95% (non-condensing) 10,000 ft
Non-operating/storage temperature	-40°C to +70°C up to 15000 ft	-40°C to +70°C up to 15000 ft	-40°C to +70°C up to 15000 ft
Non-operating/storage relative humidity	90% at 65°C (non-condensing); 15,000 ft	90% at 65°C (non-condensing); 15,000 ft	90% at 65°C (non-condensing); 15,000 ft
Acoustic	Sound Power L_{WAD} =4.0 Bel, Sound Pressure L_{pAmf} , Bystander=22.8 dB	Sound Power L_{WAD} =4.6 Bel, Sound Pressure L_{pAmf} , Bystander=28.8 dB	Sound Power L_{WAD} =4.1 Bel, Sound Pressure L_{pAmf} , Bystander=23.7 dB
Primary airflow direction	Port to Power	Port to Power	Port to Power
Electrical characteristics			
Frequency	50/60Hz	50/60Hz	50/60Hz
Maximum heat dissipation	168 BTU/hr 177 kJ/hr	168 BTU/hr 177 kJ/hr	263 BTU/hr 278 kJ/hr
Voltage	JL085A PSU: 100-127/200-240	JL086A PSU: 100-127/200-240 VAC JL087A PSU: 110-127/200-240 VAC	JL085A PSU: 100-127/200-240
Current	JL085A PSU: 0.5A/0.3A	JL086A PSU (each): 4.8A/2.4A JL087A PSU (each): 8.6A/4.3A	JL085A PSU: 1A/0.5A
Maximum power rating	49W	JL086A PSU (each): 450W JL087A PSU (each): 810W	78W
Idle power	34W	63W	52W
PoE power (max possible)	N/A	840 Watts	N/A
Hibernate power	11W	23W	11W
Notes	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst case theoretical maximum numbers provide for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst case theoretical maximum numbers provide for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst case theoretical maximum numbers provide for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.



- HPE X142 40G QSFP+ MPO eSR4 300M XCVR (JH233A)
- HPE X242 40G QSFP+ to QSFP+ 1m DAC Cable (JH234A)
- HPE X242 40G QSFP+ to QSFP+ 3m DAC Cable (JH235A)
- HPE X242 40G QSFP+ to QSFP+ 5m DAC Cable (JH236A)

Stacking cables

- HPE Aruba Networking 2920/2930M 0.5m Stacking Cable (J9734A)
- HPE Aruba Networking 2920/2930M 1m Stacking Cable (J9735A)
- HPE Aruba Networking 2920/2930M 3m Stacking Cable (J9736A)

Power supplies

- HPE Aruba Networking X371 12VDC 250W 100-240VAC Power Supply (JL085A)
- HPE Aruba Networking X372 54VDC 680W 100-240VAC Power Supply (JL086A)
- HPE Aruba Networking X372 54VDC 1050W 110-240VAC Power Supply (JL087A)

Mounting kit

- HPE X410 1U Universal 4-post Rack Mounting Kit (J9583A)
- HPE Aruba Networking X414 1U Universal 4-post Rack Mounting Kit (J9583B)

Cables

- HPE Aruba Networking X2C2 RJ45 to DB9 Console Cable (JL448A)

Licenses

- HPE Aruba Networking Central Switch 6200/29xx Foundational 1-Year Subscription E-STU (Q9Y73AAE)
- HPE Aruba Networking Central Switch 6200/29xx Foundational 3-Year Subscription E-STU (Q9Y74AAE)
- HPE Aruba Networking Central Switch 6200/29xx Foundational 5-Year Subscription E-STU (Q9Y75AAE)

- HPE Aruba Networking Central Switch 6200/29xx Foundational 7-Year Subscription E-STU (Q9Y76AAE)
- HPE Aruba Networking Central Switch 6200/2 Foundational 10-Year Subscription E-STU (Q9Y77AAE)
- HPE Aruba Networking Central On-Premises 62xx or 29xx Switch Foundational 1-Year Subscription E-STU (R6U78AAE)
- HPE Aruba Networking Central On-Premises 62xx or 29xx Switch Foundational 3-Year Subscription E-STU (R6U79AAE)
- HPE Aruba Networking Central On-Premises 62xx or 29xx Switch Foundational 5-Year Subscription E-STU (R6U80AAE)
- HPE Aruba Networking Central On-Premises 62xx or 29xx Switch Foundational 7-Year Subscription E-STU (R6U81AAE)
- HPE Aruba Networking Central On-Premises 62xx or 29xx Switch Foundational 10-Year Subscription E-STU (R6U82AAE)

For details and complete listing of HPE Aruba Networking Central licensing options, please refer to the [HPE Aruba Networking Central Data Sheet](#)

Support

- JL319A: 4 Hour Onsite 3 Year (H1TQ7E)
- JL320A: 4 Hour Onsite 3 Year (H1TZ8E)

- JL321A: 4 Hour Onsite 3 Year (H2BS5E)
- JL322A: 4 Hour Onsite 3 Year (H2CB6E)
- JL323A: 4 Hour Onsite 3 Year (HT6V1E)
- JL324A: 4 Hour Onsite 3 Year (HT6V1E)
- R0M67A: 4 Hour Onsite 3 Year (HT6V1E)
- R0M68A: 4 Hour Onsite 3 Year (HT6V1E)

For HPE Aruba Networking Central hardware only support, 24x7 TAC support, and many other support options, go to [Support Services Central SKU lookup tool](#).

Make the right purchase decision.
Contact our presales specialists.



Contact us

Visit [ArubaNetworks.com](https://arubanetworks.com)



HPE Aruba Networking 3810 Switch series



Key features

- Advanced Layer 3 switch series with backplane stacking, Dynamic Segmentation, low latency and resiliency
- Advanced security and network management via HPE Aruba Networking ClearPass Policy Manager, HPE Aruba Networking AirWave and HPE Aruba Networking Central
- Modular line rate 10 GbE and 40 GbE ports for wireless aggregation
- HPE Smart Rate for high-speed multi-gigabit bandwidth (IEEE 802.3bz) and PoE+ power
- Software defined ready with REST APIs and OpenFlow support

Product overview

The HPE Aruba Networking 3810 Switch series provides performance and resiliency for enterprises, SMBs, and branch office networks. With HPE Smart Rate multi-gigabit ports for high-speed access points and IoT devices, this advanced Layer 3 network switch delivers a better application experience with low latency, virtualization with resilient stacking technology, and line rate 40 GbE for plenty of back haul capacity.

A powerful HPE Aruba Networking ProVision ASIC delivers performance, robust feature support, and value with flexible programmability for the latest applications. The 3810 delivers resiliency and scalability via innovative backplane stacking technology and redundant, hot-swappable power supplies all in a convenient 1U form factor. It supports an advanced Layer 2 and 3 feature set with OSPF, IPv6, IPv4 BGP, Dynamic Segmentation, robust QoS, and policy-based routing are included with no software licensing.

Easy to deploy, use and manage using HPE Aruba Networking AirWave or HPE Aruba Networking Central. HPE Aruba Networking

ClearPass offers centralized security and external captive portal support. The switches offer a limited lifetime warranty.

Enhanced capabilities

Software-defined networks

- Supports multiple programmatic interfaces, including REST APIs and OpenFlow 1.0 and 1.3, to enable automation of network operations, monitoring, and troubleshooting

Unified wired and wireless support

- HPE Aruba Networking ClearPass Policy Manager provides profiling, authentication, and policy management across multi-vendor wired and wireless networks
- Switch auto-configuration automatically configures switch for different settings such as VLAN, CoS, PoE max power, and PoE priority when an HPE Aruba Networking access point is detected
- User Role defines a set of switch-based policies in areas such as security, authentication, and QoS. A user role can be assigned to a group of users or devices, using switch-based local user role or download from ClearPass

Data sheet

	HPE Aruba Networking 3810M 24G 1-slot Switch (JL071A)	HPE Aruba Networking 3810M 48G 1-slot Switch (JL072A)	HPE Aruba Networking 3810M 24G PoE+ 1-slot Switch (JL073A)
Harmonics		EN61000-3-2:2006 +A1:2009 +A2:2009 Class A	
Flicker		EN61000-3-3:2008	
Management			
	HPE Aruba Networking Central; HPE Aruba Networking AirWave Network Management; IMC—Intelligent Management Center; Command-line interface; Web browser; Configuration menu; Out-of-band management (RJ-45 Ethernet); In-line and out-of- band; Out-of-band management (serial RS-232c or micro USB)		

	HPE Aruba Networking 3810M 48G PoE+ 1-slot Switch (JL074A)	HPE Aruba Networking 3810M 16SFP+ 2-slot Switch (JL075A)	HPE Aruba Networking 3810M 40G 8 HPE Smart Rate PoE+ 1-slot Switch (JL076A)
Included accessories			
	1 HPE Aruba Networking 3810 Switch Fan Tray (JL088A)	1 HPE Aruba Networking 3810 Switch Fan Tray (JL088A)	1 HPE Aruba Networking 3810 Switch Fan Tray (JL088A)
I/O ports and slots			
	48 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only; Ports 1-48 support MACSec 1 open module slot Supports a maximum of 4 SFP+ ports or 2 40 GbE ports, with optional module or 4 Smart Rate ports	16 SFP+ fixed 1000/10000 SFP+ ports; Duplex: 100BASE-TX: half or full; 1000BASE-T: full only; Ports 1-16 support MACSec 2 open module slots Supports a maximum of 8 SFP+ ports or 2 40 GbE ports, with optional module or 4 Smart Rate ports	40 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only; Ports 1-40 support MACSec 8 RJ-45 HPE Smart Rate Multi-Gigabit ports (100M, 1/2.5/5GBaseT and 10GBaseT); Ports 1-8 support MACSec 1 open module slot Supports a maximum of 4 SFP+ ports or 2 40 GbE ports, with optional module or 4 Smart Rate ports
Additional ports and slots			
	1 stacking module slot 1 RJ-45 serial console port 1 RJ-45 out-of-band management port 1 dual-personality (RJ-45 or USB micro-B)	1 stacking module slot 1 RJ-45 serial console port 1 RJ-45 out-of-band management port 1 dual-personality (RJ-45 or USB micro-B)	1 stacking module slot 1 RJ-45 serial console port 1 RJ-45 out-of-band management port 1 dual-personality (RJ-45 or USB micro-B)



Specifications

HPE Aruba Networking 3810M 48G PoE+ 1-slot Switch (JL074A)

HPE Aruba Networking 3810M 16SFP+ 2-slot Switch (JL075A)

HPE Aruba Networking 3810M 40G 8 HPE Smart Rate PoE+ 1-slot Switch (JL076A)

Power supplies

2 power supply slots
1 minimum power supply required
(ordered separately)

2 power supply slots
1 minimum power supply required
(ordered separately)

2 power supply slots
1 minimum power supply required
(ordered separately)

Fan tray

Includes:
1 x JL088A
1 fan tray slot
Switch ships with 1 JL088A fan tray
installed. Spares ordered separately.

Includes:
1 x JL088A
1 fan tray slot
Switch ships with 1 JL088A fan tray
installed. Spares ordered separately.

Includes:
1 x JL088A
1 fan tray slot
Switch ships with 1 JL088A fan tray
installed. Spares ordered separately.

Physical characteristics

Dimensions 17.42(w) x 16.98(d) x 1.73(h) in
(44.25 x 43.13 x 4.39 cm)
(1U height)

Dimensions 17.42(w) x 16.98(d) x 1.73(h) in
(44.25 x 43.13 x 4.39 cm)
(1U height)

Dimensions 17.42(w) x 16.98(d) x 1.73(h) in
(44.25 x 43.13 x 4.39 cm)
(1U height)

Weight 13.62 lb (6.18 kg)

Weight 13.28 lb (6.02 kg)

Weight 13.61 lb (6.17 kg)

Memory and processor

P2020 Dual Core @ 1.2 GHz, 4 GB
DDR3 SDRAM, 1 GB SD Card
Dual ARM® Cortex A9 @ 1 GHz,
2 GB DDR3 SDRAM; Packet buffer size: 13.5 MB Internal

Mounting and enclosure

Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)
Horizontal surface mounting only

Performance

	IPv6 Ready Certified	IPv6 Ready Certified	IPv6 Ready Certified
1000 Mb latency	< 2.8 μs (FIFO 64-byte packets)	< 2.8 μs (FIFO 64-byte packets)	< 2.8 μs (FIFO 64-byte packets)
10 Gbps latency	< 1.8 μs (FIFO 64-byte packets)	< 1.8 μs (FIFO 64-byte packets)	< 1.8 μs (FIFO 64-byte packets)
40 Gbps latency	< 1.5 μs (FIFO 64-byte packets)	< 1.5 μs (FIFO 64-byte packets)	< 1.5 μs (FIFO 64-byte packets)
Throughput	up to 190.5 Mpps (64-byte packets)	up to 285.7 Mpps (64-byte packets)	up to 273.8 Mpps (64-byte packets)
Routing/switching capacity	320 Gbps	480 Gbps	480 Gbps
Switch fabric speed	338 Gbps	508 Gbps	508 Gbps
Routing table size	10000 entries (IPv4), 5000 entries (IPv6)	10000 entries (IPv4), 5000 entries (IPv6)	10000 entries (IPv4), 5000 entries (IPv6)
MAC address table size	64000 entries	64000 entries	64000 entries



Specifications

HPE Aruba Networking 3810M 48G PoE+ 1-slot Switch (JL074A)

HPE Aruba Networking 3810M 16SFP+ 2-slot Switch (JL075A)

HPE Aruba Networking 3810M 40G 8 HPE Smart Rate PoE+ 1-slot Switch (JL076A)

Environment

Operating temperature	32°F to 113°F (0°C to 45°C)	32°F to 113°F (0°C to 45°C).	32°F to 113°F (0°C to 45°C)
Operating relative humidity	15% to 95% @ 104°F (40°C), non-condensing	15% to 95% @ 104°F (40°C), non-condensing	15% to 95% @ 104°F (40°C), non-condensing
Non-operating/storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Non-operating/storage relative humidity	15% to 90% @ 149°F (65°C), non-condensing	15% to 90% @ 149°F (65°C), non-condensing	15% to 90% @ 149°F (65°C), non-condensing
Altitude	up to 10,000 ft (3 km)	up to 10,000 ft (3 km)	up to 10,000 ft (3 km)
Acoustic	Power: 42 dB, Pressure: 26 dB	Power: 39 dB, Pressure: 22.3 dB	Power: 45 dB, Pressure: 27.9 dB
Primary airflow direction	Front to Side and Front to Rear	Front to Side and Front to Rear	Front to Side and Front to Rear

Electrical characteristics

Frequency	50/60Hz	50/60Hz	50/60Hz
Voltage	JL086A PSU: 100-127/200-240 VAC JL087A PSU: 110-127/200-240 VAC	JL085A PSU: 100-127/200-240 VAC	JL086A PSU: 100-127/200-240 VAC JL087A PSU: 110-127/200-240 VAC
Current	JL086A PSU (Each): 5A/2.5A JL087A PSU (Each): 8.5A/5A	JL085A PSU (Each): 1A/0.5A	JL086A PSU (Each): 5A/2.5A JL087A PSU (Each): 8.5A/5A
Max/idle power rating (Switch+ 1 PSU)	135W/103W	120W/95W	190W/158W
Second PSU power adder	10W	10W	10W
Max/idle uplink Power Adder	JL078A: 4W/3W JL079A: 7W/3W JL081A: 4W/3W JL083A: 11W/4W	JL078A: 4W/3W JL079A: 7W/3W JL081A: 4W/3W JL083A: 11W/4W	JL078A: 4W/3W JL079A: 7W/3W JL081A: 4W/3W JL083A: 11W/4W
Maximum heat dissipation* (max case)	531.96	480.81	719.51
PoE Power (max possible)	1440W	N/A	1440W

Notes

Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst case theoretical maximum numbers provide for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. This is a modular product.

