VPD (Video/Power/Data) Combiners
Manual

(EB-P304-01MQ shown)

(EB-C304-01EQ shown)

Midpoint VPD Combiners:

Model #	Power	Channels
EB-P304-01MQ	Passive	4
EB-P316-60MQ	Passive	16
EB-D304-01MQ*	12VDC	4
EB-D316-60MQ*	12VDC	16
EB-C304-01MQ*	24VAC	4
EB-C316-60MQ*	24VAC	16

*Special Order Only

Endpoint VPD Combiners:

Model #	Power	Channels
EB-P304-01EQ*	Passive	4
EB-P316-60EQ	Passive	16
EB-D304-01EQ*	12VDC	4
EB-D316-60EQ*	12VDC	16
EB-C304-01EQ	24VAC	4
EB-C316-60EQ*	24VAC	16

ENFORCER VPD (Video/Power/Data) Combiners work in conjunction with standard passive VPD baluns and RJ45 cables to simplify and organize a large scale CCTV installation. Using this allows for increased flexibility and simplified, more organized cable installation, providing power to cameras while delivering high quality video all over a single CAT5e/6 cable. Troubleshooting is therefore greatly simplified and clutter reduced. ENFORCER VPD Combiners are compatible with all HD analog, including HD-AHD, HD-CVI, and HD-TVI, as well as traditional analog formats.

Table of Contents:

Introduction:

All **ENFORCER VPD Combiners** are capable of transmitting the various HD Analog formats such as HD-AHD, HD-CVI, or HD-TVI. These formats are supported in addition to traditional analog formats.

ENFORCER VPD Passive Midpoint Combiners are typically installed between the camera and DVR combining data, video, and camera power via CAT5e/6 cable to simplify installation and allow for easy expandability and serviceability. The passive combiner allows for the use of any external **ENFORCER** low voltage power supply or a compatible third party low voltage power supply.

ENFORCER VPD Active Midpoint Combiners provide the same benefits as the Passive Midpoint Combiners, but include either an integrated 12VDC or 24VAC (for greater distances) power supply.

ENFORCER VPD Passive Endpoint Combiners are typically installed near the DVR and include BNC connectors to connect directly to the DVR. This combines data, video, and camera power via CAT5e/6 cable to simplify installation and allow for easy expandability and serviceability. The passive combiner allows for the use of any external **ENFORCER** low voltage power supply or a compatible third party low voltage power supply.

ENFORCER VPD Active Endpoint Combiners provide the same benefits as the Passive Endpoint Combiners, but include either an integrated 12VDC or 24VAC (for greater distances) power supply.

All 16 channel versions are rack mountable or wall/desk mountable.

IMPORTANT: Only low voltage power supplies may be used.

Parts List:

1x VPD Combiner	2x Wall mount brackets	4x Screws for brackets[1]	1x Manual
1x Power cord (4ft)[2]	1x Spare glass fuse[2]	4x Rubber feet	

[1] 16ch models include 6x screws for brackets
[2] Powered models only

Specifications:

Midpoint VPD Combiners

Model #		EB-P304-01MQ	EB-P316-60MQ	EB-D304-01MQ*	EB-D316-60MQ*	EB-C304-01MQ*	EB-C316-60MQ*
Type		Passive Midpoint		12VDC Midpoint		24VAC Midpoint	
Channels		4	16	4	16	4	16
Video range	CVBS	984' (300m)					
	HD-AHD	720p: 1050' (320m); 1080p: 722' (220m)					
	HD-CVI	720p: 1476' (450m); 1080p: 820' (250m)					
	HD-TVI	720p/1080p: 820' (250m)					
Video format		NTSC, PAL, SECAM					
Maximum input		1Vp-p					
Frequency response		DC to 60MHz					
CMMR		60dB , 20kHz~60MHz					
Wire category		CAT5e~CAT6					
BNC Connection		Nickel-plated					
Impedance	Coax	75Ω@1MHz					
	RJ45	100Ω@1MHz					
Max. amperage		1A@12VDC/24VAC		1A@12VDC		1A@24VAC	
Data range		2,400' (800m)					
DC Loop resistance		29Ω/1,000' (9.5Ω/100m)					
Differential capacitance		19pF/ft max (62pf/m max)					
Output voltage		N/A		13.5VDC		26VAC	
Fuse		1.5A max/CH					
Input power		N/A		90~240VAC		110VAC	
Input power fuse		N/A		F2AL250V	F8AL250V	F2AL250V	F8AL250V
Operating temperature		-14~140°F (-10~60°C)					
Humidity range		0~95%, non-condensing					
Case material		Steel					
Weight		0.89-lbs	1.93-lbs	2.98-lbs	8.49-lbs	5.64-lbs	18.81-lbs
		(404g)	(876g)	(1350g)	(3850g)	(2558g)	(8532g)
Dimensions		See Dimensions (pg. 5)					

