

**Installation and
Operation Manual
P5105/P5110 and
CX452 with
CXM16/CXM22
CHM16/CHM22
CHM12A/CXM12A
*UTPLinks™***

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CX452A
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Reduce risk of fire or electrical shock do not expose this product to rain or moisture.

Note: This installation should be made by a qualified service person and conform with local codes.

Caution: To reduce the risk of electric shock do not remove cover. No user-serviceable parts inside. Refer servicing to qualified service personnel

Introduction

The **UTPLinks** system is designed to work within TIA/EIA standards-based network cabling. Using a single Cat 5e or better UTP cable, video, data and power can be sent up to 100 meters for fixed or PTZ cameras. The Power Supply and Crossover units are most often positioned within the IDF (telcom closet) and provide a standard 50 pin telco jack for easy interfacing with either a copper backbone or NITEK video receiver equipment. This manual is designed to cover several different models of Crossover and Power Supply units. Additionally, it will provide a brief system overview.

The UTPLinks system has two basic layout configurations. The first is a headend system in which cameras are powered at distances of 100 meters or less. The second is when the system is used as a midspan power supply typically located in an IDF closet. The following diagrams are basic system layouts only, many other layouts are possible.

The CXM16, CXM22, CHM16 and CHM22 allow the UTPLinks system to be configured to fit any job.

CXM16 Card

- Inserts power for 4 fixed cameras
- Provides separate fusing and power monitoring of for each camera
- Passes camera video thru to the rear Telco jack

CXM22 Card

- Inserts power for up to 4 PTZ cameras
- Provides separate fusing for each camera
- Status monitoring of power and data for each camera
- Passes camera video thru to the rear Telco jack

CHM16 Card

- Inserts power for 4 fixed cameras
- Provides separate fusing and power monitoring of for each camera
- Built-in video balun receiver

CHM22 Card

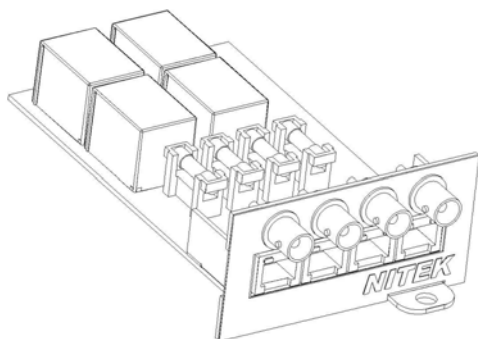
- Inserts power for up to 4 PTZ cameras
- Provides separate fusing for each camera
- Status monitoring of power and data for each camera
- Built-in video balun receiver

CHM12A Card

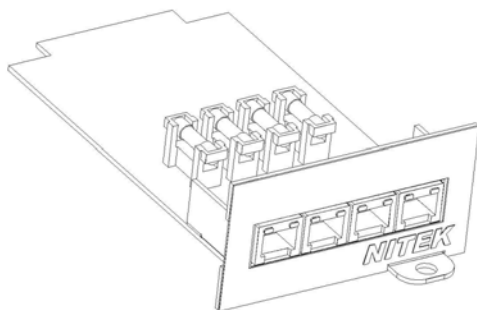
- Inserts power for 4 fixed cameras
- Provides separate fusing for each camera
- Status monitoring of power and data for each camera
- Built-in video balun receiver

CXM12A Card

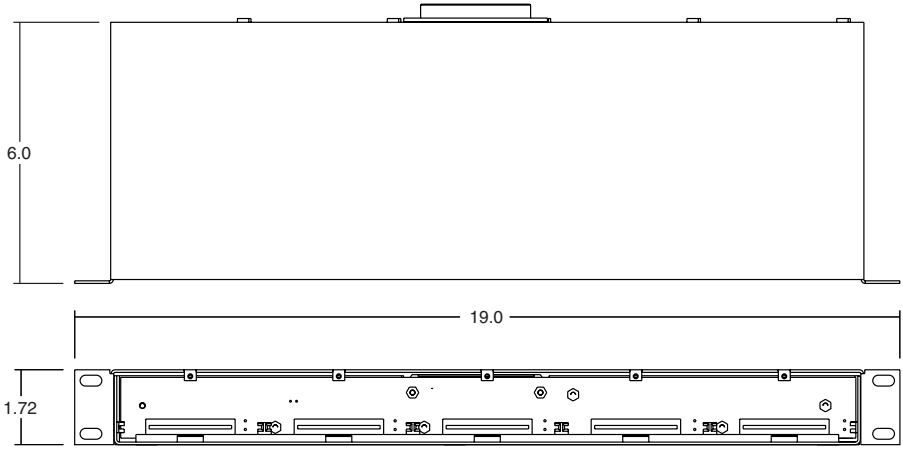
- Inserts power for 4 fixed cameras
- Provides separate fusing and power monitoring of for each camera
- Passes camera video thru to the rear Telco jack