*Switch + 2 power supplies + one JL083A Uplink. For most accurate heat dissipation, idle and max power for any combination of chassis and accessories, please consult configurator.

Safety

EN 60950/IEC 60950; UL 60950; UL 60950-1; CAN/CSA 22.2 No. 60950; EN 60825; CSA 22.2 60950-1; EN 62479:2010; EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011 +A2:2013; EN 62368-1, Ed. 2; IEC 60950-1:2005 Ed.2; Am 1:2009+A2:2013; IEC 60825:2007; EN60850-1:2007 / IEC 60825-1:2007 Class1 Class 1 Laser Products/Laser Klasse 1; UL 62368-1 Ed.2

Specifications

HPE Aruba Networking 3810M
48G PoE+ 1-slot Switch (JL074A)

HPE Aruba Networking 3810M
16SFP+ 2-slot Switch (JL075A)

HPE Aruba Networking 3810M
40G 8 HPE Smart Rate PoE+ 1-slot
Switch (JL076A)

Emissions

FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A;
EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011 +A2:2013

Immunity

Generic	EN55022: 2010
EN	EN55024: 2010
ESD	IEC 61000-4-2
Radiated	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC
Conducted	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Voltage dips and interruptions	IEC 61000-4-11; >95% reductions, 0.5 period; 30% reduction, 25 periods
Harmonics	EN61000-3-2:2006 +A1:2009 +A2:2009 Class A
Flicker	EN61000-3-3:2008

Management

HPE Aruba Networking Central; HPE Aruba Networking AirWave Network Management; IMC—Intelligent Management Center; Command-line interface; Web browser; Configuration menu; Out-of-band management (RJ-45 Ethernet); In-line and out-of- band; Out-of-band management (serial RS-232c or micro USB)

- RFC 2096 IP Forwarding Table MIB
- RFC 2578 Structure of Management Information Version 2 (SMIV2)
- RFC 2613 SMON MIB
- RFC 2618 RADIUS Client MIB
- RFC 2620 RADIUS Accounting MIB
- RFC 2665 Ethernet-Like-MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
- RFC 2737 Entity MIB (Version 2)
- RFC 2787 VRRP MIB
- RFC 2863 The Interfaces Group MIB
- RFC 2925 Ping MIB
- RFC 2932 IP (Multicast Routing MIB)
- RFC 2933 IGMP MIB
- RFC 3411 SNMP Management Frameworks
- RFC 3412 Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)
- RFC 3413 Simple Network Management Protocol (SNMP)

Applications

- RFC 3414 User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)
- RFC 3415 View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)
- RFC 3418 Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)
- RFC 4836 Managed Objects for 802.3 Medium Attachment Units (MAU)
- RFC 7331 BFD MIB

Network management

- IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
- RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events)
- RFC 3176 sFlow
- RFC 5424 Syslog Protocol
- ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED)
- SNMPv1/v2c/v3
- XRMON
- OSPF
- RFC 2328 OSPFv2

- RFC 3101 OSPF NSSA
- RFC 3623 Graceful OSPF Restart (Unplanned Outages only)
- RFC 5340 OSPFv3 for IPv6 QoS/CoS
- RFC 2474 DiffServ Precedence, including 8 queues/port
- RFC 2475 DiffServ Architecture
- RFC 2597 DiffServ Assured Forwarding (AF)
- RFC 2598 DiffServ Expedited Forwarding (EF)

Security

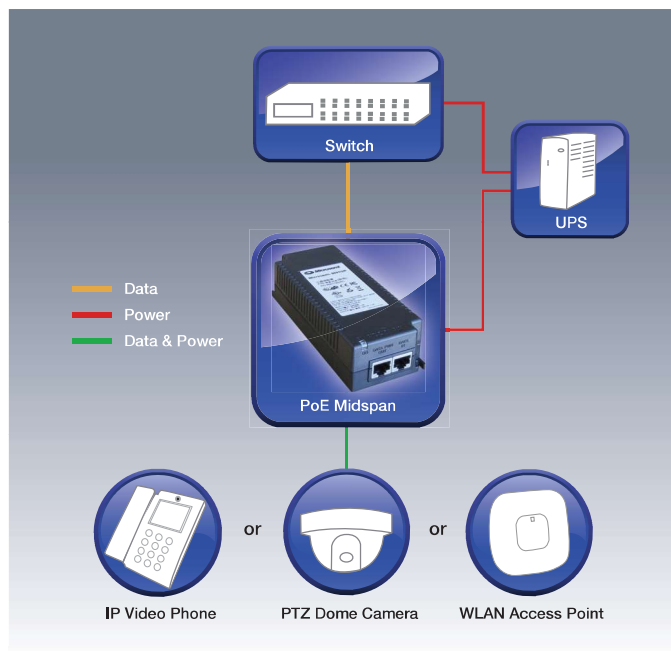
- IEEE 802.1X Port Based Network Access Control
- RFC 1321 The MD5 Message-Digest Algorithm
- RFC 2698 A Two Rate Three Color Marker
- RFC 2818 HTTP Over TLS RFC 1492 TACACS+
- RFC 2865 RADIUS (client only)
- RFC 2866 RADIUS Accounting
- RFC 3579 RADIUS Support For Extensible Authentication Protocol (EAP)
- Secure Sockets Layer (SSL)
- SSHv2 Secure Shell
- RFC 7030 Enrollment over Secure Transport
- RFC 6614 Transport Layer Security (TLS) Encryption over Radius (RadSec)

HPE Aruba Networking 3810 switches and accessories**Switch models**

- HPE Aruba Networking 3810M 24G 1-slot Switch (JL071A)
- HPE Aruba Networking 3810M 48G 1-slot Switch (JL072A)
- HPE Aruba Networking 3810M 24G PoE+ 1-slot Switch (JL073A)
- HPE Aruba Networking 3810M 48G PoE+ 1-slot Switch (JL074A)
- HPE Aruba Networking 3810M 16SFP+ 2-slot Switch(JL075A)
- HPE Aruba Networking 3810M 40G 8 HPE Smart Rate PoE+ 1-slot Switch (JL076A)
- HPE Aruba Networking 3810M 48G PoE+ 4SFP+ 680W Switch (JL428A)
- HPE Aruba Networking 3810M 48G PoE+ 4SFP+ 1050W Switch (JL429A)
- HPE Aruba Networking 3810M 24SFP+ 250W Switch(JL430A)

PD-9501GR Midspan

Single-port, 60W Gigabit Midspan, 4-Pairs, 802.3at Compliant



Overview

Microsemi's PD-9501GR is a single port solution for remote powering of current as well as emerging high power applications. The PD-9501GR is designed specifically to power IEEE 802.11n and IEEE 802.3at access points, pan-tilt-zoom (PTZ) and dome cameras, IP videophones, thin clients and other high power Ethernet end terminals with 60W of power, and is also backward compatible and safe to use with any IEEE 802.3af terminal such as VoIP phones, IP cameras and wireless LAN access points. It can power both existing 10/100Base-T devices and emerging wireless Gigabit devices such as Wi-MAX and wireless IEEE 802.11n access points. The PD-9501GR provides power on all 4-pairs while being backwards compatible to 802.3af and 802.3at powered devices.

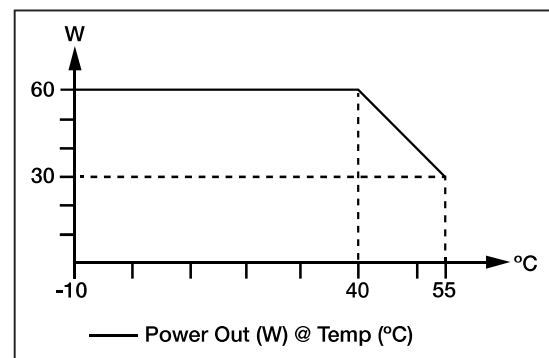
PD-9501GR Features

- IEEE 802.3at compliant with 2-event classification
- IEEE 802.3af backward compatible
- Output power of 60W over 4-pairs is guaranteed
- Supports 10/100/1000Base-T applications
- Plug-and-play installation
- Safe: low power devices receive only the power they need
- Automatic detection and protection of non-standard Ethernet terminals
- Compact design fits easily in WLAN access point and IP camera installations

PD-9501GR Specifications

No. of Ports	1
Pass Through Data Rates	10/100/1000 Mbps
Power over Ethernet Output	Pin Assignment and Polarity: Data Pairs 1/2 (-) and 3/6 (+) Spare Pairs 7/8 (-) and 4/5 (+) Output Power Voltage: 55 VDC User Port Power: 60W over 4-pairs (Guaranteed)
Input Power Requirements	AC Input Voltage: 100 to 240 VAC AC Input Current: 1.5A @100-240 VAC AC Frequency: 50 to 60 Hz
Dimensions	62 mm (W) x 38 mm (H) x 151 mm (L) 2.44 in. x 1.5 in. x 5.94 in
Weight	Bare unit: .71 lbs (320g)
Indicators	AC Power: Yellow Channel Power Indicator: Green
Connectors	Shielded RJ-45, EIA 568A and 568B
Environmental Conditions	Operating Ambient Temperature: 14° to 113°F (-10°C to 45°C) @60W 14° to 131°F (-10°C to 55°C) @30W Operating Humidity: Maximum 90%, Non-condensing Storage Temperature: -4° to 158°F (-20° to 70°C) Storage Humidity: Maximum 95%, Non-condensing
Reliability	MTBF: 240,000 hrs. @25°C
Thermal Rating	30 BTU/Hr (@100Vac)
Warranty	1-year
Regulatory	IEEE 802.3at (PoE), RoHS Compliant, WEEE Compliant, CE
Electromagnetic Emission & Immunity	FCC Part 15, Class B EN 55022 Class B (Emissions) EN 55024 (Immunity), VCCI
Safety Approvals	UL/cUL Per EN 60950-1 GS Mark Per EN 60950-1

Performance Data



Ordering Information

Part Number	Name	Description
PD-9501GR	Microsemi PD-9501GR	1-port, IEEE 802.3at 4-Pairs, Gigabit Midspan



Microsemi Corporate Headquarters
One Enterprise, Aliso Viejo, CA 92656 USA
Within the USA: +1 (800) 713-4113
Outside the USA: +1 (949) 380-6100
Sales: +1 (949) 380-6136
Fax: +1 (949) 215-4996
email: sales.support@microsemi.com
www.microsemi.com

Microsemi Corporation (Nasdaq: MSCC) offers a comprehensive portfolio of semiconductor and system solutions for communications, defense & security, aerospace and industrial markets. Products include high-performance and radiation-hardened analog mixed-signal integrated circuits, FPGAs, SoCs and ASICs; power management products; timing and synchronization devices and precise time solutions, setting the world's standard for time; voice processing devices; RF solutions; discrete components; security technologies and scalable anti-tamper products; Power-over-Ethernet ICs and midspans; as well as custom design capabilities and services. Microsemi is headquartered in Aliso Viejo, Calif., and has approximately 3,400 employees globally. Learn more at www.microsemi.com.

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MSC-PD-9501GR 5.14

MASTER NTP TIME SERVER
TIMENET®
PRO



TIMENET Pro is used in security applications to maintain accurate time for reliable evidential data.

Accurate, low cost,
extremely compact
universal atomic
clock reference for
network time
synchronisation

- | TIMENET Pro supports all NTP compatible devices
- | Ideal for synchronising VMS + ACS servers & clients
- | Ideal for closed or secure networks
- | Ideal for mobile or vehicle-based applications
- | POE-powered device (or 12V DC input), low power (1.5W)
- | Simple browser interface allows fast installation
- | Wide operating temperature range

TIMENET Pro is a Master NTP reference
clock for Ethernet networks with POE capability.



TIMENET Pro is GPS based, so it can be used anywhere on the earth's surface

GPS is a global satellite system used primarily for position location, using accurate atomic clock references.



mounted on a roof, window or wall etc. As an alternative to POE, TIMENET Pro can be powered by an optional 12V DC supply (VPSU-12V-U).