Endpoint VPD Combiners

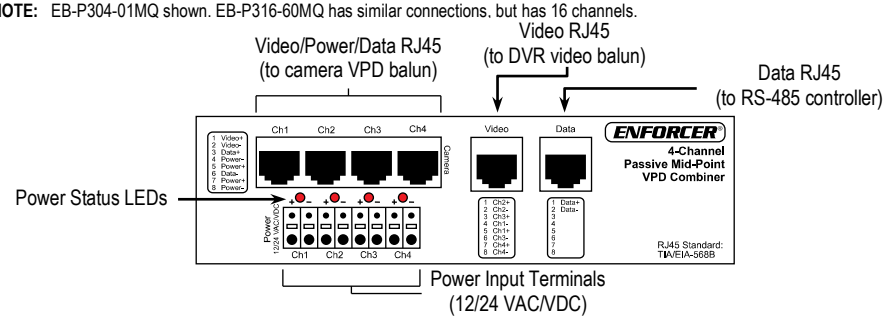
Model #		EB-P304-01EQ*	EB-P316-60EQ	EB-D304-01EQ*	EB-D316-60EQ*	EB-C304-01EQ	EB-C316-60EQ*
Type		Passive Endpoint		12VDC Endpoint		24VAC Endpoint	
Channels		4	16	4	16	4	16
Video range	CVBS	984' (300m)					
	HD-AHD	720p: 1050' (320m); 1080p: 722' (220m)					
	HD-CVI	720p: 1476' (450m); 1080p: 820' (250m)					
	HD-TVI	720p/1080p: 820' (250m)					
Video format		NTSC, PAL, SECAM					
Maximum input		1Vp-p					
Insertion loss		0.3dB per pair from 20kHz~60Mhz					
Frequency response		DC to 60MHz					
CMMR		60dB , 20kHz~60MHz					
Wire category		CAT5e~CAT6					
BNC Connection		Nickel-plated					
Impedance	Coax	75Ω@1MHz					
	RJ45	100Ω@1MHz					
Max. amperage		1A@12VDC/24VAC		1A@12VDC		1A@24VAC	
Data range		2,400' (800m)					
DC Loop resistance		29Ω/1,000' (9.5Ω/100m)					
Differential capacitance		19pF/ft max (62pf/m max)					
Output voltage		N/A		13.5VDC		26VAC	
Fuse		1.5A max/CH					
Input power		N/A		90~240VAC		110VAC	
Input power fuse		N/A		F2AL250V	F8AL250V	F2AL250V	F8AL250V
Operating temperature		-14~140°F (-10~60°C)					
Humidity range		0~95%, non-condensing					
Case material		Steel					
Weight		0.96-lbs	2.2-lbs	3.06-lbs	8.75-lbs	5.72-lbs	19.17-lbs
		(436g)	(998g)	(1388g)	(3968g)	(2596g)	(8694g)
Dimensions		See Dimensions (pg. 5)					

*Special Order Only

Overview:

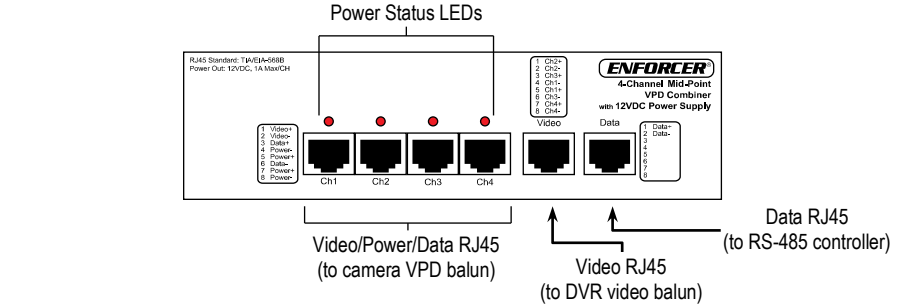
Passive Midpoint VPD Combiners:

NOTE: EB-P304-01MQ shown. EB-P316-60MQ has similar connections, but has 16 channels.