CHM16, CHM22 or CHM12A card
Video decoded out front of card

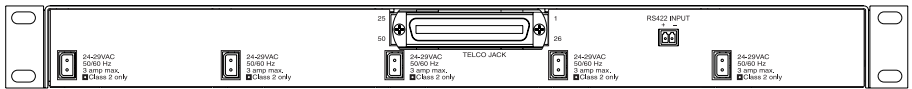


CXM16, CXM22 or CXM12A card
Video and data routed to rear Telco jack



CX452 Card Cage

Holds up to 5 cards



CX452 Rear Panel

Telco jack for easy connection to copper backbone

UTPLinks HEAD-END DISTRIBUTION

In a head-end system all equipment is located together. There is no backbone copper and all of the horizontal runs are limited to 100 meters(TIA/EIA standards), so passive receivers can be used.

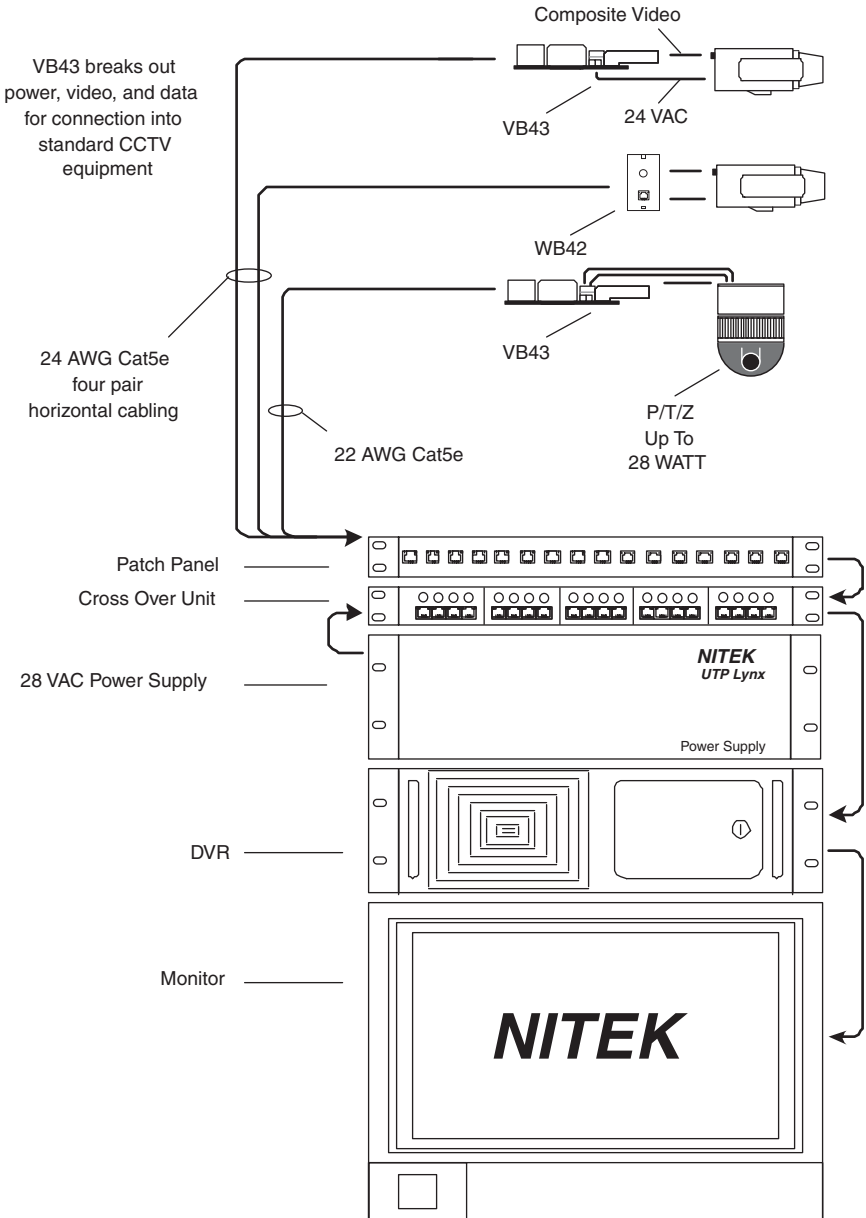
Starting at the camera end, there are several UTPLinks transmitter units available, only three are shown here. These units allow the video, power and data to be separated out and fed into standard CCTV cameras.