TIMENET Pro Applications

With its compact rugged enclosure, extended operating temperature range TIMENET Pro is suitable for a wide range of applications and environments.

Security related applications include time synchronisation of DVR and NVR servers, access control servers, operator workstations, and even IP cameras. More general applications include time-synchronisation of Windows, Mac and Linux PCs and servers. The availability of full GPS position data to third party applications also makes TIMENET Pro ideal for use in mobile or vehicle based systems.



About GPS

GPS is a global satellite system used primarily for position location, using very accurate atomic clock references. GPS signals are far less prone to interference than traditional national radio clock signals. Thus TIMENET Pro is a universal solution which can be used anywhere in the world.

About Time Zones

UTC is effectively a GMT reference time and TIMENET Pro provides this via NTP as a universal reference.

It is the task of the network client (i.e. DVR or other client device) to look after the local time zone setting for the country or zone location, including any local or national variations to daylight savings time or equivalent.

About UTC Time

Universal co-ordinated time is an official world-wide atomic clock reference for time, agreed by national standards around the world. UTC time copes with variations in the earth's rotation by the introduction of leap seconds at pre defined intervals. GPS time references incorporate this automatically. Therefore TIMENET Pro will continuously and automatically provide an accurate UTC clock reference over many years.

About NTP

NTP stands for Network Time Protocol and is a universal standard for time synchronisation of computers or other devices on a network. TIMENET Pro is NTP compatible and acts as a time server for any NTP-enabled client. All Windows, Linux and Mac OS operating systems are NTP compatible.

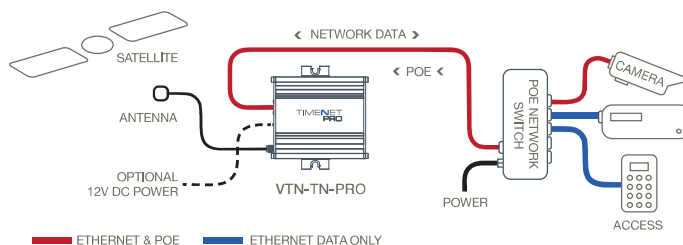


Diagram 1. TIMENET Pro delivers an accurate network time signal with maximum reliability and minimal installation effort.



TIMENET Pro comes with antenna and 5 metre cable included.

TECHNICAL SPECIFICATION

TIMENET[®]
PRO

TIME SERVER	
Time source	GPS Satellite
Protocol	NTP Stratum 1 Time Server (NTPv4)
Accuracy	Ethernet NTP $\pm 1\text{ms}$ overall GPS source $\pm 0.1\mu\text{s}$
ANTENNA	
Connector	SMA Male
Cable	5 metre cable, (optional 10 metre extension)
Antenna head	GPS sensor, in externally rated magnetic housing (+ adhesive pad/window fixing)
POWER	
Unit power	1.5W
POE type	Class 1
Alternative power input	10-40V DC (max current 150mA at 12V)
ETHERNET INTERFACE	
Connector type	RJ45
Rate	10Base-T/100Base-TX full-duplex with auto-negotiation
Data security	Shared Keys system (server authentication)
LEDS	
Status indicators	Green LED: long pulse: OK short pulse: no GPS lock Amber LED: heartbeat pulse
PHYSICAL/ENVIRONMENTAL	
Dimensions	L 87mm W 75mm H 22mm (W 97mm with wall mounting brackets) L 3.42 inches W 2.95 in H 0.86 in (W 3.8 in with wall mounting brackets)
Weight	123g [4.3oz] (with mounting brackets) 121g [4.2oz] (without brackets)
Operating temperature	TIMENET Pro -15°C to 75°C [5°F to 167°F] Antenna -40°C to 85°C [-40°F to 185°F]
Relative humidity	95% non-condensing
Compliance	CE, FCC, UKCA, RoHS
PRODUCT CODES	
VTN-TN-PRO	TIMENET Pro Device, and 5 metre [16.4 feet] cable with antenna
VTN-EXTEND	Antenna Extension (10 metre) [32.8 feet]
VPSU-12V-U	Optional 12V Power Supply (not required if POE is used)



TIMENET Pro Antenna
Extension Cable
10 metres

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Under no circumstances should this document be reproduced,
distributed or changed, partially or wholly, without written,
formal authorisation from Veracity UK Ltd.
TIMENET PRO is a trademark of Veracity UK Ltd.

Surge Protection

All Veracity products have been independently tested to verify their resilience to the stringent immunity levels of international standards. Users should note that no electronic equipment can be guaranteed to be completely protected at levels beyond the defined standard; therefore product warranty cannot include damage to products which has been caused by surges exceeding those of the standards specified, for example lightning strike activity.

It is the user's responsibility to implement relevant surge protection measures, as appropriate to the installation. This may include the fitting of additional surge protection devices where required.



Veracity HQ
Prestwick International Aerospace Park
4 Dow Road
Prestwick
UK
KA9 2TU
Tel +44 (0) 1292 264967

www.veracityglobal.com
sales@veracityglobal.com

See www.veracityglobal.com website
for country and region specific contacts.

USB Professional Joystick Keyboard



The innovative USB joystick keyboard allows you to have easy and complete control of all the functionality of the ACC Client for live, playback and alarm management. It is just one of the many ways Avigilon can help provide the very best monitoring and protection.

KEY FEATURES

- USB powered
- Preconfigured with Avigilon Control Center Client software commands
- Can be configured for right-hand or left-hand use

SYSTEM	Operating System	Windows 10
MECHANICAL	Dimensions (LxWxH)	379 mm x 89 mm x 224 mm; 15" x 3.5" x 8.8"
	Weight	1.35 kg (3.0 lbs)
	USB Cable Length	1.5 m (59")
ELECTRICAL	Power Source	USB port
	Power Consumption	350mA max
ENVIRONMENTAL	Operating Temperature	0° C to 45° C (32° F to 113° F)
CERTIFICATIONS		EN55022 Class B
		EN50130-4
		EN61000-6-3
		EN 62368-1
		FCC part 15 Class B
ORDERING INFORMATION	ACC-USB-JOY-PRO	Avigilon USB Professional Joystick Keyboard

Remote Monitoring Workstation

2 Monitor

4 Monitor

The Avigilon Remote Monitoring Workstation lineup offers a simple and easy way to bring high-resolution video monitoring to new and existing systems. Optimized to support ACC Client workloads, these pre-provisioned workstations are quick to deploy and reliable in the field.



Features



Tested Performance

The Avigilon Workstation lineup has been stress tested through various component combinations for the highest performance for ACC Client workloads.



Small Form Factor

Its streamlined size and design reduces hardware footprint for space-constrained areas.



Easy Recovery

A purpose-built and turnkey solution that is simple and secure for Security and IT teams to deploy.



Simple Setup

Plug-and-play is made easy with DisplayPort and HDMI adapters included for typical monitor connections.

Specifications

Video Playback Performance†	RM7-WKS-4MN	RM7-WKS-2MN
2 MP @ 30 fps	22 Primary Streams + 14 Secondary Streams	18 Primary Streams
4 MP @ 30 fps	22 Primary Streams + 14 Secondary Streams	18 Primary Streams
8 MP @ 30 fps	4 Primary Streams + 32 Secondary Streams	4 Primary Streams + 14 Secondary Streams
16 MP @ 24 fps	2 Primary Streams + 34 Secondary Streams	2 Primary Streams + 16 Secondary Streams
61 MP @ 7 fps	6 Primary Streams + 30 Secondary Streams	4 Primary Streams + 14 Secondary Streams
Video Wall: 4 MP @ 30 fps†	144 secondary streams (6x6 streams on 4 monitors)	60 secondary streams (5x6 streams on 2 monitors)
Video Wall: 8 MP @ 30 fps†	80 secondary streams (4x5 streams on 4 monitors)	40 secondary streams (4x5 streams on 2 monitors)
Video Wall: 16 MP @ 24 fps†	80 secondary streams (4x5 streams on 4 monitors)	40 secondary streams (4x5 streams on 2 monitors)
Video Wall: 61 MP @ 7 fps†	224 secondary streams (7x8 streams on 4 monitors)	84 secondary streams (6x7 streams on 2 monitors)

‡ Primary streams are high resolution/bandwidth, secondary streams are low resolution/bandwidth.

† Video wall playback performance assumes minimal interaction with the ACC Client after initial setup. Testing was done with analytic bounding boxes disabled.

System		
Supported Monitor Interfaces	Combination of up to 4: mDP, DP, and HDMI (DP and HDMI adapters are supplied)	Combination of up to 2: DP, and HDMI (HDMI adapters are supplied)
Operating System	Microsoft Windows 10 IoT Enterprise LTSC (2021)	
Processor	Intel® Core™ i5 (12th Gen)	Intel® Core™ i3 (12th Gen)
Memory	32 GB DDR4 RAM	8 GB DDR4 RAM
OS Drive	M.2 256 GB PCIe NVMe Class 35 SSD	
Network Interface	2 × 1 Gigabit Ethernet RJ-45 ports (1000Base-T)	
Optical Drive	DVD-RW	
Graphics	NVIDIA T1000 (8GB)	Intel Integrated graphics
Warranty	Lifetime 24/7 Avigilon technical phone support and a 3 year next business day warranty	

Mechanical	
Form Factor	Small form factor
Dimensions (DxWxH)	292.8 mm × 92.6 mm × 290 mm (11.53" × 3.65" × 11.42")
Weight	5.956 kg (13.13 lbs)

Electrical	
Power Input	90 to 264 VAC, 50/60 Hz, auto-switching
Power Supply	Single non-redundant
Power Consumption	300W

Environmental	
Operating Temperature	5°C to 45°C (41°F to 113°F)
Storage Temperature	-40° to 70°C (-40° to 158°F)
Humidity	20% to 80% relative humidity with 26°C (79°F) maximum dew point (non-condensing)
Operating Vibration	0.26 Grms random at 5 Hz to 350 Hz
Operating Shock	Bottom/right half-sine pulse of 40 G for up to 2.0 ms
Operating Altitude	Up to 3048 m (10,000 ft)

Supplied Accessories	
RM7-WKS-4MN-XX	USB Keyboard, USB Mouse, Power cord, 4 mDP to DP adapters, 4 mDP to HDMI adapters†
RM7-WKS-2MN-XX	USB Keyboard, USB Mouse, Power cord, 2 DP to HDMI adapters†
† Monitor sold separately	
Certifications	
Certifications/Approvals	UL, cUL, CE, UKCA, ROHS, RCM, KC, NOM, BSMI, CCC, NRCS, VCCI, CMIM, PSB
Safety Standards	UL/CSA/IEC/EN 62368-1
Electromagnetic Emissions Standards	FCC Part 15 Subpart B (Class B), ICES-003 (Class B), EN 55032 (Class B), EN 61000-3-2, EN 61000-3-3
Electromagnetic Immunity Standards	EN 55035

Ordering Information

ORDERING INFORMATION	
RM7-WKS-4MN-XX	Avigilon remote monitoring workstation for up to 4 monitors†
RM7-WKS-2MN-XX	Avigilon remote monitoring workstation for up to 2 monitors†
RM7-WKS-WARR-EXTEND-2YR	2-Year Extended Warranty for RM7-WKS
WKS-RACK	Rack compatible with NVR5-WKS, RM7-WKS, NVR4X-WKS, RM6-WKS, NVR4-WKS, RM5-WKS

† Monitor sold separately

RM7-WKS-xMN-NA		RM7-WKS-xMN-UK		RM7-WKS-xMN-EU		RM7-WKS-xMN-AU	
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Support

Learn more and find additional documentation at [avigilon.com](https://www.avigilon.com) or email sales@avigilon.com for specific product support.



Specifications for **M4K43-G2-NA**

Package dimensions :

Depth (package,cm):	111.76 cm
Gross Weight (Package, kg):	25.4 kg
Height (package,cm):	27.94 cm
Width (package,cm):	73.66 cm

Product dimensions :

Net Weight (Product, kg):	22.68 kg
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Vendor information :

Brand Name	:	Avigilon
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Video technology :

Input	:	HDMI, VGA, DP, Mini DP
Video Entry No	:	5

Wireless productivity for the busiest offices



Wireless Combo MK270

The Logitech Wireless Combo MK270 delivers fast and reliable keyboard and mouse connectivity of up to 10 meters with Logitech Advanced 2.4 GHz wireless, even in the busiest environments. The mouse features the Logitech Unifying receiver for plug-and-play productivity anywhere and the long battery life reduces support requirements and costs.

Features:

- Logitech Advanced 2.4 GHz wireless connectivity with 10-meter/32-feet range¹
- Logitech Unifying receiver and internal storage compartment in mouse
- 24-month keyboard and 12-month mouse battery life² plus auto-sleep
- Keyboard shortcuts
- Feel-good typing
- Contoured mouse design with laser tracking
- Plug-and-play simplicity

Logitech **Wireless Combo MK270****Product Specifications****Price:** \$29.99**Part #:** 920-004536**Keyboard****Width:** 17.6 in (441.5 mm)**Height:** 0.9 in (22.9 mm)**Depth:** 5.9 in (149.1 mm)**Weight:** 17.2 ounces (487.6 g)**Mouse****Width:** 4.2 in (106.9 mm)**Height:** 1.6 in (39.6 mm)**Depth:** 2.4 in (60.2 mm)**Weight:** 2.4 ounces (68.9 g)**System Requirements**

Windows® XP, Windows Vista®, Windows® 7, Windows® 8, USB port

Inside the box

Keyboard, Mouse, USB receiver, USB range extender, 2 AAA (keyboard) and 2 AA (mouse) batteries, User documentation

Warranty

3-year limited hardware

FEATURE SPOTLIGHT**Logitech Advanced 2.4 GHz wireless connectivity with 10-meter/32-feet range¹**

Delivers a fast, reliable, and secure connection using 128-bit AES keyboard encryption with virtually no delays or dropouts—even in the busiest wireless environments—for convenient use anywhere in the office, including a conference room environment.