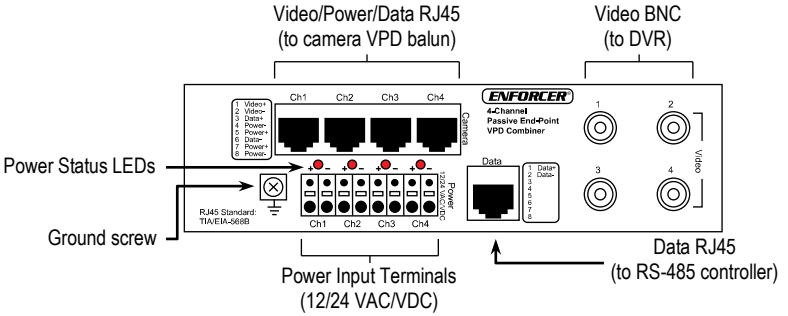
Active Midpoint VPD Combiners:

NOTE: EB-D304-01MQ shown. EB-C304-01MQ has similar connections. EB-D316-60MQ and EB-C316-60MQ have similar connections, but have 16 channels. Power switch and fuse on the back of the unit are not shown.



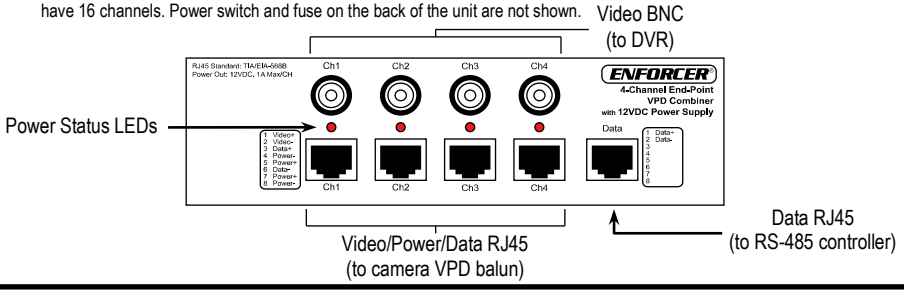
Passive Endpoint VPD Combiners:

NOTE: EB-P304-01EQ shown. EB-P316-60EQ has similar connections, but has 16 channels.



Active Endpoint VPD Combiners:

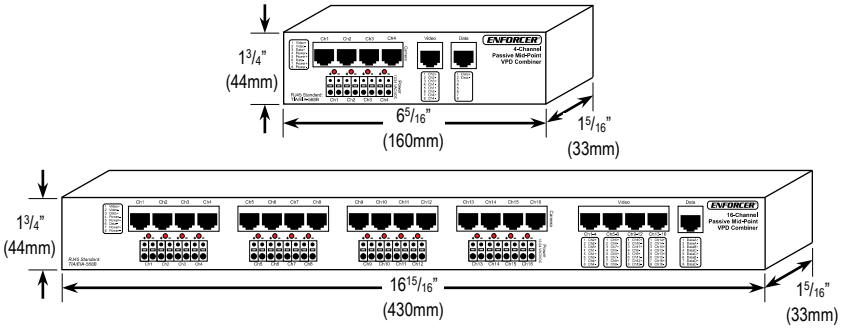
NOTE: EB-D304-01EQ shown. EB-C304-01EQ has similar connections. EB-D316-60EQ and EB-C316-60EQ have similar connections, but have 16 channels. Power switch and fuse on the back of the unit are not shown.



Dimensions:

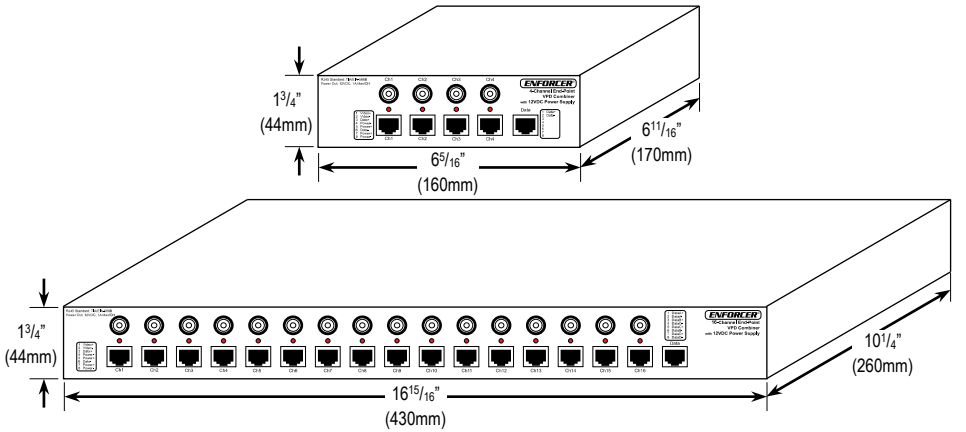
Passive VPD Combiners:

NOTE: EB-P304-01MQ and EB-P316-60MQ shown. EB-P304-01EQ and EB-P316-60EQ have the same dimensions (respectively).