From the transmitter there is a standard 4 pair Cat 5 cable running back to a patch panel up to 100 meters away(TIA/EIA standards). Using 24awg patch cables, connections for each camera are sent to the Crossover unit. The Crossover unit provides a central point for the combining of the power, data and video signals. Each camera port is fused and lights on each of the front panel RJ45 jacks show the status of both power and data.

Power for the system is provided by a Power Supply unit mounted under the Crossover unit. The Power Supply unit is selected based on the wattage requirements of the cameras in the system. It connects to the Crossover unit via snap in jumper cables that can be installed in seconds.

Data for the CX452 is routed though the Telco jack on the rear of the unit. In this system CHM16 and CHM22 cards feed video out the front BNC jacks for connection into standard CCTV equipment. In this example that is a DVR which is viewed on a monitor. It could have been a matrix, multiplexer or any other equipment needed for your application.

UTPLinks DIRECT FROM HEAD-END



UTPLinks INTERMEDIATE POWER DISTRIBUTION

In a system equipment is often spread out over a large facility and the communications backbone of that facility is used for the routing of the video and data signals. Power is inserted at the IDF (Telco closet) located closer to the camera end.

Starting at the camera end, there are several UTPLinks transmitter units available, only two are shown here. These units allow the video, power and data to be separated out and fed into standard CCTV cameras.

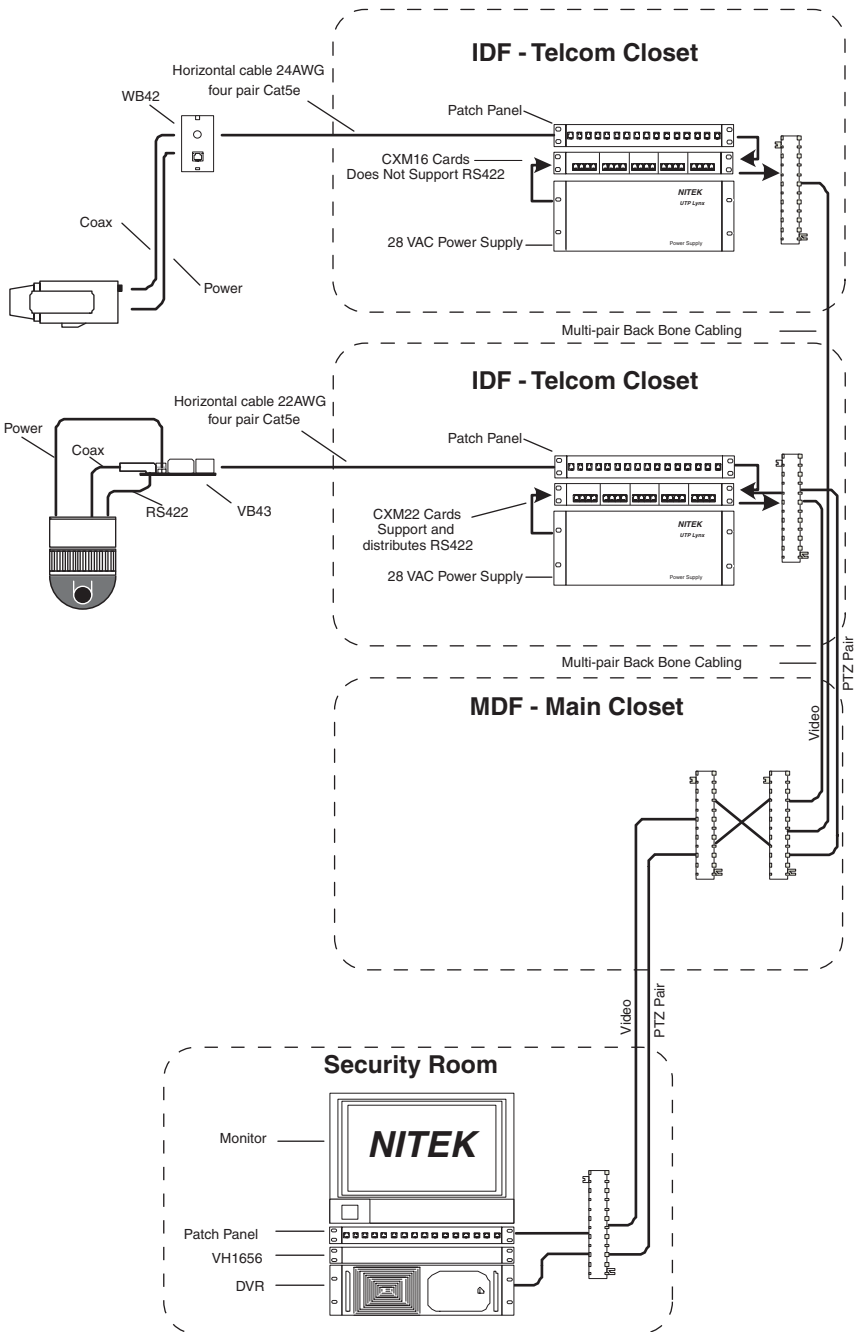
From the transmitter there is a standard 4 pair Cat 5 cable run back to a patch panel in the IDF, up to 100 meters away(TIA/EIA standards). These could be existing runs of network cabling if any are available. For fixed cameras 24awg Cat 5 network cabling is fine, but for PTZ cameras 22awg Cat 5 cable should be used. From the patch panel each camera is sent to the Crossover unit. The Crossover unit provides a central point for the combining of the power, data and video signals. Each camera port is fused and lights on each of the front panel RJ45 jacks show the status of both power and data.