**Logitech Unifying receiver and internal storage compartment in mouse**

The small receiver stays plugged into the laptop's USB port for easy, convenient, and clutter-free connectivity and can be stored in your mouse to reduce the risk of damage or loss. Users can add up to six devices to one USB port.

**24-month keyboard and 12-month mouse battery life² plus auto-sleep**

Offers long-lasting battery life to minimize downtime and the cost and hassle of changing batteries. Auto-sleep and on/off switches reduce power consumption to further extend battery life.

**Keyboard shortcuts**

Save time with eight keyboard hot keys, which provide instant access to most-used applications like email, Internet and volume up/down.

**Feel-good typing**

A full-size, spill-resistant³ keyboard with low-profile, whisper-quiet keys, F-keys and a number pad is comfortable, convenient, and built to last for easy use.

**Contoured mouse design with laser tracking**

Provides all-day comfort and smooth and accurate tracking.

**Plug-and-play simplicity**

Works right out of the box for maximum plug-and-play efficiency. No software installation is required, saving tech support time.

Learn more at logitech.com/business

To order contact your reseller, or call us at 800-308-8666.

¹ Wireless range may vary due to environmental and computing conditions.² Keyboard battery life calculation based on an estimated two million keystrokes/year in an office environment.

User experience may vary. Mouse battery life may vary based on user and computing conditions.

³ Tested under limited conditions (maximum 60 ml liquid spillage). Do not immerse in liquid.

Logitech Inc., 7600 Gateway Blvd, Newark, CA 94560

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Tools Designed for the Anywhere Workplace



General Information: **ER1-17N32-Cat6-M3X-IP**

Form Factor: 1U Rackmount

Mounting Type: 4 Post/Cabinet (Contact for 2 Post)

Mounting Depth (4P): Varied — See Below

Number of Drawers: 1

LCD Access: Clamshell Style

Model Version: Generation 4 (Gen4)

Color: Black (Custom Available)

Hardware Supported: Multi-Platform

OS Compatibility: Windows, Linux, Netware, UNIX

Regulatory Approval: CE, FCC, CCC, RoHS3, UL, REACH

Warranty: 2 Years (Extended Available)

LCD

Display Size: 17.3" Diagonal

Ratio: 16:9

LCD Type: Grade A Industrial TFT LCD Panel

Backlighting: LED

Resolution: 1920×1080 (1080p)

Display Color: 16.7M

Brightness: 300 cd/m²

Contrast Ratio: 1000:1 typical

Viewing Angle: 178° Up-Down / 178° Left-Right

Response Time: 25ms

Display Area: 381 x 214 mm

Surface Treatment: Haze 25%, Hard Coating

Surface Hardness: 3H

Signal Input: VGA; Optional HDMI, DVI-D, SDI (Single Console)

MTBF: 15,000 hours

Touch Screen Options: Optional e-Resistive or Capacitive

KVM

Number of Ports: 8 (Std/Cat 6) / 12 (DVI-D) / 16 (Std/Cat 6) / 32 (Cat 6)

Maximum Cascade: 8 Levels (64-256 Servers) Std & Cat 6 Only

Remote IP Option

Number of IP Ports: 1 (Models ending in: IP / M3X-IP / M4X-IP)

2 (Models ending in: M4X-2IP)

User Management: 15-User login; 1-4 active users possible

Browsers Supported: Internet Explorer, Mozilla Firefox, Apple Safari, Google Chrome

Security: SSL v3, RSA, AES, HTTP/HTTPS, CSR

IP Access: 1 x RJ45 Ethernet, 1 x DB9 Serial, 1 x USB

Multi-User Option

Remote Boxes: 1 (Models ending in: 2X / M2X / M3X-IP / M4X-2IP)

2 (Models ending in: M3X / M4X-IP)

FREEDM® One Tight-Buffered Cable, Plenum 6 F, 50 µm multimode, extended 10G distance (OM4)

CORNING

Part Number:

006T8P-31191-29

Corning FREEDM® One plenum cables are flame-retardant, UV-resistant, indoor/outdoor cables designed for aerial and duct applications with no need for a transition splice when entering the building. The tight-buffered construction facilitates easier termination for low-fiber-count applications in the local area network (LAN) and eliminates the need for fan-out kits. The design features TIA-598 color-coded 900 µm buffered fibers for easy identification, consistent stripping and direct termination. The small diameter and bend radius of the cable allow for easy installation in space-constrained areas while the innovative waterblocking technology is ideal for outside plant (OSP) applications. The all-dielectric cable construction requires no grounding or bonding, and the UV-resistant, flame-retardant jacket is rugged, durable and easy to strip. Note: This cable is available in 12 different jacket colors – blue, orange, green, brown, slate, white, red, black, yellow, violet, rose and aqua. The colored jacket allows for easy visual identification of the cables while still providing all of the required environmental protection of an indoor/outdoor cable jacket. Black is the standard jacket color using the part numbers shown here. Contact Customer Care at 1-800-743-2675 to order other color options.

Features and Benefits

Waterblocking technology

OSP (outdoor) applications

Small diameter and bend radius

Easy installation in space-constrained areas

Color-coded fibers

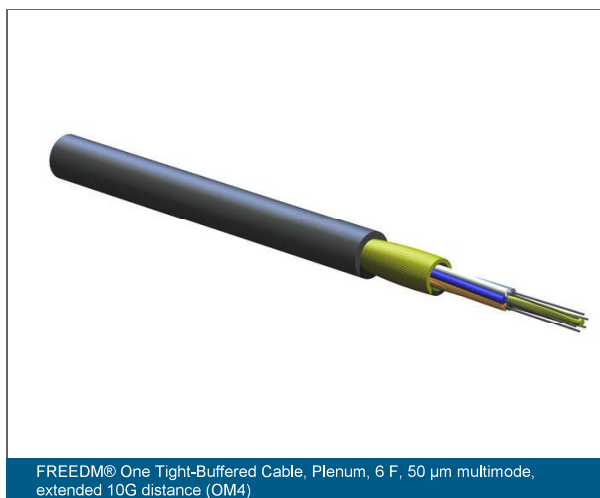
Quick and easy identification

All-dielectric construction

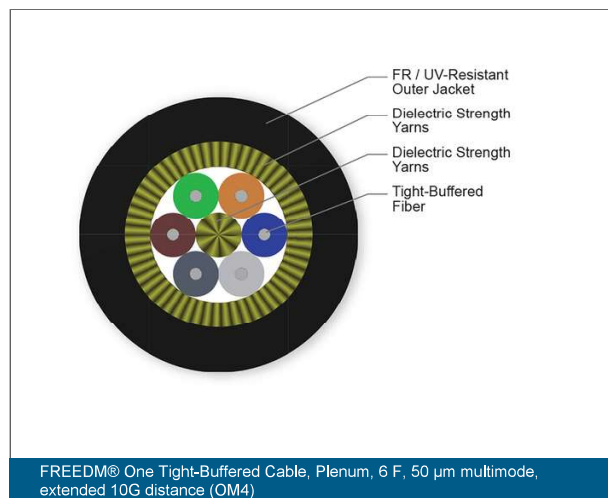
Requires no grounding or bonding

UV-resistant, flame-retardant jacket

Rugged, durable and easy to strip



FREEDM® One Tight-Buffered Cable, Plenum, 6 F, 50 µm multimode, extended 10G distance (OM4)



FREEDM® One Tight-Buffered Cable, Plenum, 6 F, 50 µm multimode, extended 10G distance (OM4)

FREEDM® One Tight-Buffered Cable, Plenum 6 F, 50 µm multimode, extended 10G distance (OM4)

CORNING

Specifications

General Specifications

Cable Type	Tight-Buffered
Environment	Indoor/Outdoor
Product Type	Dielectric
Fiber Category	50 µm MM (OM4+)
Flame Rating	Plenum (OFNP)
Application	Aerial, Duct, General purpose, Horizontal, Vertical Riser, Plenum
Cable geometry	Round

Standards

RoHS	Free of hazardous substances according to RoHS 2011/65/EU
Approvals and Listings	National Electrical Code® (NEC®) OFNR, UL-1666, CSA OFN FT-4
Design and Test Criteria	ICEA S-104-696

Environmental Conditions

Temperature Range, Installation	0 °C to 60 °C (32 °F to 140 °F)
Temperature Range, Operation	-40 °C to 70 °C (-40 °F to 158 °F)
Temperature Range, Storage	-40 °C to 70 °C (-40 °F to 158 °F)

Cable Design

Central Element	Dielectric
Fiber Count	6
Outer Jacket Color	Black
Outer Jacket Material	Flame-Retardant, UV-Resistant
Tensile Strength Elements and/or Armoring - Layer 1	Water-swellable strength members
Tight Buffer Color	Blue, Orange, Green, Brown, Slate, White

FREEDM® One Tight-Buffered Cable, Plenum 6 F, 50 µm multimode, extended 10G distance (OM4)

CORNING

Cable Design

Flame Rating	Plenum (OFNP)
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Mechanical Specifications

Max. Tensile Strength, Long-Term	200 N (44.96 lbf)
Max. Tensile Strength, Short-Term	675 N (151.75 lbf)
Min. Bend Radius Installation	79.5 mm (3.13 in)
Min. Bend Radius Operation	53 mm (2.09 in)
Nominal Outer Diameter	5.3 mm (0.21 in)

Optical Characteristics

Fiber Code	T
Fiber Type	Multimode
Performance Option Code	91
Fiber Core Diameter	50 µm
Minimum Effective Modal Bandwidth (EMB)	5350 MHz*km / -
Maximum Attenuation	2.8 dB/km / 1.0 dB/km
Min. Overfilled Launch (OFL) Bandwidth	3500 MHz*km / 500 MHz*km
Serial 1 Gigabit Ethernet	1100 MHz*km / 600 MHz*km
Serial 10 Gigabit Ethernet	600 MHz*km / -
Wavelengths	850 nm / 1300 nm
Fiber Category	OM4 Extended Distance

Dimensions

Cable Weight	26.8 kg/km (18.01 lb/1000 ft)
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Closet Connector Housing (CCH) Panel, LC Adapters Duplex, 6 F, 50 μ m multimode (OM3/4)

CORNING

Part Number:

CCH-CP06-E4

Corning closet connector housing panels (CCH-CP) are offered in a variety of fiber counts for use with LANscape® solutions hardware products for a “one-size-fits-all” approach. Used with factory-installed or field-installable connectors, these panels provide interconnect or cross-connect capability in a housing at main cross-connections, intermediate cross-connections, telecommunication rooms or work areas. Available with a variety of industry-standard adapter types, the CCH-CP provides an efficient way to securely mate two connectors and offers multimode and single-mode applications.



Closet Connector Housing (CCH) Panel, LC Adapters Duplex, 6 F, 50 µm multimode (OM3/4)

CORNING

Specifications

General Specifications

Product Type	Panels and Modules
Fiber Category	50 µm MM (OM3)
Application	Data Center LAN/SAN, Enterprise Networks

Standards

RoHS	Free of hazardous substances according to RoHS 2011/65/EU
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Design

Number of Adapters per Panel	3
Fiber Count	6
Adapter Type Master Level	LC APC
Housing Type	Panels and Modules

Cable Design

Fiber Count	6
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Design - Adapter

Housing Color	Aqua
Housing Material	Composite
Adapter Type	LC Duplex
Insert	Ceramic

Ordering Information

Product Number	CCH-CP06-E4
EAN Code	4056418194868

UniCam® Connector, LC 50 µm multimode (OM3/OM4)

CORNING

Part Number:

95-050-99-X

Corning® UniCam® LC connectors offer optical performance in a fast, easy field-termination solution ideal for fiber-to-the-workstation applications where setup and teardown time is critical. The high-precision mechanical splice technology enables fiber optic networks to be installed quickly and cost effectively. Installation of an LC, SC or ST® compatible connector can be accomplished in about 50 seconds to one minute with the UniCam High-Performance Tool Kit.

The lightweight, handheld installation tool and high-performance precision cleaver virtually eliminate human variability during installation, ensuring terminations are right the first time, every time. This kit was designed with consideration for network installers, from the cleaver, with its intuitive, hand-held precision design and dual-clamp precision hold, to the installation tool, with its immediate go/no-go feedback signal indicating proper mating of the field fiber to the fiber stub. Installation is as easy as strip, clean, cleave, cam and crimp, with exceptional optical performance assured. Every UniCam connector is assured to meet the published specification at the time of installation or Corning will replace it.

