WEST PENN WIRE

UTP Video Cables

West Penn Wire introduces its new line of UTP security cables,V/CAT. The V/CAT (Video over Category 5E) is designed for the video over UTP applications. The cables are constructed with two pairs of UTP Category 5E type cables, and two conductors of either 18 or 16 Awg. cables.

• Pair 1 - Category 5E Type 100Ω
The first pair is used for video transmission.

• Pair 2 - Category 5E Type 100Ω
The second pair is for video transmission or data transmission, such as RS-422 or RS-485 or PTZ for the cameras.

• Two Conductors - The 18 or 16 Awg. solid bare conductors are used to carry power to the cameras.

The V/CAT Unshielded twisted pairs are 100 Ω balanced cables. The UTP's are tightly twisted to prevent outside interference (EMI/RFI) and internal interference from the other pair, and conductors.

The V/CAT power carrying conductors are available in either 18 Awg. or 16 Awg. The 16 Awg. conductors are used for extremely long video over UTP runs.

The V/CAT cables are available in Plenum or Riser constructions. The cables carry UL and C(UL) listing CMR and/or CMP.

V/CAT Characteristics:

• Send power and video signals over the same shared sheath.

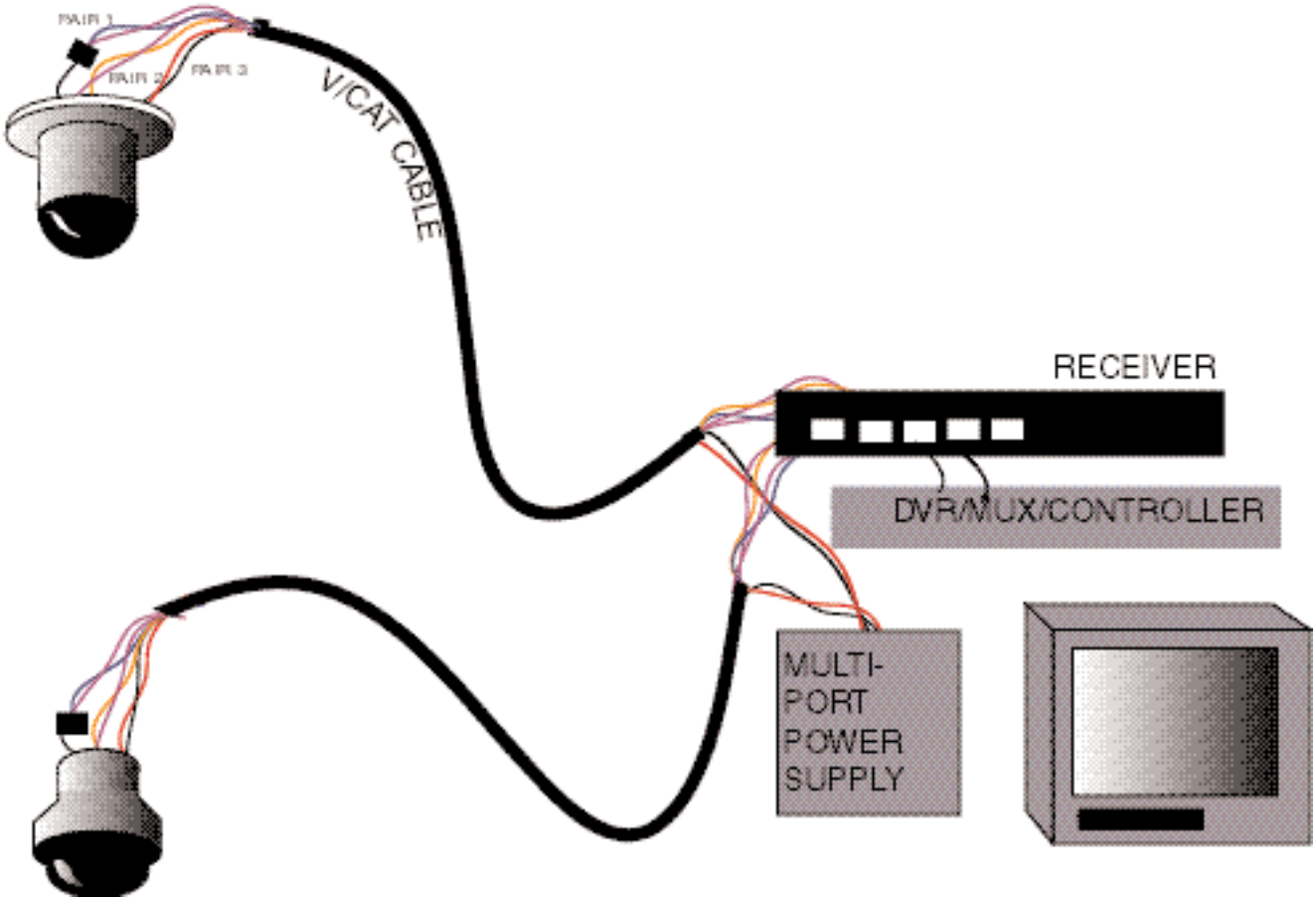
• Supports: Video/ PTZ/ Power
Two video / Power