Power for the system is provided by a Power Supply unit mounted near the Crossover unit. The Power Supply unit is selected based on the wattage requirements of the cameras connected to the Crossover unit. It connects to the Crossover unit via snap in jumper cables that can be installed in seconds.

Video from and data to the cameras is routed though the Telco jack on the rear of the Crossover unit. Using a standard Telco cable these signals are routed over a facilities backbone communication cables to the MDF (main Telcom center). From the MDF they can be rerouted to the security room.

In the security room these signals are taken back off of the backbone and put into NITEK video receiver units. The video signal can be sent up to 3000 feet depending on the receiver units used. That distance should include wiring from the camera all the way back to the security room. Once they are decoded in the receiver unit these video signals are fed out BNC jacks for connection into standard CCTV equipment. In our current example, a DVR which is then viewed on a monitor. It could have been a matrix, multiplexer or any other equipment needed for your application.

UTPLinks LOCATED IN IDF CLOSETS



INSTALLATION

General Rules

- All horizontal cable runs from a Crossover unit to cameras must be 100 meters or less to meet TIA/EIA standards
- Fixed cameras (10 watts or less) wire must be Cat 5 or better 22awg or 24awg
- All PTZ cameras (10 to 28 watts) must be 22awg Cat 5 or better
- TIA/EIA Category wiring standards should be used
- All cabling should be T568B wiring
- Always disconnect power to system while working on wiring

Step 1) Determine Power Requirements

Determine the total power requirements of your cameras. Because of the way power is distributed in the system cameras should be grouped into sets of up to 4 cameras where the total current draw of a group is less than 40 watts or less then 80 watts. You should consult your camera manufacturer for your specific cameras. Consider the following cases and note that PTZ cameras can be split up among groups to spread out the power requirements:

Case 1: Fixed Cameras: 16 Fixed@5 watts = 80 watts total

4 cameras per 4 port card = 20 watts per card x 4

Case 2: PTZ and Fixed: 4 PTZ@ 19 watts and 12 Fixed@5 watts = 136 watts

3 Fixed/ 1 PTZ per 4 port card = 34 watts per card x 4

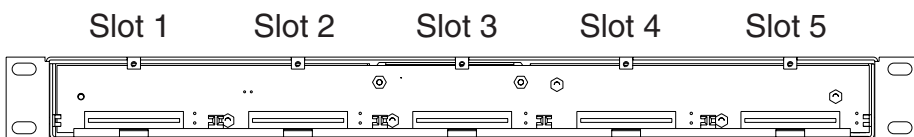
Case 3: PTZ Cameras: 16 PTZ@ 19 watts = 304 watts