Features and Benefits

Performance guaranteed

100 percent yield guarantee

Broad operating temperature range (-40°C to +75°C)

Utility and flexibility

Factory-polished end face

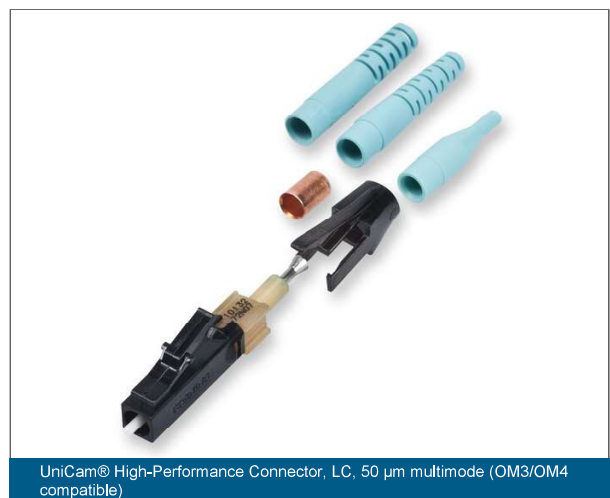
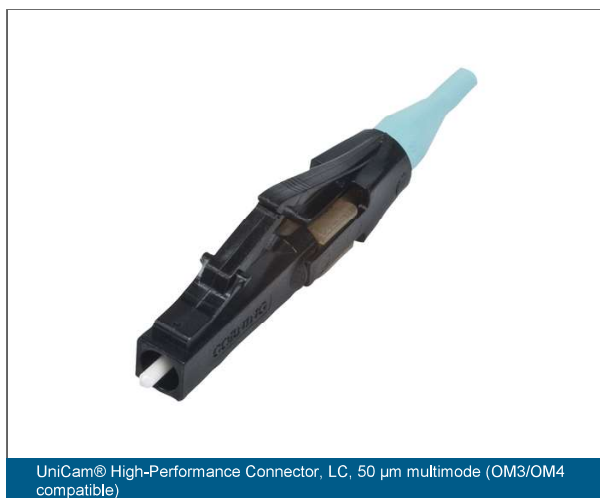
Consistent optical performance

Fast termination and no consumables

Low installation cost

Minimum insertion loss

Optimum optical performance



UniCam® Connector, LC 50 µm multimode (OM3/OM4)



Specifications

General Specifications	
Fiber Category	50 µm MM (OM3/OM4)
Product Type	Field-Installable Connectors
Corning Logo	Yes
Keyed (security)	No
Technology	No-Epoxy/No-Polish

Standards	
RoHS	Free of hazardous substances according to RoHS 2011/65/EU

Environmental Conditions	
Temperature Range, Operation	-40 °C to 75 °C (-40 °F to 167 °F)

Design - Connector	
Connector Type	LC
Housing Color	Black
Boot Color	Aqua
Ferrule Material	Ceramic
Pinned	No

Mechanical Specifications - Connector	
Nominal Fiber Outer Diameter	125 µm
Tensile Strength Jacketed Cable	50 N (11.24 lbf)
Durability	≤ 0.2 dB change, 500 rematings, FOTP-21
Tensile Strength 900 µm Cable	4.9 N (1.1 lb) change ≤ 0.2 dB, FOTP-6

UniCam® Connector, LC 50 µm multimode (OM3/OM4)



Optical Specifications - Connector	
Polish	UPC
Insertion Loss, Max.	0.5 dB
Insertion Loss, Typical	0.1 dB

Ordering Information	
Product Number	95-050-99-X
EAN Code	4042673619420
Package Contents	"Connector, Trigger, Crimp Band, Boot (900 µm), Boot (3.0 mm), Boot (2.0 mm)"
Packaging Method	Individual Pack
Units per Delivery	1/1



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Closet Connector Housing (CCH) One rack unit, holds two CCH connector panels

CORNING

Part Number:

CCH-01U

Closet connector housings (CCHs) provide interconnect or cross-connect capabilities between outside plant, riser or distribution cables and opto-electronics. Like other LANscape solutions hardware, the housings accept CCH connector panels. In addition, the housings accept CCH cassettes and CCH modules.

From fiber and cable routing and strain relief, to port labeling and termination, these housings reduce the risk of error that can disrupt networks. The units are designed for rack mounting in 19-in (48 cm) racks or optional 23-in (58 cm) equipment racks (1.75-in EIA hole spacing). They are available in rack space options of 1U (two panels, cassettes or modules), 2U (four panels, cassettes or modules), 3U (six panels, cassettes or modules) and 4U (12 panels, cassettes or modules). The 1U, 2U and 3U options feature a slide-out tray and see-through, removable top covers. The CCH-04U features a clear door, removable front and rear enclosures and a platinum-colored interior for maximum visibility and access.

Every CCH housing is shipped complete with strain relief brackets, routing clips and guides, and mounting brackets for proper installation. Documentation labels are provided and components can be added as needed to construct a fiber distribution frame for any application. All housings include a removable tinted polycarbonate front door.

Features and Benefits

Durable, polycarbonate-tinted front door for viewing jumpers

Ideal for pigtail splicing

Removable, translucent top covers (1U, 2U, 3U), rear cover (4U)

Visibility and ease of access for installation, testing, and troubleshooting

Internal and external strain-relief options

Flexibility for installation and moves, adds, and changes (MACs)

Accepts panels, modules, and cassettes

Variety of field-termination options

Adaptable to use as a modular splice housing

Splices are stored and protected in same footprint



Closet Connector Housing (CCH), one rack unit, holds two CCH connector panels

Closet Connector Housing (CCH) One rack unit, holds two CCH connector panels

CORNING

Specifications

General Specifications

Product Type	Fiber Optic Hardware
Environment	Indoor
Access Type	Front and rear access slidable
Lockable	Yes
Mounting Type	Rack 19-in, Rack 23-in, Cabinet-mount
Application	Carrier Networks, Data Center, Enterprise Networks

Standards

RoHS	Free of hazardous substances according to RoHS 2011/65/EU
Approvals and Listings	Meets ANSI/TIA/EIA-568A and 606, Tested in accordance with Telecordia GR-63-CORE, UL1863 - Communication Circuit Accessories
UL-Listed	United States and Canadian safety standards

Environmental Conditions

Temperature Range, Operation	-40 °C to 70 °C (-40 °F to 158 °F)
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Design

Fiber Count	48
Housing Material	Powder-coated metal and polycarbonate tray
Number of Modules	2
Cable entry type	External and Internal strain-relief bracket
Number of Panels/Cassettes per Housing	2
Pigtail Length	2.25 m (7.38 ft)
Housing Type	CCH
Locking Availability	Front or rear
Panel or Cassette Type	CCH

Closet Connector Housing (CCH) One rack unit, holds two CCH connector panels

CORNING

Design

Panel or Module Type	CCH
Splice Tray Options	CCH Pigtailed Splice Cassette (CCH-CS)
Number of Ports	24

Dimensions

Height	47.11 mm (1.85 in)
Width	496.5 mm (19.55 in)
Depth	433 mm (17.05 in)

Ordering Information

Product Number	CCH-01U
EAN Code	4056418169491
Package Contents	"Closet Connector Housing 1U, 2 blank panels, Installation kit with mouting screws, Internal and external strain relief brackets, Label Cards"
Shipping Weight	4.98 kg
Height Unit	1 U
Units per Delivery	1/1
Shipping Height	124 mm (4.88 in)
Shipping Width	530 mm (20.87 in)
Shipping Depth	511 mm (20.12 in)



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Closet Connector Housing (CCH) Four rack units, holds 12 CCH connector panels

CORNING

Part Number:

CCH-04U

Closet connector housings (CCHs) provide interconnect or cross-connect capabilities between outside plant, riser or distribution cables and opto-electronics. Like other LANscape solutions hardware, the housings accept CCH connector panels. In addition, the housings accept CCH cassettes and CCH modules.

From fiber and cable routing and strain relief, to port labeling and termination, these housings reduce the risk of error that can disrupt networks. The units are designed for rack mounting in 19-in (48 cm) racks or optional 23-in (58 cm) equipment racks (1.75-in EIA hole spacing). They are available in rack space options of 1U (two panels, cassettes or modules), 2U (four panels, cassettes or modules), 3U (six panels, cassettes or modules) and 4U (12 panels, cassettes or modules). The 1U, 2U and 3U options feature a slide-out tray and see-through, removable top covers. The CCH-04U features a clear door, removable front and rear enclosures and a platinum-colored interior for maximum visibility and access.

Every CCH housing is shipped complete with strain relief brackets, routing clips and guides, and mounting brackets for proper installation. Documentation labels are provided and components can be added as needed to construct a fiber distribution frame for any application. All housings include a removable tinted polycarbonate front door.

Features and Benefits

Durable, polycarbonate-tinted front door for viewing jumpers

Ideal for pigtail splicing

Removable, translucent top covers (1U, 2U, 3U), rear cover (4U)

Visibility and ease of access for installation, testing, and troubleshooting

Internal and external strain-relief options

Flexibility for installation and moves, adds, and changes (MACs)

Accepts panels, modules, and cassettes

Variety of field-termination options

Adaptable to use as a modular splice housing

Splices are stored and protected in same footprint



Closet Connector Housing (CCH), four rack units, holds 12 CCH connector panels

Closet Connector Housing (CCH) Four rack units, holds 12 CCH connector panels

CORNING

Specifications

General Specifications

Product Type	Fiber Optic Hardware
Environment	Indoor
Access Type	Front and rear access slidable
Lockable	Yes
Mounting Type	Rack 19-in, Rack 23-in, Cabinet-mount
Application	Carrier Networks, Data Center, Enterprise Networks

Standards

RoHS	Free of hazardous substances according to RoHS 2011/65/EU
Approvals and Listings	Meets ANSI/TIA/EIA-568A and 606, Tested in accordance with Telecordia GR-63-CORE, UL1863 - Communication Circuit Accessories
UL-Listed	United States and Canadian safety standards

Environmental Conditions

Temperature Range, Operation	-40 °C to 70 °C (-40 °F to 158 °F)
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Design

Number of Panels/Cassettes per Housing	12
Housing Type	CCH
Locking Availability	Front or rear
Housing Color	Black
Panel or Cassette Type	CCH
Fiber Capacity	288

Closet Connector Housing (CCH) Four rack units, holds 12 CCH connector panels

CORNING

Dimensions

Height	178 mm
Width	483 mm
Depth	430 mm

Ordering Information

Product Number	CCH-04U
EAN Code	4056418169439
Package Contents	"Closet Connector Housing 4U, 12 blank panels, Installation kit with mouting screws, Internal and external strain relief brackets, Label Cards"
Shipping Weight	7.5 kg
Units per Delivery	1/1
Shipping Height	257 mm
Shipping Width	532 mm
Shipping Depth	513 mm



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Fiber Optic Jumper, 2 F, LC Duplex to LC Duplex, Zipcord Cable, Riser, 2.0 mm legs Standard LC Duplex MM / Standard LC Duplex MM, OM4 50um, 2F, Zipcord Riser, Standard Aqua Jacket 1 Meters

CORNING

Part Number:

050502Q5120001M

Two-fiber cable assemblies are available with a variety of connector and cable combinations. Options include LC, SC, and ST® compatible connectors.

RoHS-compliant zipcord, DFX®, MIC®, Fan-out, and RIC cables are also available. Additional detailed furcation images are available in the cable assembly family specification sheet. Many of our fiber optic cable assemblies are highly configurable.

Features and Benefits

Flame-retardant jacket

Rugged and durable

Superior Performance Testing

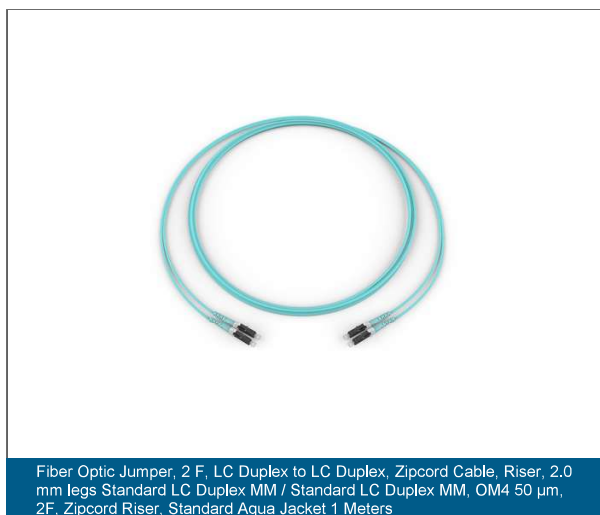
Every termination is tested to ensure the highest in network performance

State-Of-The-Art Manufacturing Processes

Corning proprietary manufacturing processes and advanced technology result in unsurpassed product consistency

Corning advantage

Integrated developer and manufacturer of cable, connectors and fiber to ensure overall cable assembly performance



Fiber Optic Jumper, 2 F, LC Duplex to LC Duplex, Zipcord Cable, Riser, 2.0 mm legs Standard LC Duplex MM / Standard LC Duplex MM, OM4 50 μ m, 2F, Zipcord Riser, Standard Aqua Jacket 1 Meters

Fiber Optic Jumper, 2 F, LC Duplex to LC Duplex, Zipcord Cable, Riser, 2.0 mm legs Standard LC Duplex MM / Standard LC Duplex MM, OM4 50um, 2F, Zipcord Riser, Standard Aqua Jacket 1 Meters

CORNING

Specifications

General Specifications

Flame Rating	Riser (OFNR)
Fiber Category	50 µm MM (OM4)
Cable Assembly Type	Two Fiber
Application	General Building Applications, Vertical Riser
Cable Type	Tight-Buffered

Standards

RoHS	Free of hazardous substances according to RoHS 2011/65/EU
------	---

Design

Fiber Count	2
Outer Jacket Color	Aqua
Fiber Type	Multimode

Optical Characteristics

Fiber Code	Q
Fiber Type	Multimode
Performance Option Code	90
Fiber Core Diameter	50 µm
Minimum Effective Modal Bandwidth (EMB)	4700 MHz*km / -
Maximum Attenuation	2.8 dB/km / 1.0 dB/km
Min. Overfilled Launch (OFL) Bandwidth	3500 MHz*km / 500 MHz*km
Serial 1 Gigabit Ethernet	1100 MHz*km / 600 MHz*km
Serial 10 Gigabit Ethernet	550 MHz*km / -
Wavelengths	850 nm / 1300 nm
Fiber Category	OM4

Fiber Optic Jumper, 2 F, LC Duplex to LC Duplex, Zipcord Cable, Riser, 2.0 mm legs Standard LC Duplex MM / Standard LC Duplex MM, OM4 50um, 2F, Zipcord Riser, Standard Aqua Jacket 1 Meters

CORNING

Specifications - Connector A

Insertion Loss, Typical	0.35 dB
Boot Color	Aqua
Connector Type	LC Duplex
Ferrule Material	Ceramic
Housing Color	Black
Housing Material	Composite

Specifications - Connector B

Insertion Loss, Typical	0.35 dB
Boot Color	Aqua
Connector Type	LC Duplex
Ferrule Material	Ceramic
Housing Color	Black

Ordering Information

Product Number	050502Q5120001M
EAN Code	4056418145884
Units per Delivery	1/1

Furcation - Connector A

Leg Length	254 mm -0 / +38.1mm (10 in -0 / +1.5in)
Leg Diameter	2 mm (0.08 in)
Plug Type	Heat-shrink sleeve
Plug Height	5.5 mm (0.22 in)
Plug Width	3.5 mm (0.14 in)
Plug Depth	25.4 mm (1 in)

Overview

J9150D is an Aruba 10G SFP+ LC SR 300m MMF XCVR.