• Plenum and Riser constructions

Catalog No. & Rating	Cable Type	Dielectric Material	Nom. Ω 2 pair UTP	2 pair Nom. Capacitance	
				pf/ft	pf/m
V/CAT COMPOSITE CABLES					
CC2418 CM	2 Pair 24 Awg. UTP 2 Cond. 18 Awg. Unshielded	Thermoplastic	100 Ω	14	46
CC252418 CMP	2 Pair 24 Awg. UTP 2 Cond. 18 Awg. Unshielded	Plenum Thermoplastic	100 Ω	14	46
CC2416 CM	2 Pair 24 Awg. UTP 2 Cond. 16 Awg. Unshielded	Thermoplastic	100 Ω	14	46
CC252416 CMP	2 Pair 24 Awg. UTP 2 Cond. 16 Awg. Unshielded	Plenum Thermoplastic	100 Ω	14	46
CATEGORY 3 CABLES					
WP54982 CM	2 Pair UTP 24 Awg Category 3 Type	Thermoplastic	100 Ω	18	59
WP54983 CM	3 Pair UTP 24 Awg Category 3 Type	Thermoplastic	100 Ω	18	59
WP54980 CMP	3 Pair UTP 24 Awg Category 3 Type	Plenum Thermoplastic	100 Ω	18	59
CATEGORY 5 CABLES					
WP55254 CM	3 Pair UTP 24 Awg Category 5 Type	Thermoplastic	100 Ω	14	46
WP55827 CMP	3 Pair UTP 24 Awg Category 5 Type	Plenum Thermoplastic	100 Ω	14	46
CATEGORY 5E CABLES					
4245 CM	4 Pair UTP 24 Awg Category 5E	Thermoplastic	100 Ω	14	46
254245 CMP	4 Pair UTP 24 Awg Category 5	Plenum Thermoplastic	100 Ω	14	46

RS-422 TYPE P/T/Z CONTROL

PAIR 1 VIDEO CATEGORY 5E TYPE - 24 AWG.
PAIR 2 P/T/Z CATEGORY 5E TYPE - 24 AWG
PAIR 3 POWER 2 COND. 16AWG OR 18 AWG



History

For many years, products have been available for transmitting video over existing UTP cable. For much of this time the UTP balun did little more than convert the unbalanced coaxial signal to a balanced signal for use on a twisted pair. Until recently, these devices provided inadequate noise immunity, no surge protection, and no ground loop isolation. Today's technology allows video signals to be transmitted long distance with rejected noise interference over a UTP cable.

The goal of any CCTV system is sharp, bright, identifiable video, admissible as evidence in a court of law. Coaxial cable is a great choice for quality, conclusive CCTV video. However video over UTP has become a viable solution for long distance and single location/multiple camera CCTV applications.