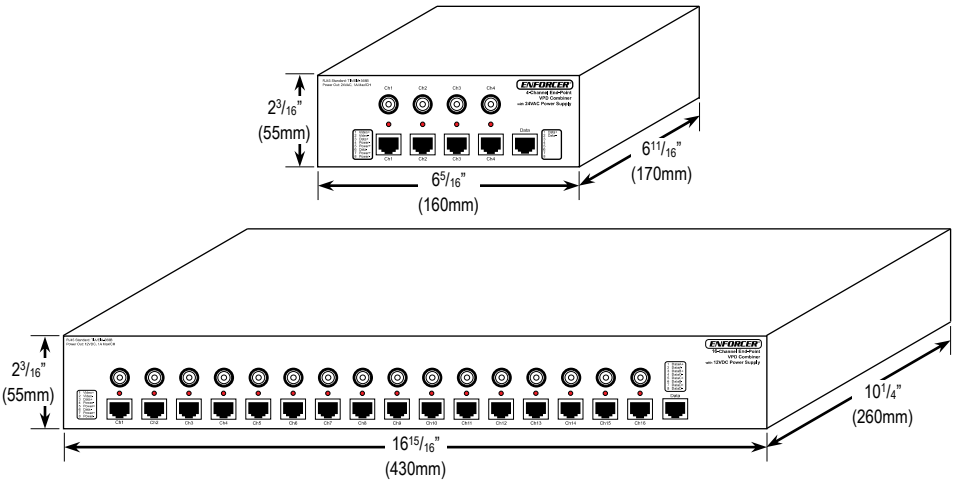
12VDC VPD Combiners:

NOTE: EB-D304-01EQ and EB-D316-60EQ shown. EB-D304-01MQ and EB-D316-60MQ have the same dimensions (respectively).



24VAC VPD Combiners:

NOTE: EB-C304-01EQ and EB-C316-60EQ shown. EB-C304-01MQ and EB-C316-60MQ have the same dimensions (respectively).



Installation:

1. Location: Install the unit in a ventilated, dry location where it will not be disturbed by other activities. A data center room is ideal.

   NOTE: For indoor use only. Make sure there is a cool air flow around the unit to prevent it from overheating.

   a. Install the **Passive Midpoint VPD Combiners** near the power supply at a point between the cameras and DVR.

   b. Install the **Active Midpoint VPD Combiners** at a point between the cameras and DVR. A power supply is already included in these models.

   c. Install the **Passive Endpoint VPD Combiners** near the power supply and DVR – ideally in the same room.

   d. Install the **Active Endpoint VPD Combiners** near the DVR – ideally in the same room. A power supply is already included in these models.

2. Mounting:

   a. Wall-mounting – attach the two included mounting brackets to the sides of the VPD Combiner (see fig. 1). Then attach to a wall with the four included screws and, if needed, optional screw anchors.

   b. Rack-mounting – attach the two included mounting brackets to the front or back of the VPD Combiner (see fig. 2). Then attach to a standard 19" rack with the four included screws.
   NOTE: Rack-mounting is available for 16-channel models only.

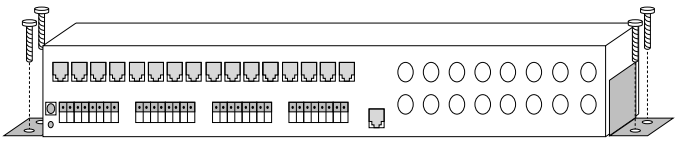


Fig. 1 (Wall/Desk-Mounting)

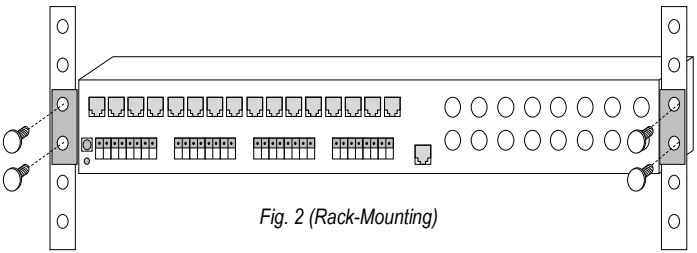


Fig. 2 (Rack-Mounting)