Quick Spec

Figure 1 shows the appearance of J9150D.



Table 1 shows the quick spec.

Product Name (SKU)	DOM - Digital Optical Monitoring (4x4 part #)	Central we (nm)	Fiber mode	Fiber diameter (μm)	Bandwidth (MHz*km)	Transmis-ion distance
Aruba 10G SFP+ LC SR 300m MMF XCVR (J9150D)	Yes (1990-4391, 1990-4175)	850	MMF	50/125	4700 (OM4)	400 m (1312.34 ft)
					2000 (OM3)	300 m (984.25 ft)
					500 (OM2)	82 m (269.03 ft)
					400	66 m (216.54 ft)
				62.5/125	200 (OM1)	33 m (108.27 ft)
					160	26 m (85.30 ft)

Supported Devices

Figure 2 shows the front panel of J9150D.



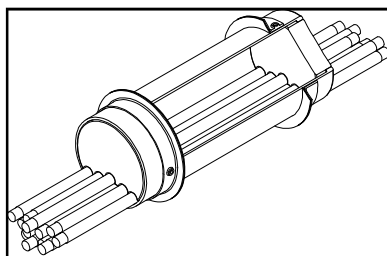
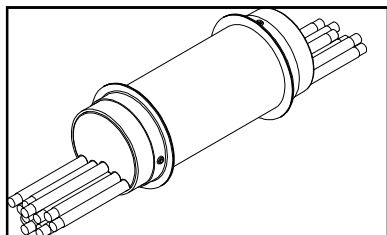


READY® SLEEVE FIRESTOP SLEEVE

APPLICATIONS

SpecSeal® READY® SLEEVE Pathways are used to protect or support cables in both non-rated and rated construction.

SpecSeal® READY® SLEEVE Pathways are suitable for use in all common constructions including concrete floors, concrete walls, concrete block walls, and gypsum board/stud wall assemblies up to 10" (254 mm) thick.



PRODUCT DESCRIPTION

SpecSeal® READY®SLEEVE Pathways are a complete UL® Classified out-of-the-box solution for new cable penetrations through walls. Each sleeve kit contains a pre-cut metallic sleeve, mounting escutcheons, intumescent escutcheon gaskets, wall warning labels, and the amount of putty required to seal both ends.

SpecSeal® READY®SLEEVE Pathway kits are simple in design and installation. All sizes of the Sleeve Pathways include a unique press-fit end cap design to eliminate potential sharp edges and do away with the need for conduit bushings.

SpecSeal® READY®SLEEVE Pathways are sized to the same O.D. as standard EMT (Electrical Mechanical Tubing) and will accept EMT accessories such as grounding bushings. Additionally, SpecSeal® READY®SLEEVE Pathways provide an easy method for compliance with the sleeve attachment requirements of the 2009 IBC Section 713.2 without the need for struts or other bracing.

FEATURES

- **Economical:** Offers significant material and labor savings.
- **Ready to Install:** No cutting required, no waste!
- **Locks Into Place:** No support struts and clamps required
- **No External Firestop Seal Required:** Factory supplied intumescent firestop gasket
- **Firestop Putty Provided with Kit:** Sufficient to seal ends to 1" (25 mm) depth
- **UL Classified and Code Compliant**
- **For Rated and Non-Rated Barriers:** Putty seal impedes the passage of fire, smoke, superheated gases, particulate dust, and minimizes noise transmission

PERFORMANCE

SpecSeal® READY®SLEEVE pathways are UL tested and Classified in accordance with ASTM E814 (UL1479) and CAN-ULC- S115. Systems are available for cable penetrations through common wall constructions up to and including 4 hours.



FIRESTOP DEVICE CERTIFIED FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS. SEE UL ONLINE CERTIFICATIONS DIRECTORY.

PHYSICAL PROPERTIES

Available Sizes:	1" (25 mm), 2" (51 mm), and 4" (102 mm)
Sleeve and Plate:	
Construction:	0.059" (1.5 mm) thick steel (zinc plated)
Intumescent Gasket:	
Storage Temperature:	Less than 120°F (49°C)
Expansion Temperature:	350°F (177°C)
Volume Expansion:	15x (free expansion)
In Service Temperature:	-10°F (-23°C) to 120°F (49°C)
Putty Fill Material:	SpecSeal® Firestop Putty
Color:	Red
Odor:	None
Solids:	100%
Storage Temperature:	Less than 120°F (49°C)
Expansion Temperature:	230°F (110°C)
Volume Expansion:	8x (free expansion)
In Service Temperature:	-10°F (-23°C) to 120°F (49°C)
VOC Content:	0.00 lbs/gal (0.0 g/l)
Shelf Life:	No Limit

SPECIFICATIONS

All data, video, communication, power, and control cables shall be installed through sleeves wherever said cables penetrate fire resistance rated barriers. The sleeve shall be sized to accommodate the present cable bundle as well as anticipated growth. The sleeve kit shall include steel escutcheon plates and intumescent firestop gaskets sized to fit the specific outside diameter of the sleeve and sandwich the barrier to lock said sleeve in place. The sleeve shall be provided with a sufficient thickness of intumescent firestop putty to seal the ends of the sleeve to restrict the passage of fire, smoke, and superheated gases. The firestop sleeve shall be UL Classified and tested to the requirements of ASTM E 814 (ANSI/UL1479) and CAN-ULC- S115.

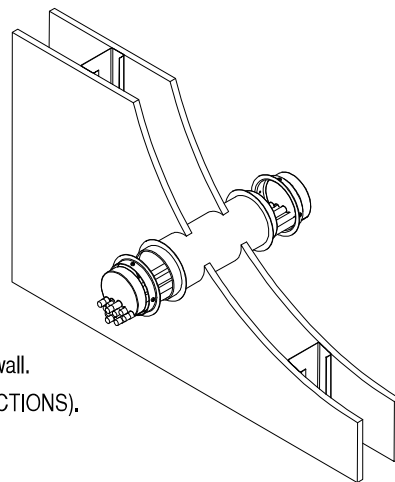
SPECIFIED DIVISIONS

Division 7	07 84 00	Through-Penetration Firestopping
Division 26	26 00 00	Basic Electrical Materials & Methods
Division 27	27 00 00	Communications



Table A:

Catalog Number	Trade Size*	Opening	
		Min. Opening	Max. Opening
FS100	1" (25 mm)	1.12" (28 mm)	1.25" (32 mm)
FS200/FS201	2" (51mm)	2.38" (60 mm)	2.50" (64 mm)
FS400	4" (102 mm)	4.50" (114 mm)	4.75" (121 mm)
FS401	4" (102 mm)	4.50" (114 mm)	5.00" (127 mm)



INSTALLATION INSTRUCTIONS

SpecSeal® READY® SLEEVE pathways are easily installed using the following steps:

1. Create an appropriately sized opening through wall (See Table A).
2. Slide sleeve into opening. Center in wall with sleeve extending equidistant from both sides of wall.
NOTE: Sleeves can be pre-set to wall depth prior to installation (See INSTALLATION INSTRUCTIONS).
3. Install intumescent gaskets around ends of sleeve and slide to wall surface.
4. Install escutcheon plates around ends of sleeve and slide to wall.
5. With escutcheon plates held tightly to wall, tighten set screws.

FOR 3 & 4 HOUR WALLS: Note: Most barriers are rated at 2 hours or less. In situations where walls are rated for 3 or 4 hours, compress and pack tightly minimum 4 pcf (64 kg/m³) mineral wool batt insulation (not provided with kit) into sleeve prior to installation or putty. Mineral wool must be ordered separately (Catalog Number SSAMW). See UL Systems for more information. MINERAL WOOL IS NOT REQUIRED FOR 1 & 2 HOUR RATED WALLS.

CABLE AND FIRESTOP INSTALLATION

Install cables through sleeve. After installing cables, pack ends of sleeve with SpecSeal Firestop Putty (included). Install putty to a depth of 1" (25 mm). Pack putty completely around cable bundle sealing all gaps and interstices. Install Barrier Labels on both wall surfaces.

CABLE CHANGES AND MAINTENANCE

SpecSeal® Firestop Putty is permanently non-hardening to facilitate the removal or addition of cables. After cable changes, reinstall putty to original depth. NOTE: This product represents a UL Classified Firestop System. Only approved SpecSeal® materials may be used. NO SUBSTITUTIONS ARE PERMITTED.

TECHNICAL SERVICE

Technical information including Product Data Sheets, Installation Instructions, applicable UL Classified Systems, Certificates of Conformance, and suggested specifications are available at the company's web site (www.stifireshop.com). For other information, contact the factory directly by dialing (800) 992-1180.

PRECAUTIONARY INFORMATION

No unusual hazards are known or expected. Observe normal safety procedures during installation.

AVAILABILITY

SpecSeal® READY® SLEEVE Pathways are available from authorized STI distributors worldwide. Consult factory for the names and locations of the nearest sales representatives or distributors. Ordering information is listed below:

TABLE B: ORDERING INFORMATION

CAT. NO.	DESCRIPTION	Qty.	Case Qty.	Weight
FS100	1" (25 mm) sleeve, escutcheon plates, gaskets, and putty	1	6	1.00 lb. (.45 kg)
FS200	2" (51 mm) sleeve, escutcheon plates, gaskets, and putty	1	6	2.00 lb. (.90 kg)
FS400	4" (102 mm) sleeve, escutcheon plates, gaskets, and putty	1	6	4.00 lb. (1.8 kg)
FS201	2" (51 mm) sleeve, large escutcheon plates, gaskets and putty	1	N/A	2.60 lb. (1.3 kg)
FS401	4" (102 mm) sleeve, large escutcheon plates, gaskets and putty	1	N/A	4.80 lb. (2.2 kg)

LIMITED WARRANTY: STI warrants that its products will be free of defects for one year from the date of purchase. In the event a product does not conform to this warranty, the sole and exclusive remedy is, at STI's option, replacement of the product or refund of the purchase price. The warranty provided herein shall be void and of no effect in the event that the product is not installed in accordance with STI's published instructions, listed systems and applicable building and safety codes. THIS WARRANTY IS IN LIEU OF ALL OTHER REPRESENTATIONS AND EXPRESSED OR IMPLIED WARRANTIES (including the implied warranties of merchantability or fitness for a particular use) AND UNDER NO CIRCUMSTANCES SHALL STI BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING, WITHOUT LIMITATION, ANY LOSS OF REVENUE, PROFIT OR USE. Prior to use, the user shall determine the suitability of the product for its intended use, and the user assumes all risks and liability for subsequent use. No person other than an officer of STI is authorized to bind STI to any other warranty for any product for which this warranty is issued.

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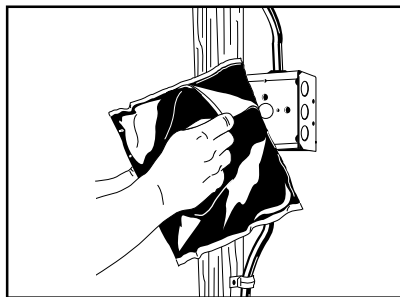
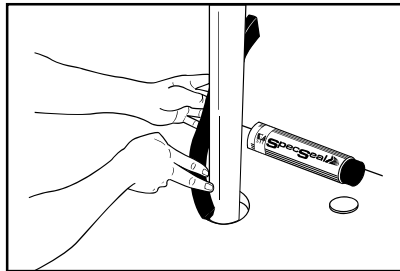




SERIES SSP PUTTY & PUTTY PADS

APPLICATIONS

SpecSeal® Series SSP Putty and Putty Pads are used to seal through-penetrations as well as construction gaps and blank openings. SpecSeal® Putty Pads are used to seal around electrical boxes to reduce sound transmission (see Technical Update) and increase fire resistance. These pads also provide a metered method of application when sealing through-penetrations and in some applications, are used to provide a cushion to allow movement due to settling, expansion and contraction, or vibration.



PRODUCT DESCRIPTION

SpecSeal® Series SSP Putty is a non-hardening, intumescent compound designed to seal through-penetrations as well as certain membrane penetrations against the spread of fire, smoke and toxic gasses. SpecSeal® Putty expands up to eight times its original size when exposed to high temperatures or flames.

Requiring no tools, SpecSeal® Series SSP Putty is soft and pliable making it easy to install by hand packing into openings. Its aggressive adhesion makes it suitable for use with all common construction materials as well as cable jacketing and pipes. SpecSeal® Putty remains soft and easy to reuse or retrofit.

SpecSeal® Series SSP Putty Pads provide this same level of protection in a release lined pad for easy application to electrical boxes or other penetrants. The pad is conveniently sized to fit a typical 1-1/2" (38 mm) deep 4S box with no cutting or piecing required. Faced on both sides with a convenient poly liner, SpecSeal® Putty Pads are easily applied with no mess or excessive residue.

FEATURES

- **Non-Hardening** = Easy retrofit!
- **Two Stage Intumescence** features aggressive expansion.
- **Endothermic Fillers** absorb heat & release water.
- **Highly Adhesive** formula Stays put. Allows movement.
- **Soft & Pliable** for easy installation.
- **No Water-Soluble Expansion Ingredients** means better water resistance!
- **Sound Deadening!** Excellent sound attenuation properties. Reduces noise transmission.

PERFORMANCE

SpecSeal® Series SSP Putty is the basis for systems that meet the exacting criteria of ASTM E814 (UL1479). Systems have been tested for all common forms of construction and most common penetrants with ratings up to 3 hours. Sound attenuation properties have also been tested as per ASTM C919 and E90.



Additionally, SpecSeal® Series SSP Putty Pads have been tested to UL263 (ASTM E119, NFPA 251) and are classified for up to 2 hours as a Wall Opening Protective Material for use with both metallic and nonmetallic outlet or switch boxes installed in gypsum wallboard assemblies (steel and wood stud assemblies). Boxes protected with SpecSeal® Putty Pads have been successfully tested with box spacing reduced to less than 16" (406 mm). (Not tested nor approved for boxes installed directly back to back).