Video over Coaxial cable advantages:

- Great Choice for quality and conclusive CCTV video
- Less expensive solution for CCTV applications of 1200ft or less with one camera per location.
- Impedance matching throughout the system. (75Ω)

Video over UTP cable advantages:

- Good video quality (dependent on the video Balun Manufacturer)
- Less expensive solution for CCTV applications that require multiple cameras in a single location. (each pair will carry a video source)
- Easy upgrade (Retrofit)
- Long distance CCTV applications that exceed 1200ft.

INSTALLATION CHARACTERISTICS:

(Coax + 1 Pair) Vs. V/CAT Cables NON-PLENUM

Bend Radius:

- V/CAT bend radius 4 x OD
- Coaxial min. bend radius 10 x OD

Physical sizes:

- V/CAT #CC2418 - .175 X .345" OD
- V/CAT #CC2416 - .185 X .360" OD
- # 2815B - .204 X .445" OD

Pull Tensions:

- V/CAT #CC2418 - 30 lbs
- V/CAT #CC2416 - 35 lbs
- # 2815B - 45 lbs

Termination:

- Coaxial BNC terminations can typically be connectorized in less than one minute.

Side by Side Analysis: (COAX + 1 PAIR) VS. V/CAT

A comparison between V/CAT and Coax with 1 pair for CCTV:
Interference rejection:

- Common mode noise rejection
  - > 99% rejection possible
  - Function of the Receiving Devices and MFG.
  - Function of twist rate and uniformity
- Coax 95% braid and foil has 75 dB of Shield Effectiveness
  - Braid is excellent low freq. shield

System Cost: NON-PLENUM AND PLENUM COMPARISON 1 CAMERA PER LOCATION.

8x1000' Runs	1 camera per location (8 camera's total) NON-PLENUM		
	RG59/U + 1 Pair	V/CAT 1 pr. 18 Awg	V/CAT 1 pr. 16 Awg
WPW cable P.N	2815B	CC2418	CC2416
8000'	$1120	$680	$920
Strip tool	$25	$10	$10
Crimp tool	$65	$0	$0
Connectors + Labor	$35	$0	$0
Baluns Tx /Rx	$0	$856	$856
Labor costs **	$8000	$8000	$8000
Totals	$9240.00	$9546.00	$9786.00

Labor costs ** equal in labor cost one cable per camera location.

- Looking at the Non-Plenum comparison between a Coax with 1 pair and the V/CAT Cable, there is little difference in the overall system cost.
The Traditional Coax system cost is less than the V/CAT system cost. Other considerations may need to be taken in overall system cost

8x1000' Runs	1 camera per location (8 camera's total) PLENUM		
	RG59/U + 1 Pair	V/CAT 1 pr. 18 Awg	V/CAT 1 pr. 16 Awg
WPW cable P.N	252815	CC252418	CC252416
8000'	$3000	$1560	$1904
Strip tool	$25	$10	$10
Crimp tool	$65	$0	$0
Connectors + Labor	$35	$0	$0
Baluns Tx /Rx	$0	$856	$856
Labor costs **	$8000	$8000	$8000
Totals	$11,120.00	$10,426.00	$10,770.00

- Looking at the Plenum comparison between a Coax with 1 pair and the V/CAT Cable, there is little difference in the overall system cost.
The V/CAT installation cost is less than the Coax system cost. Other considerations may need to be taken in overall system cost

INSTALLATION CHARACTERISTICS:
COAX VS. CATEGORY 5E NON-PLENUM

Bend Radius:
- Category 5 min. bend radius 4 x OD (<1")
- Coaxial min. bend radius 10 x OD (<2")

Physical sizes:
- Category 5 - 0.209" OD
- # 815 Coax - 0.232" OD
- # 825 Coax - 0.146" OD

Pull Tensions:
- Max pull tension Category 5E - 25lbs.
- Max pull tension # 815 Coax - 50lbs.
- Max pull tension # 825 Coax - 30lbs.

Termination:
- Coaxial BNC terminations can typically be connectorized in less than one minute.