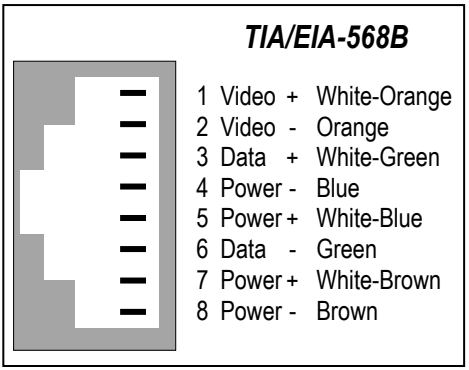
Power Range:

Use this chart to determine the maximum distance between the VPD Combiner and the cameras when powering cameras at extended distances.

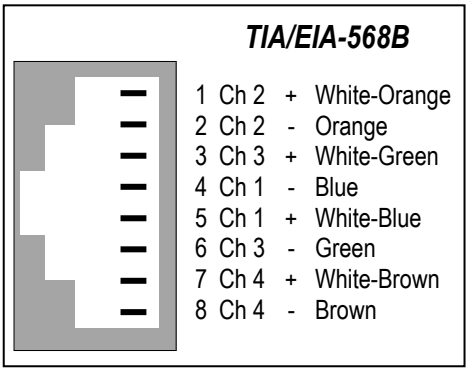
Power Supply Voltage	26VAC	13VDC
Resultant Camera Voltage	20VAC	10VDC
100mA Camera	1,960ft (600m)	984ft (300m)
300mA Camera	656ft (200m)	328ft (100m)
500mA Camera	394ft (120m)	197ft (60m)
1A Camera	197ft (60m)	98ft (30m)

RJ45 Connections:

Camera Connections:

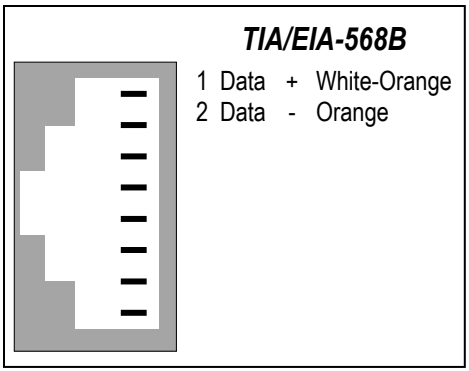


Video Connections:

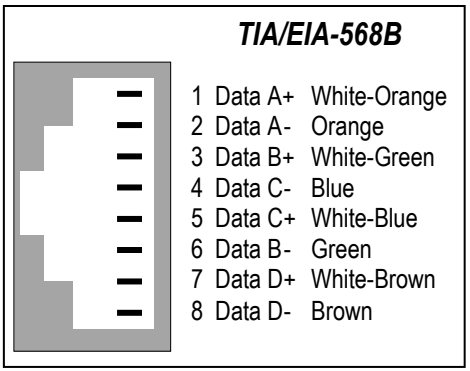


Data Connections:

4-channel models:



16-channel models:



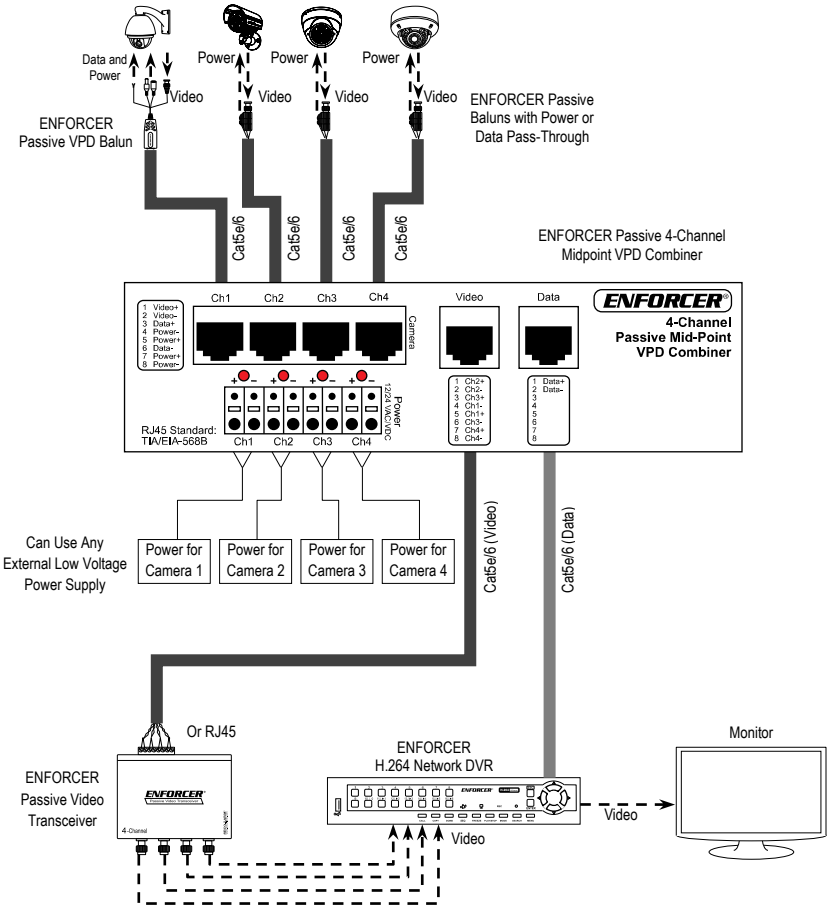
NOTE: A is channels 1~4, B is channels 5~8, C is channels 9~12, D is channels 13~16.

Wiring the Passive Midpoint VPD Combiners (EB-P304-01MQ and EB-P316-60MQ):

1. Connect cameras to VPD baluns (such as the EB-P101-20VQ) and run them via CAT5e/6 to the "Camera" ports on the VPD Combiner.
2. Run 12 or 24 VDC power to the "Power In" press-fit terminals on the VPD Combiner, depending on each camera's power requirements. For each camera port connected to the VPD balun, the corresponding power input must be connected to power.
   NOTE: Observe polarity when connecting power.
3. Run a CAT5e/6 cable from the "Video Out" port on the VPD Combiner to baluns or a multiple-channel passive video transceiver on the DVR side.
   NOTE: Consult the balun or video transceiver manual for range information.
4. Run a CAT5e/6 cable from the "Data Out" port on the VPD Combiner to the DVR or PTZ Controller.

Sample Installation:

NOTE: EB-P304-01MQ shown. EB-P316-60MQ has similar connections, but has 16 channels.

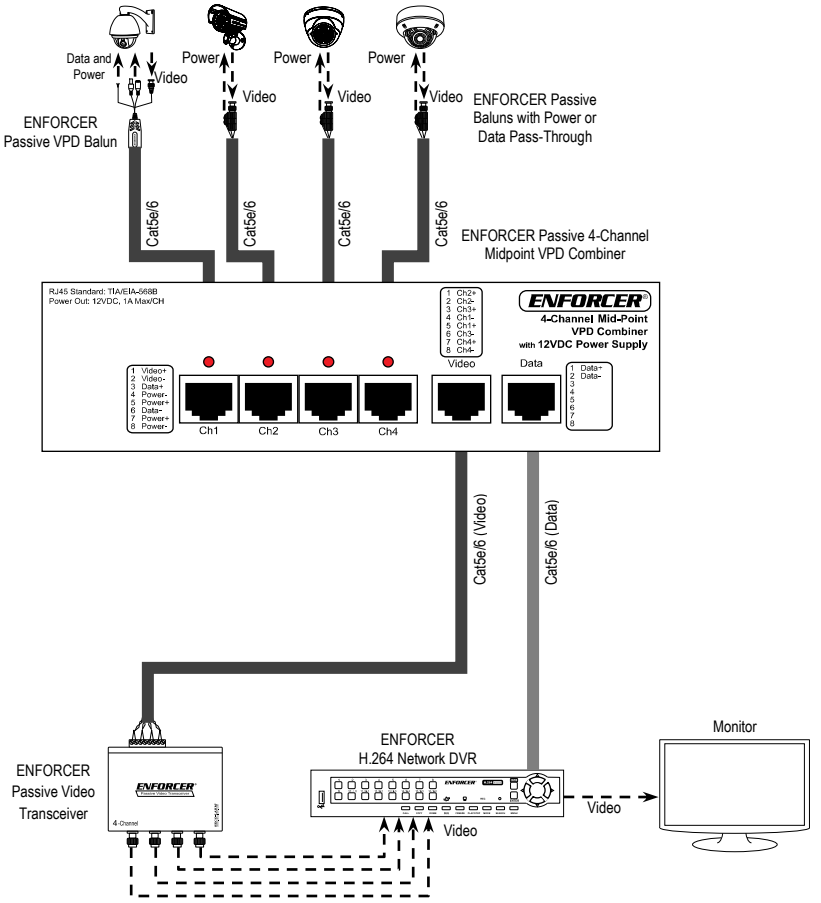


Wiring the Active Midpoint VPD Combiners (EB-D304-01MQ, EB-D316-60MQ, EB-C304-01MQ and EB-C316-60MQ):