PHYSICAL PROPERTIES

PHYSICAL PROPERTIES

Product Name:	Series SSP Putty
Color:	Red
Odor:	None
Density:	1.45 kg/L (12.08 lb/gal)
Solids:	100%
Expansion Begins:	230°F (110°C)
Volume Expansion:	> 500% (free expansion)
In-Service Temp:	120°F (49°C)
STC Rating:	62
VOC Content**:	0.00 lbs/gal (0.0g/L)
Shelf Limit:	No Limit

**ASTM D 3960 and EPA Federal Reference Method 24.

	UNDERWRITERS LABORATORIES INC.® CLASSIFIED WALL PROTECTION MATERIAL. SEE PRODUCT CATEGORY IN UL FIRE RESISTANCE DIRECTORY		
	CLASSIFIED FILL, VOID, OR CAVITY MATERIALS FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS. SEE UL DIRECTORY OF PRODUCTS CERTIFIED FOR CANADA AND UL FIRE RESISTANCE DIRECTORY		

SPECIFICATIONS

The firestopping putty shall be a one-part, two-stage intumescent, non-hardening compound. The putty, when exposed to high heat or flame shall be capable of expanding a minimum of five times. Range of continuing expansion shall be from 230°F to >1,000°F (110°C to >538°C). The putty shall be soft and pliable with aggressive adhesion and shall not contain any water-soluble intumescent ingredients. The putty shall be UL Classified and/or FM Systems Approved and tested to the requirements of ASTM E814 (UL1479).

SPECIFIED DIVISIONS

DIV.	7	07840	Through-Penetration Firestopping
DIV.	13	13900	Special Construction Fire Suppression & Supervisory Systems
DIV.	15	15250	Mechanical Insulation – Fire Protection
DIV.	16	16050	Basic Electrical Materials & Methods



MAINTENANCE

Installations should be inspected periodically for subsequent damage. Any damage should be repaired using SpecSeal® products per the original approved design.

CLEAN UP

Remove excess material from all contact surfaces immediately. Clean hands or skin using a waterless hand cleaner. When using water-emulsifiable soaps, apply soap and work over areas of skin contact prior to applying water.

TECHNICAL SERVICE

Specified Technologies Inc. provides toll free technical support to assist in product selection and appropriate installation design. UL Systems, Material Safety Data Sheets and other technical information is available at the Technical Library at www.stifirestop.com.

PRECAUTIONARY INFORMATION

Consult Material Safety Data Sheet for additional information on the safe handling and disposal of this material. Wash areas of skin contact with soap and water. Avoid contact with eyes. DO NOT APPLY TO EXPOSED ELECTRICAL CONDUCTORS.

AVAILABILITY

SpecSeal® Series SSP Putty is available from authorized STI distributors nationwide. Consult factory for the names and locations of the nearest sales representatives or distributors.

TABLE A: ORDERING INFORMATION

CAT. NO.	DESCRIPTION	CASE QTY.
SSP100	36 in ³ (0.6 liter) bar	6
SSP28	24 in ³ (0.4 liter) bar	-
SSP4S	7.25" x 7.25" x 3/16" (184 x 184 x 5 mm) pad	20
SSP9S	9.00" x 9.00" x 3/16" (229 x 229 x 5 mm) pad	20



CITY OF NEW YORK MEA 30-92-M

IMPORTANT NOTICE: All statements, technical information, and recommendations contained herein are based upon testing believed to be reliable, but the accuracy and completeness thereof is not guaranteed.

WARRANTY

Specified Technologies Inc. manufactures its goods in a manner to be free of defects. Should any defect occur in its goods (within one year), Specified Technologies Inc., upon prompt notification, will at its option, exchange or repair the goods or refund the purchase price.

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No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of seller and manufacturer.

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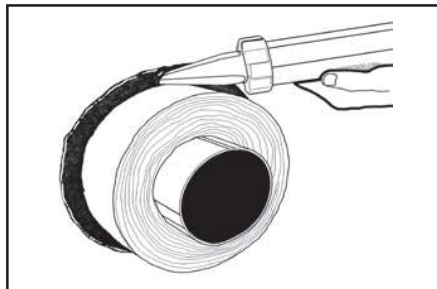


SERIES SSS INTUMESCENT SEALANT

APPLICATIONS

SpecSeal® Series SSS Sealant is used to seal through-penetrations as well as construction gaps and blank openings. SpecSeal Series SSS has been tested for use with metallic penetrants up to 30" (762 mm) trade size. This product is also used with other SpecSeal® Products such as SpecSeal® Firestop Collars and Wrap Strips.

See Table A for a summary application list.



PRODUCT DESCRIPTION

SpecSeal® Series SSS Sealant is a latex based, high solids firestop compound. This material, when properly installed, will effectively seal penetration openings against the spread of fire, smoke, toxic gasses and water.

SpecSeal® Series SSS Sealant features STI's patented and proprietary two-stage intumescent technology. When exposed to high temperatures or fire, this material expands aggressively in a highly directionalized fashion to quickly close off voids left by the burning or melting of combustible materials.

SpecSeal® Series SSS Sealant's unique multi-viscosity formula yields a single grade that has excellent caulking properties as well as high build properties on vertical or overhead surfaces. This single grade may be pumped, caulked (standard cartridge or bulk loaded), knifed or troweled. In addition, SpecSeal Series SSS Sealant does not contain PCB's or asbestos.

SpecSeal® Series SSS Sealant is storage stable (when stored according to the manufacturer's recommendations) and will not separate nor shrink when dried. SpecSeal Series SSS Sealant will adhere to all common construction and penetrant materials and contains no solvents that might adversely effect plastic pipes or cable jackets.

FEATURE	BENEFIT
• Water-Based	Easy installation, cleanup, and disposal.
• Two-Stage Intumescence	Extremely fast and directionalized expansion.
• Endothermic Fillers	Absorb heat & release water.
• High Solids Formula	No shrinkage!
• Sandable & Paintable	(when dry)
• Water-Resistant	Will not re-emulsify when dry!
• Safe	Safe for contact with plastics.
• Red Color	Easy identification and inspection.
• Multi Viscosity Grade	Excellent caulking properties along with high build capabilities.
• Excellent Smoke Seal	

PERFORMANCE

SpecSeal® Series SSS Sealant is the basis for systems that meet the exacting criteria of ASTM E814 (UL1479) as well as the time-temperature requirements of ASTM E119 (UL263). Systems have been tested for all common forms of construction and most common penetrants with ratings up to 4 hours. STI firestop systems are designed to maximize the fire resistance of the seal by not only sealing off the spread of fire and hot gasses but also by minimizing the amount of heat conducted through the assembly. Thus all systems have been designed to provide T Ratings capable of matching the rating of the wall or floor assembly (where possible) when tested without penetrants.

	<p>FILL, VOID OR CAVITY MATERIALS FOR USE IN JOINT SYSTEMS AND THROUGH-PENETRATION FIRESTOP SYSTEMS. SEE UL DIRECTORY OF PRODUCTS CERTIFIED FOR CANADA AND UL FIRE RESISTANCE DIRECTORY.</p> <p>3L73</p>	
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PHYSICAL PROPERTIES

Properties	Series SSS
Color	Red
Odor	Mild Latex
Density	9.4 lb/gal (1.13 kg/L)
Solids Content	80% ± 2%
pH	8.3
In Service Temperature	-10°F (-23°C) - 185°F (85°C)
Storage Temperature	40°F (4°C) - 95°F (35°C)
Flame Spread	0*
Smoke Developed*	10*

Properties	Series SSS
STC Rating (ASTM E90/ASTM C919)	62
VOC Content (EPA Method 24/ASTM D3960)	0.18 lbs/gal (22.0 g/L)
Shelf Life	2 yrs
Expansion Begins	230°F (110°C) 1st Stage 350°F (177°C) 2nd Stage
Expansion Range	230°F to > 1,000°F (110°C to > 538°C)
Volume Expansion	> 500% Free Expansion

* Tested to ASTM E84 (UL723) at 14% surface coverage (modified test for sealants and caulks)



INSTALLATION INSTRUCTIONS

LIMITATIONS: SpecSeal® Series SSS Sealant is water-based and cures through the evaporation of water. Low temperatures as well as high humidity may retard drying. Non-porous or impermeable backing materials, plates, or coatings may retard the drying process. Do not paint or seal in any way that prevents contact with air until sealant has dried through completely. This product has been designed to be safe with plastics and has been used extensively and successfully with a variety of different types of plastic pipes, tubes, and plastic cable insulations. Variations in these materials however, make it impossible to guarantee compatibility. STI strongly recommends that the user consult with the manufacturer of the pipe, tubing, or cable in question regarding any known sensitivities or potential restrictions before applying this product.

MAINTENANCE

Inspection: Installations should be inspected periodically for subsequent damage. Any damage should be repaired using SpecSeal® products per the original approved design.

Retrofit: When adding or removing penetrants, care should be taken to minimize damage to the seal. Reseal using SpecSeal® products per the approved design. **NOTE:** New penetrants of a different nature than the original design may require a totally new firestop design or extensive modifications to the existing design. Reseal all openings as per the requirements of the modified design.

TECHNICAL SERVICE

Specified Technologies Inc. provides toll free technical support to assist in product selection and appropriate installation design. UL Systems, Material Safety Data Sheets and other technical information is available through the Technical Library at www.stifirestop.com.

PRECAUTIONARY INFORMATION

Consult Material Safety Data Sheet for additional information on the safe handling and disposal of this material. Wash areas of skin contact with soap and water. Avoid contact with eyes. **SEALANT IS CONDUCTIVE UNTIL DRY.**

AVAILABILITY

SpecSeal® Series SSS Sealant is available from authorized STI distributors. Consult factory or website for the names and locations of the nearest sales representatives or distributors.

CATALOG NUMBER	DESCRIPTION
SSS100	10.1 oz. Tube (300 ml) 18.2 cu.in.
SSS129	29 oz. Tube (858 ml) 52 cu. in.
SSS120	20 oz. Sausage (592 ml) 36 cu. in.
SSS102	2 Gal. Pail (7.6 liters) 462 cu.in.
SSS105	5 Gal. Pail (19.0 liters) 1,155 cu.in.

CITY OF NEW YORK MEA 28-92-M

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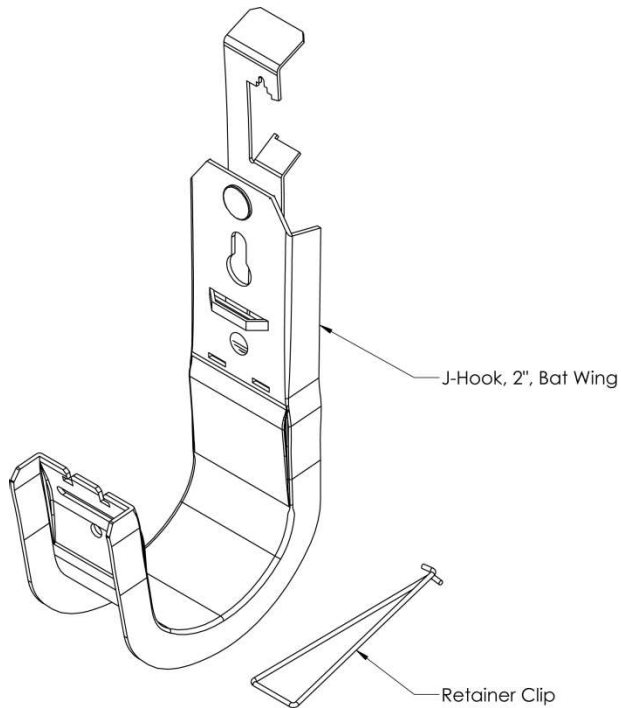
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J-Hook, 2", Bat Wing, 25 PK



Package Include:

- A. J-Hook, 2", Bat Wing, 25 Pieces**
- B. Retainer Clip, 25 Pieces**
- C. Installation Instructions, 1 Sheet**

Features and Benefits

- Made of high quality galvanized steel for strength and durability
- Accommodates CAT 5e, CAT 6, CAT 6A, coax, and fiber optic cables, and conduit
- Rust resistant zinc finish
- Complies with EIA/TIA requirements for structured cabling systems
- Cost effect alternative to expensive cable tray or ladder runway rack
- Smooth edges to protect cables and facilitate bend radius
- Cables can be pulled through quickly and easily
- Cable anchor points allows users to secure with cable ties
- Stopper tab allow an easier installation onto 12 AWG ceiling wire
- Supports up to 25 lbs. of weight
- Available in bulk 25 pack