4 PTZ cameras per 4 port card = 76 watts x 4

Step 2) Mount Cards in Card Cage

The CX452 Crossover unit has 5 card slots. When installing a card into the CX452 slide it in using the card guides for alienment. Once the card is fully inserted use the #4-40 screw on the top to secure the card in place. Unused card slots should be covered up with blank covers. Because each card can handle up to 4 cameras the total unit capacity is currently 20 cameras. Modular cards allow the system to be flexible for future applications. Which card you use will depend on your application.

RJ45 jacks on the front of the card provide the connction for each camera. To meet TIA/EIA standards your camera runs should be terminated in a patch panel. The camera runs should be wired for T568B standard. Using standard patch cables connect the camera ports to the patch panel.



CX452 Front Panel

IF USING CXM16, CXM22 or CXM12A cards

When using a CXM card the video and data signals are routed out the rear Telco jack of the CX452 unit. Using a standard Telco cable you can route the signals on the the copper backbone of the facility. Refer to the “Standard Telco Color Code” chart in this manual for pin assignments. RS422 data can also be supplied via the rear RS422 jack of the CX452.

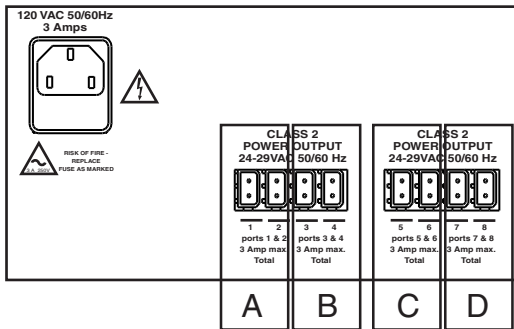
IF USING CHM16, CHM22 or CHM12A cards

When using a CHM card the video is provided out the front of the card on BNC jacks. This decoded video can be fed into other equipment as needed. If RS422 data is needed for PTZ cameras it should be connected to the rear panel RS422 jack.

Step 3) Connect Power Supply

NOTE: DO NOT CONNECT PRIMARY POWER UNTIL INSTALLATION IS COMPLETE. The CX452 can be powered by either a PS105 or a PS110 Power Supply. The PS105 and PS110 have easy connect jacks for power output. The PS105 has two 80 watt outputs (group A & B below) and each of the two 80 watt outputs can be used as two 40 watt ports. The PS110 has four 80 watt outputs (group A, B, C & D) or eight 40 watt ports. Care should be taken in connecting the Power Supply to the Crossover. Be sure that each 4 port bank of cameras on the Crossover unit does not exceed the wattage of your Power Supply connection. **NOTE THAT THE POWER PORTS SHOULD NEVER BE OVER LOADED. Over loading ports may cause internal protection circuit to engage. If this happens consider reconfiguring your power requirements and contact NITEK technical support for reset procedures.**

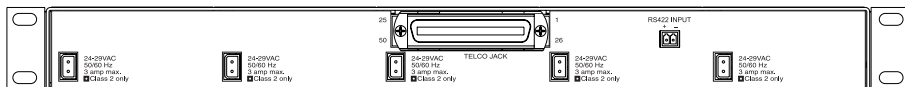
BACK PANEL VIEW PS110



Shown above is the back of a PS110 unit. In the case of the PS105 you only have A and B outputs. There is a maximum of 80 watts power draw per 2 port group A, B C or D.

Step 3) Continued

The Power Supply connects to the back of the CX452. There is a power connector directly behind each card slot. Be careful to match your connection to the proper card slot, as cards are installed from left to right in the front so the power connections are made from right to left in the back.



Back Panel View of CX452

Step 4) At the Camera End of the Horizontal Run

At the camera end there are several models of Balun Combiner units you can use. The particular model you choose will depend on your installation. For the connection of the Balun Combiner unit refer to the manual for your unit.