1. Connect cameras to VPD baluns (such as the EB-P101-20VQ) and run them via CAT5e/6 to the "Camera" ports on the VPD Combiner.
2. Run a CAT5e/6 cable from the "Video Out" port on the VPD Combiner to baluns or a multiple-channel passive video transceiver on the DVR side.
   NOTE: Consult the balun or video transceiver manual for range information.
3. Run a CAT5e/6 cable from the "Data Out" port on the VPD Combiner to the DVR or PTZ Controller.

Sample Installation:

NOTE: EB-D304-01MQ shown. EB-C304-01MQ has similar connections. EB-D316-60MQ and EB-C316-60MQ have similar connections, but have 16 channels.

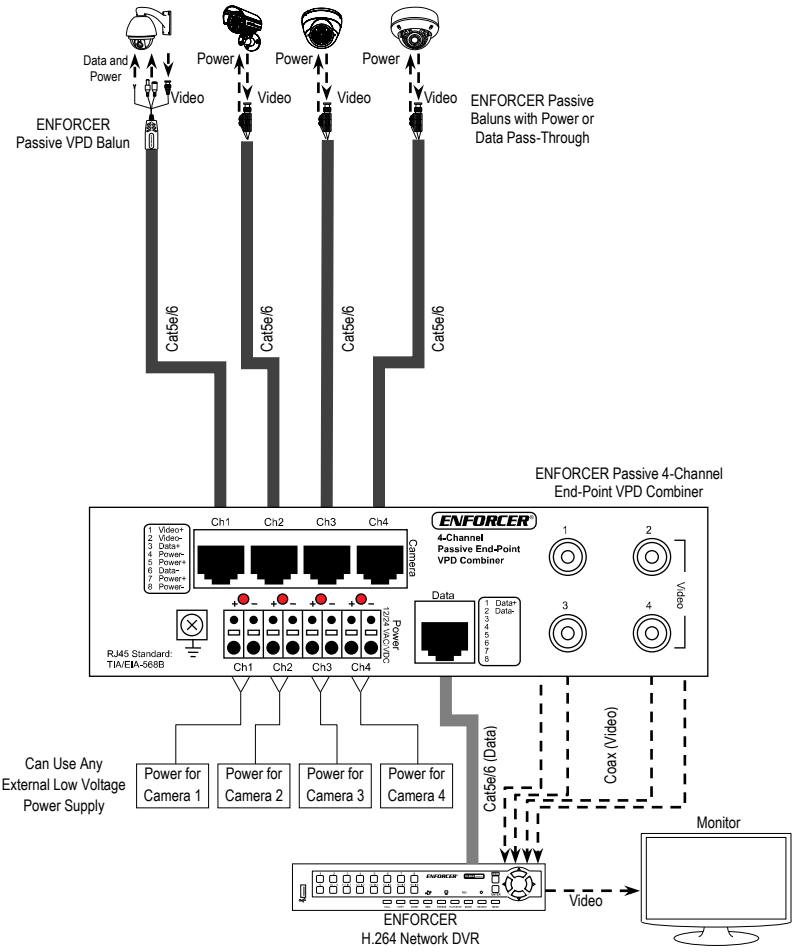


Wiring the Passive Endpoint VPD Combiners (EB-P304-01EQ, EB-P316-60EQ):

1. Connect cameras to VPD baluns (such as the EB-P101-20VQ) and run them via CAT5e/6 to the "Camera" ports on the VPD Combiner.
2. Run 12 or 24 VDC power to the "Power In" press-fit terminals on the VPD Combiner, depending on each camera's power requirements. For each camera port connected to the VPD balun, the corresponding power input must be connected to power.
   NOTE: Observe polarity when connecting power.
3. Run coaxial cables from the BNC ports on the VPD Combiner to the BNC ports on the DVR.
4. Run a CAT5e/6 cable from the "Data Out" port on the VPD Combiner to the DVR or PTZ Controller.

Sample Installation:

NOTE: EB-P304-01EQ shown. EB-P316-60EQ has similar connections, but has 16 channels.