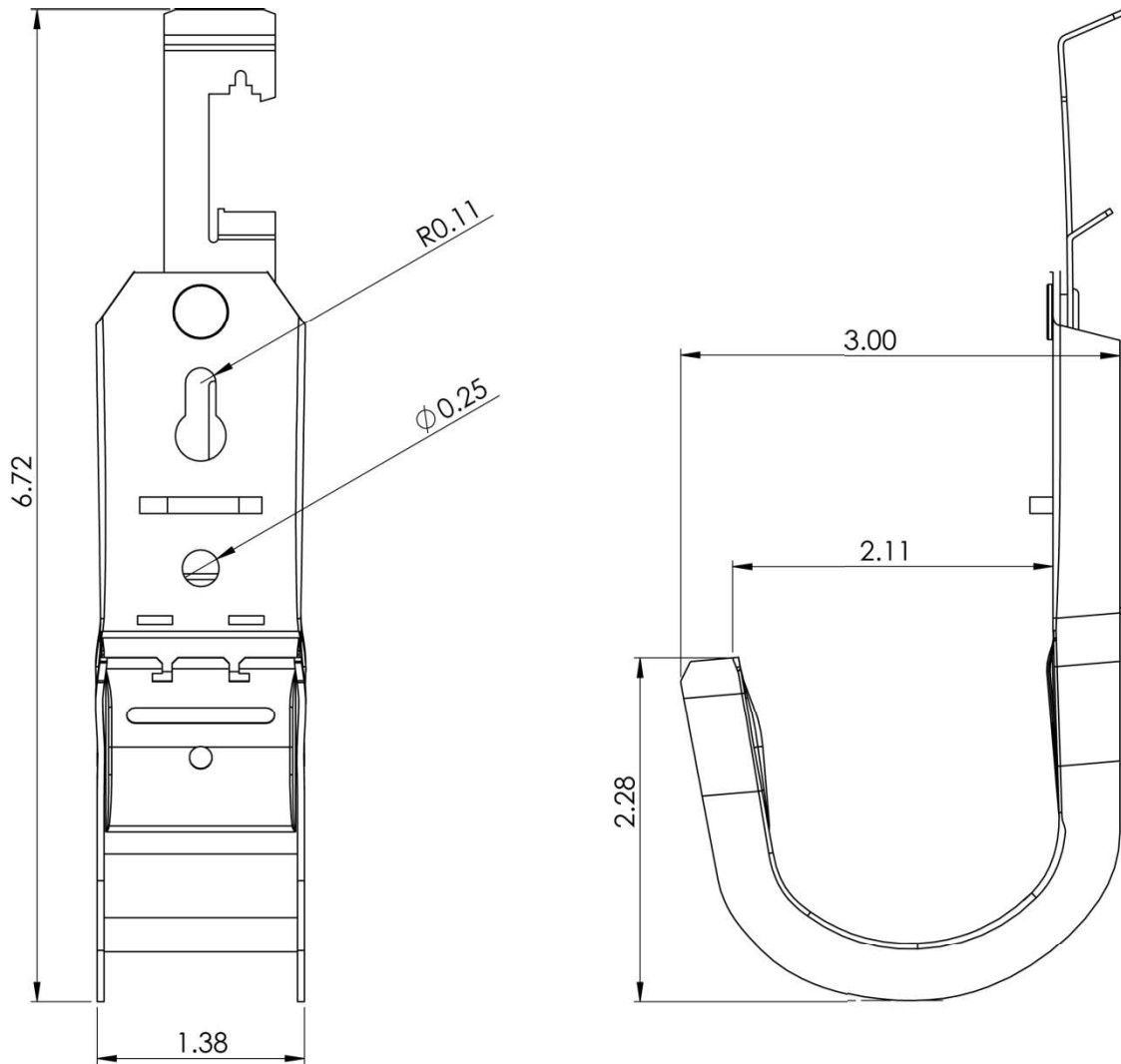
Part No: ICCMSJHW44

Rev: A1

Page 1 of 2

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Specifications

- Material: 18 gauge galvanized steel
- Finish: Zinc plated J-Hook, and black powder coated batwing
- 30 lbF. static load MAX

Capacity Reference			
Cable Type	CAT 5e	CAT 6	CAT 6A
Qty	~86	~56	~27

Part No: ICCMSJHW44

Rev: A1

Page 2 of 2

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3M™ Temflex™ Vinyl Electrical Tape

1700

Data Sheet

November 2011

Product Description	3M™ Temflex™ Vinyl Electrical Tape 1700 is a good quality, economical general purpose vinyl insulating tape. It has excellent resistance to: abrasion, moisture, alkalies, acid, copper corrosion and varying weather conditions. It is a polyvinyl chloride (PVC) tape that is flame-retardant and conformable. 3M Temflex 1700 Tape provides excellent mechanical protection with minimum bulk. It is a UL Listed and CSA Certified “Insulating Tape.”
Agency Approvals & Self Certifications	<p>UL Listed; UL 510 Standard “Insulating Tape” (product category OANZ), File E129200</p> <p>CSA Certification; Standard C22.2 No. 197-M1983 “PVC Insulating Tape,” File LR48769</p> <p>RoHS 2002/95/EC </p> <p>RoHS Compliant 2002/95/EC” means that the product or part (“Product”) does not contain any of the substances in excess of the maximum concentration values in EU Directive 2002/95/EC, as amended by Commission Decision 2005/618/EC, unless the substance is in an application that is exempt under RoHS. This information represents 3M’s knowledge and belief, which may be based in whole or in part on information provided by third party suppliers to 3M.</p>
Applications	<ul style="list-style-type: none">• Primary electrical insulation for most wire and cable splices rated up to 600 volts• Protective jacketing for high voltage cable splices and repairs• Harnessing of wires and cables• For indoor or outdoor applications• For above or below ground application
Installation Techniques	<p>Apply the tape in half-lapped layers with sufficient tension to conform and produce a uniform covering. In most applications, this tension will reduce the tape’s width to approximately 5/8 of its original width. On pigtail splices, the tape should be wrapped beyond the end of the wires and then folded back, leaving a protective cushion to resist cut-through. Always wrap the tape “uphill” to create a shingle effect. Apply the tape with no tension on the last wrap to prevent flagging.</p>

3M™ Temflex™ Vinyl Electrical Tape 1700

Typical Data/ Physical Properties

Not for specifications. Values are typical, not to be considered minimum or maximum. Properties measured at room temperature 73°F (~23°C) unless otherwise stated.

Physical Properties (Test Method) *ASTM D1000	Typical Value US units (metric)
Thickness*	7 mils (0,18 mm)
Adhesion* To Steel To Backing	22 oz/in (2,4 N/cm) 22 oz/in (2,4 N/cm)
Operating Temperature UL 510 CSA 2.22	80°C (176°F) 80°C (176°F)
Breaking Strength*	17 lbs/in (30 N/cm)
Elongation*	200%
Flammability (UL 510)	Pass

Electrical Properties (Test Method) *ASTM D1000	Typical Value US units (metric)
Dielectric Strength* Standard Condition After Humidity Condition	>1000 V/mil (39.4kV/mm) >90% of Standard
Insulation Resistance*	10 ⁶ Megohms

Shelf Life & Storage

3M Temflex Electrical Tape 1700 has a 5-year shelf life (from date of manufacture) when stored in a humidity controlled storage (10°C /50°F to 27°C /80°F and less than 75% relative humidity).

Availability

Temflex Electrical Tape 1700 is available from your local 3M authorized electrical distributor in the following standard roll size: ¾ in. x 60 ft. Other lengths and widths available by special order.

Important Notice

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Electrical Markets Division

6801 River Place Blvd.
Austin, TX 78726-9000
800.245.3573
FAX: 800.245.0329
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ONE-WRAP® FR Fastener HTH 889 with Loop 3610





Sell Sheet
March 2019

ONE-WRAP® FR FASTENER For Use In Plenum Air Space



VELCRO® Brand Self-Engaging closure.
Medium profile for indoor use.

Patented VELCRO® Brand ONE-WRAP® self-engaging back-to-back tape. Perfect for cable & cord management in plenum air space*. Easy, fire retardant, adjustable and re-usable.

CLOSURE INFORMATION		
	MATERIAL	Polypropylene (Hook) Polyamide (Backing)
	CYCLE LIFE	Medium
	PEEL	0.6 PIW
	SHEAR	29 PSI

*Plenum Rated—Suitable for use in air handling spaces in accordance with Section 300.22 (C) and (D) of the National Electrical Code.

PART NUMBERS

REFERENCE	UPC CODE	LENGTH	WIDTH	COLOR	QTY PER SHIPPING BOX	APPLICATION METHOD
30986	075967309862	25 yards	1/2"	■ Black (330)	24	Bundle, wrap, fasten
30994	075967309947			■ Cranberry (502)		
30987	075967309879		3/4"	■ Black (330)		
30993	075967309930			■ Cranberry (502)		

APPLICATIONS

Applications Include: Securing cables in plenum air space, organizing cable pathways, bundling, ideal for fiber optic projects



A.
System
Overview

B1.
Cable Ties

B2.
Cable
Accessories

B3.
Stainless
Steel Ties

C1.
Wiring
Duct

C2.
Surface
Raceway

C3.
Abrasion
Protection

C4.
Cable
Management

D1.
Terminals

D2.
Power
Connectors

D3.
Grounding
Connectors

E1.
Labeling
Systems

E2.
Labels

E3.
Pre-Printed
& Write-On
Markers

E4.
Permanent
Identification

E5.
Lockout/
Tagout/
& Safety
Solutions

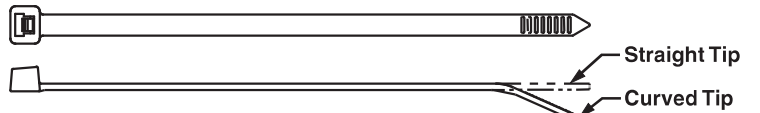
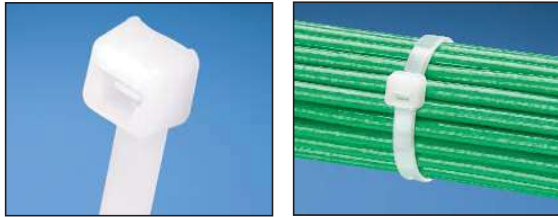
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Index



Pan-Ty® Cable Ties – Nylon 6.6

- For indoor use
- Versatile cable ties can be used in countless applications
- One-piece construction for consistent performance and reliability
- Lowest threading force of any one-piece cable tie in the industry

- Curved tip is easy to pick up from flat surfaces and allows faster initial threading to speed installation
- A variety of materials and colors available for specific applications
- UL Listed for use in plenum or air handling spaces per NEC except PLT.6SM and PLT5H/6H/8H/13H



Part Number	Length		Width		Thickness		Max. Bundle Dia.		Min. Loop Tensile Str.		Recommended Installation Tool	Std. Pkg. Qty.	Std. Ctn. Qty.
	In.	mm	In.	mm	In.	mm	In.	mm	Lbs.	N			

Subminiature Cross Section

PLT.6SM-C	2.8	71	.070	1.8	.030	.8	.60	15	8	36	GTS, GTSL, PTS	100	1000
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Miniature Cross Section – Plenum-Rated

PLT.7M-C	3.1	79	.090	2.3	.032	.8	.68	17	18	80	GTS, GTSL, GS2B, PTS, PPTS, STS2	100	1000
PLT1M-C	3.9	99	.098	2.5	.043	1.1	.87	22	18	80		100	1000
PLT1.5M-C	5.6	142	.098	2.5	.043	1.1	1.25	32	18	80		100	1000
PLT2M-C	8.0	203	.098	2.5	.043	1.1	2.00	51	18	80		100	1000

Intermediate Cross Section – Plenum-Rated

PLT1.5I-C	5.6	142	.142	3.6	.045	1.1	1.38	35	40	178	GTS, GTSL, GS2B, PTS, PPTS, STS2	100	1000
PLT2I-C	8.0	203	.142	3.6	.045	1.1	2.00	51	40	178		100	1000
PLT2.5I-C	9.7	246	.145	3.7	.052	1.3	2.50	64	40	178		100	1000
PLT3I-C	11.4	290	.145	3.7	.052	1.3	3.00	76	40	178		100	1000
PLT4I-C	14.5	368	.145	3.7	.052	1.3	4.00	102	40	178		100	1000

Standard Cross Section – Plenum-Rated

PLT1S-C	4.8	122	.190	4.8	.052	1.3	1.00	25	50	222	GTS, GTSL, GS2B, GTH, GS4H, PTS, PPTS, PTH, STS2, STH2	100	1000
PLT1.5S-C	6.2	157	.190	4.8	.052	1.3	1.50	38	50	222		100	1000
PLT2S-C	7.4	188	.190	4.8	.052	1.3	1.88	48	50	222		100	1000
PLT2.5S-C	9.8	249	.190	4.8	.052	1.3	2.50	64	50	222		100	1000
PLT3S-C	11.5	292	.190	4.8	.052	1.3	3.00	76	50	222		100	1000
PLT4S-C	14.5	368	.190	4.8	.052	1.3	4.00	102	50	222		100	1000
PLT4.5S-C	15.5	394	.190	4.8	.052	1.3	4.50	114	50	222		100	1000
PLT5S-C	17.5	445	.190	4.8	.052	1.3	5.00	127	50	222		100	500

Light-Heavy Cross Section (Straight Tip) – Plenum-Rated

PLT2H-L	8.1	206	.300	7.6	.075	1.9	2.00	51	120	534	GTH, GS4H, GS4EH, PTH, STH2, ST3EH	50	500
PLT2.5H-L	9.8	251	.300	7.6	.075	1.9	2.50	64	120	534		50	500
PLT3H-L	11.4	290	.300	7.6	.075	1.9	3.00	76	120	534		50	500
PLT4H-L	14.5	368	.300	7.6	.075	1.9	4.00	102	120	534		50	500
PLT6LH-L	21.9	556	.300	7.6	.075	1.9	6.00	152	120	534		50	500
PLT7LH-L	24.7	627	.300	7.6	.075	1.9	7.00	178	120	534		50	500
PLT8LH-L	27.6	701	.300	7.6	.075	1.9	8.00	203	120	534		50	500
PLT9LH-L*	30.5	775	.300	7.6	.075	1.9	9.00	229	120	534		50	500
PLT10LH-L*	34.3	871	.300	7.6	.075	1.9	10.31	262	120	534		50	1000

Heavy Cross Section (Straight Tip)

PLT5H-L*	17.7	450	.350	8.9	.078	2.0	5.00	127	175	778	GTH, GS4H, GS4EH, PTH, STH2, ST3EH	50	500
PLT6H-L*	20.9	530	.350	8.9	.078	2.0	6.00	152	175	778		50	500
PLT8H-L*	30.6	779	.350	8.9	.078	2.0	9.00	229	175	778		50	500
PLT13H-Q*	43.3	1100	.350	8.9	.078	2.0	13.00	330	175	778		25	500

*UL Listed – meets the requirements of UL 181B-C, for securing UL Listed non-metallic air ducts and air connectors.

Order number of pieces required, in multiples of Standard Package Quantity.

Prime items appear in **BOLD**.