Step 5) Connecting the Receiver VIDEO ON BACKBONE APPLICATIONS

On the rear of the Crossover unit is a standard 50 pin Telco connector. Using a Telco cable to connect the Crossover unit into the backbone wiring. From the IDF (telco closet) the video and data can be sent up to 3,000 feet (less the distance to the camera) back to the headend security room. At the headend you will need to select video receiver equipment appropriate for the distance you are going. Refer to NITEK video receiver manuals for details on your specific receiver equipment. Refer to the "Standard Telco Color Code" chart in this manual for pin assignments.

HEADEND DISTRIBUTION APPLICATIONS

If using a CHM card the receiver is built-into the card. Connect a coax cable from the panel to the rest of your video equipment as needed. If you are using CXM cards you will need to use the rear Telco jack for connection into your video receiver equipment. The particular receiver equipment that you use will depend on your installation. The following chart shows pair assignments for the Telco jack on a CX452 unit.

Troubleshooting

- Problem** **Low voltage at the camera or PTZ.**
Fix/Cause
- Make sure that you have not over loaded the Crossover unit. Check the camera wattages. Particularly for PTZ cameras.
 - Check horizontal run wiring, make sure that both power pairs are properly connected.
- Problem** **Video inverted or rolling and unstable.**
Fix/Cause
- Check horizontal run wiring, the video wires may be reversed, to fix reverse the video pair at one end.
- Problem** **No video out at the receiver.**
Fix/Cause
- Check to make sure that there is video in at the camera end.
 - Check to make sure camera has power.
 - Check power to receiver.
 - Make sure that the wire pairs you are using is not open or shorted between the transmit and receiver points.
- Problem** **Ghost image at the receiver.**
Fix/Cause
- Bridge tap or "T" tap on the twisted pair video line. Remove tap.
- Problem** **Crossover unit keeps blowing fuse.**
Fix/Cause
- Check horizontal run for shorts and correct wiring.

For additional help with problems please call NITEK® Technical Assistance at (800) 528-4343. Hours are from 8am to 5pm Central Standard Time Monday through Friday. We are always ready to help.

Standard Telco Color Code

Pair/ Slot/ Camera	Wire color	Pin Number	Pair/ Slot/ Camera	Wire color	Pin Number
1 Slot 1 Video 1	blue white	1 (-)	14 Slot 4 Video 2	brown black	14 (-)
	white blue	26 (+)		black brown	39 (+)
2 Slot 1 Video 2	orange white	2 (-)	15 Slot 4 Video 3	slate black	15 (-)
	white orange	27 (+)		black slate	40 (+)
3 Slot 1 Video 3	green white	3 (-)	16 Slot 4 Video 4	blue yellow	16 (-)
	white green	28 (+)		yellow blue	41 (+)
4 Slot 1 Video 4	brown white	4 (-)	17 RS422 Data	orange yellow	17 (-)
	white brown	29 (+)		yellow orange	42 (+)
5 Slot 2 Video 1	slate white	5 (-)	18 Slot 5 Video 1	green yellow	18 (-)
	white slate	30 (+)		yellow green	43 (+)
6 Slot 2 Video 2	blue red	6 (-)	19 Slot 5 Video 2	brown yellow	19 (-)
	red blue	31 (+)		yellow brown	44 (+)
7 Slot 2 Video 3	orange red	7 (-)	20 Slot 5 Video 3	slate yellow	20 (-)
	red orange	32 (+)		yellow slate	45 (+)
8 Slot 2 Video 4	green red	8 (-)	21 Slot 5 Video 4	blue violet	21 (-)
	red green	33 (+)		violet blue	46 (+)
9 Slot 3 Video 1	brown red	9 (-)	22 Not Used	orange violet	22
	red brown	34 (+)		violet orange	47
10 Slot 3 Video 2	slate red	10 (-)	23 Not Used	greenviolet	23
	red slate	35 (+)		violet green	48
11 Slot 3 Video 3	blue black	11 (-)	24 Not Used	brown violet	24
	black blue	36 (+)		violet brown	49
12 Slot 3 Video 4	orange black	12 (-)	25 Not Used	slate violet	25
	black orange	37 (+)		violet slate	50
13 Slot 4 Video 1	green black	13 (-)			
	black green	38 (+)			

Intentionally Blank

Intentionally Blank