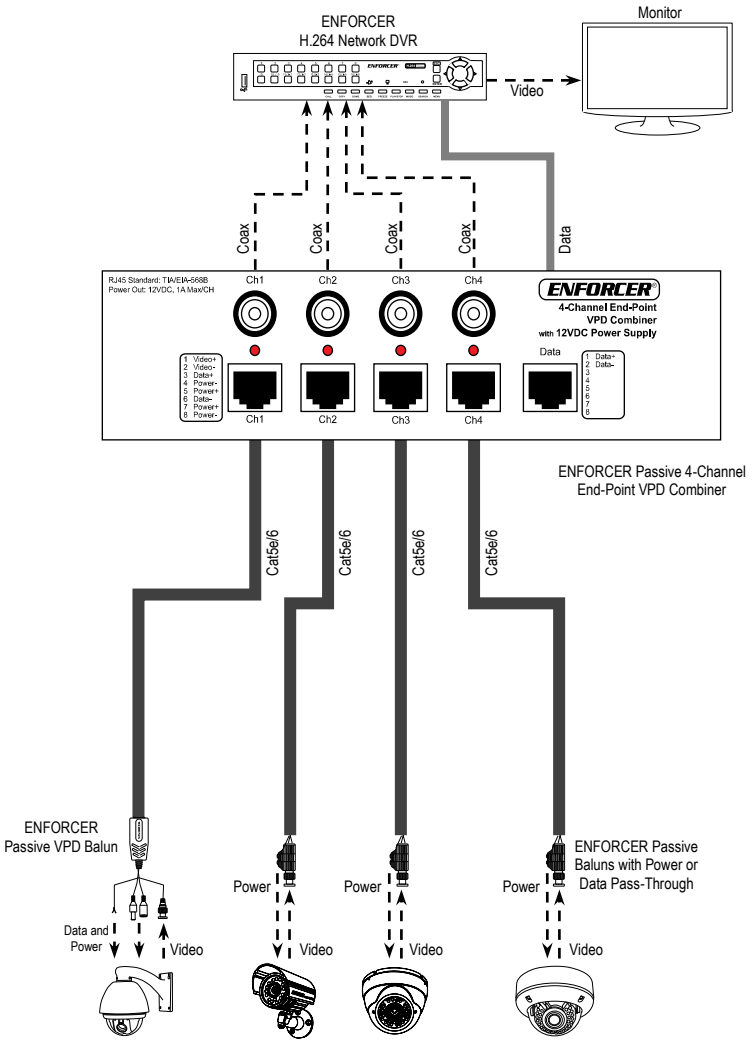


Wiring the Active Endpoint VPD Combiners (EB-D304-01EQ, EB-D316-60EQ, EB-C304-01EQ and EB-C316-60EQ):

1. Connect cameras to VPD baluns (such as the EB-P101-20VQ) and run them via CAT5e/6 to the “Camera” ports on the VPD Combiner.
2. Run coaxial cables from the BNC ports on the VPD Combiner to the BNC ports on the DVR.
3. Run a CAT5e/6 cable from the “Data Out” port on the VPD Combiner to the DVR or PTZ Controller.

Sample Installation:

NOTE: EB-D304-01EQ shown. EB-C304-01EQ has similar connections. EB-D316-60EQ and EB-C316-60EQ have similar connections, but have 16 channels.



Troubleshooting:

Wavy or ghost image if connected to image processor (e.g., multiplexer or DVR), but not if directly to monitor.	• Move the Cat5e/6 cable away from possible sources of interference. • Ensure that the same twisted pair connects to a balun at both ends of the cable. • Replace the cable with a new Cat5e/6 cable.
Image is wavy and shakes.	• Try reversing polarity of the two wires at one end of the Cat5e/6 cable.
Image is weak or faded.	• Reduce the Cat5e/6 cable length. • Replace with a higher-grade cable. Cat5e cable meets the specifications in the manual. Cat6 cable allows longer range.
No image.	• Double-check that the Cat5e/6 and BNC cables are connected properly. • Run a continuity test on all wires in the cable. • Check that the camera and monitor are powered up.
PTZ Controls do not work.	• Reduce the Cat5e/6 cable length. • Refer to your PTZ camera manual.
Power LEDs are OFF	• Check that the power supply is ON.

Also Available from SECO-LARM:

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SECO-LARM® U.S.A., Inc.
16842 Millikan Avenue, Irvine, CA 92606 Website: www.seco-larm.com
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