Side by Side Analysis: COAX VS. CAT 5E
Non-Plenum Application

A comparison between UTP and Coax for CCTV:
System Cost:

8x800' Runs	1 camera per location (8 camera's total)		
	RG59/U	MiniMax 25Awg.	Category 5E
WPW cable P.N	815	825	4245
6400' Coax Cable 6400' Category 5E	$544	$488	$288
Strip tool	$25	$25	$10
Crimp tool	$65	$65	$0
Connectors + Labor	$35	$35	$0
Baluns Tx /Rx	$0	$0	$856
Labor costs **	$6400	$6400	$6400
Totals	$7069.00	$7013.00	$7554.00

Labor costs ** equal in labor cost one cable per camera location.

The Traditional Coax system cost is less than the Category 5E systemfor one camera per location.

8x800' Runs	2 camera per location (16 camera's total)		
	RG59/U	MiniMax 25Awg.	Category 5E
WPW cable P.N	815	825	4245
12,800' Coax Cable 6400' Category 5E	$1088	$960	$288
Strip tool	$25	$25	$10
Crimp tool	$65	$65	$0
Connectors + Labor	$70	$70	$0
Baluns Tx /Rx	$0	$0	$1712
Labor costs **	$9920	$9920	$6400
Totals	$11,168.00	$11,040.00	$8410.00

Labor costs **- Coaxial labor cost- Multiply 1.55% to the UTP labor cost. The Category 5E installation Cost is less than the traditional Coax system for 2 or more camera's per location

OTHER INSTALLATION CONSIDERATIONS MUST BE CALCULATED SUCH AS:

- Conduit size (A UTP 4 pair cable can carry 4 separate CCTV signals in one sheath.) The UTP cable will take up less room in a conduit than four separate Coaxial cables.
- PLENUM Applications will cause an effect on the overall cost of the installation.

- OEM camera's will have an effect on the overall cost of the installation.

Security - CCTV Accessories

Baluns

CCTV Passive Device	
CN-BNCJ	BNC Female to RJ45

Category 5 or Better UTP
Distance: 2230ft

CCTV Passive Device	
CN-BNCJKS	BNC Female to RJ45 Keystone Mount

Category 5 or Better UTP
Distance 2230ft

CCTV Passive Device	
CN-MTL	Miniature - BNC Male to IDC Clamp Down
CN-MTL2	Miniature - BNC Male to screw terminals- Sold in Pairs

CN-MTL2- Economy- Category 5 or Better UTP
Distance: 2230ft

CCTV Passive Device	
CN-RJ45PT	BNC Male to RJ45 IDC Clamp Down Pigtail
CN-STPT2	BNC Male to Screw Terminal Pigtail- Sold in Pairs

Category 5 or Better UTP
Distance: 2230ft

CCTV Passive Device	
CN-TL	BNC Male to IDC Clamp Down
CN-50VB10	Economy BNC Male to Spring Clamps- Sold in Pairs up to 1250ft.

Category 5 or Better UTP
Distance: 2230ft

CCTV Passive Device	
CN-PVRJ45	BNC Male to RJ45 - Power Thru and Video

Category 5 or Better UTP: Distance: 2230ft
Power: 3 Pair - 24VDC.
5VA: 519ft. (170mm), 10VA: 258ft. (85mm),
20VA: 130ft. (43mm), 30VA: 86ft

CCTV Passive Device	
CN-RJ45	BNC Male to RJ45
CN-50VBRJ45	Economy BNC Male to RJ45 - Sold in Pairs - Up to 1250ft.

CCTV Passive Device	
CN-VPDRJ45	BNC Male to RJ45 - Power Thru , Video, and Data

CCTV Passive Patch Panel	
CN-H16PRJ45BNC	16 Port RJ45 to 16 Port BNC PatchPanel
CN-H16STRJ45	16 Port RJ45 With Power and Control Screw Terminal
CN-H16PRJ45	16 Port RJ45 to RJ45 PatchPanel

CCTV Active Receiver Hub	
CN-AH16PRJ45BNC	16 Port Active Reciever Hub
CN-AH32PRJ45BNC	32 Port Active Reciever Hub

Complete listing of Baluns In the LAN Cable Accessories pgs. 156-158

VIDEO BALUN MANUFACTURERS PRODUCTS LIST:

NETWORK VIDEO TECHNOLOGIES PRODUCTS LIST		
PASSIVE TRANSCEIVERS	NV-211T-M	VIDEO TRANSMITTER
	NV-212A	PASSIVE VIDEO TRANSCEIVER
	NV-213A	PASSIVE VIDEO TRANSCEIVER
	NV-213A-M	PASSIVE VIDEO TRANSCEIVER, MALE BNC
	NV-413A	PASSIVE VIDEO TRANSCEIVER, 4 CHANNEL
ACTIVE TRANSCEIVERS	NV-652R	ACTIVE VIDEO RECEIVER
	NV-653T	ACTIVE VIDEO TRANSMITTER
	NV-452R	ACTIVE VIDEO RECEIVER, 4 CHANNEL
HIGH DENSITY PASSIVE & ACTIVE HUBS	NV-813A	8 PORT PASSIVE HUB
	NV-862R	8 PORT ACTIVE HUB
	NV-1613A	16 PORT PASSIVE HUB
	NV-1662R	16 PORT ACTIVE HUB
	NV-3213A	32 PORT PASSIVE HUB
	NV-3262R	32 PORT ACTIVE HUB
HIGH DENSITY PASSIVE & ACTIVE HUBS	NV314A	PASSIVE VIDEO/ AUDIO TRANSCEIVER
	NV-418A	DUAL PASSIVE VIDEO/ AUDIO TRANSCEIVER
	NV-418AR	DUAL PASSIVE VIDEO/ AUDIO TRANSCEIVER, RACKMOUNT
	NV-518A	DUAL VIDEO/ AUDIO TRANSCEIVER
	NV-518AR	DUAL VIDEO & AUDIO TRANSCEIVER, RM

VIGITRON PRODUCTS LIST		
PASSIVE TRANSCEIVERS	VB1000F	BLUE HAWK VIDEO BALUN, FEMALE (V,D,A, PTZ)
	VB1000M	BLUE HAWK VIDEO BALUN, MALE (V,D,A, PTZ)
	VI1000F	PASSIVE TRANSCEIVER, FEMALE (V,D,A,PTZ)
	VI1000M	PASSIVE TRANSCEIVER, MALE (V,D,A,PTZ)
	VI1010F	PASSIVE TRANSCEIVER, FEMALE (V,A,PTZ) DC GND.LIFT
	VI1010M	PASSIVE TRANSCEIVER, MALE (V,A,PTZ) DC GND.LIFT
	VI1110F	PASSIVE TRANSCEIVER FEMALE (V,D,A,PTZ) DC GND.LIFT
	VI1110M	PASSIVE TRANSCEIVER MALE (V,D,A,PTZ) DC GND.LIFT
ACTIVE TRANSCEIVERS	VI6000VT	VIDEO TRANSMITTER 12V DC
	VI6000VR	VIDEO RECEIVER 12V DC
PASSIVE HUBS	VI1004	4 CH. PASSIVE HUB
	HA1008	8 CH. PASSIVE HUB
	HA1108	8 CH. PASSIVE HUB DC. GND
	HA1016	16 CH. PASSIVE HUB
	HA1116	16 CH. PASSIVE HUB DC. GND
	VI1032	32 CH. PASSIVE HUB
ACTIVE HUBS	VI6004HR	4 CH. ACTIVE HUB
	VI6008HR	8 CH. ACTIVE HUB
	VI6016HR	16 CH. ACTIVE HUB
	VI6032HR	32 CH. ACTIVE HUB

CONSULT YOUR BALUN MANUFACTURER FOR SPECIFIC INFORMATION ON PRODUCTS, PRICING AND CAPABILITIES.