



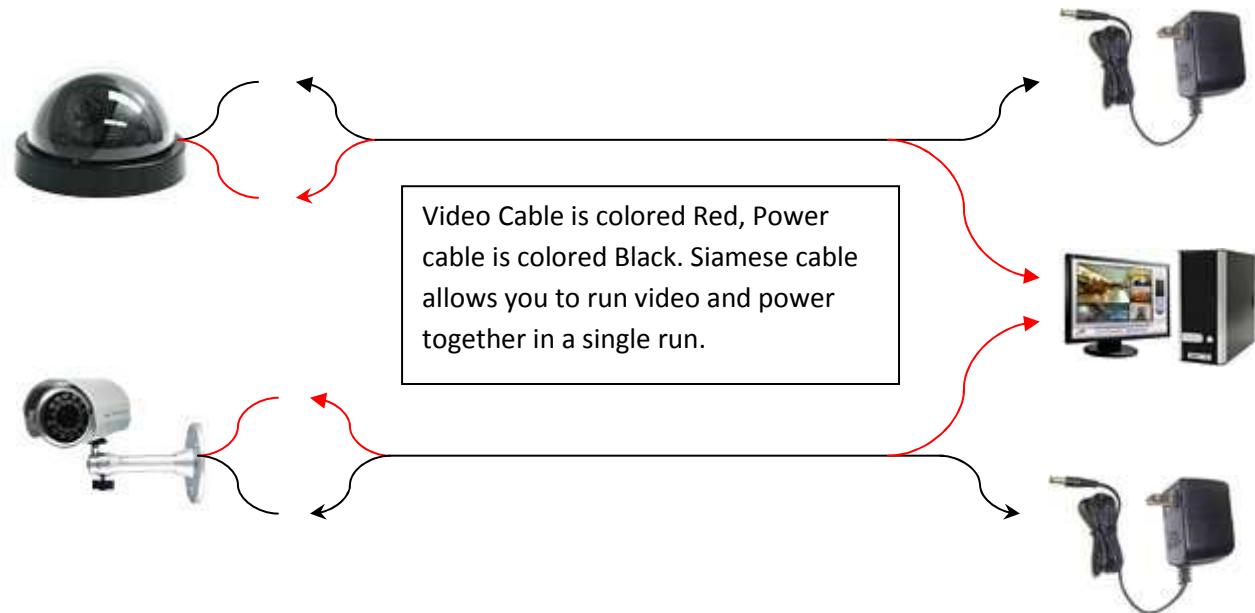
System Wiring Design Guide

This guide will help demonstrate the various types of wiring solutions available when connecting video surveillance cameras to EZ Watch Pro and Armor Pro Digital Video Recorders. Wiring a camera can be a time-consuming process, so understanding how the cables are connected on both sides will help to quickly plan out a wiring solution to ensure the most rapid installation possible.

This guide will explain how to wire the following systems :

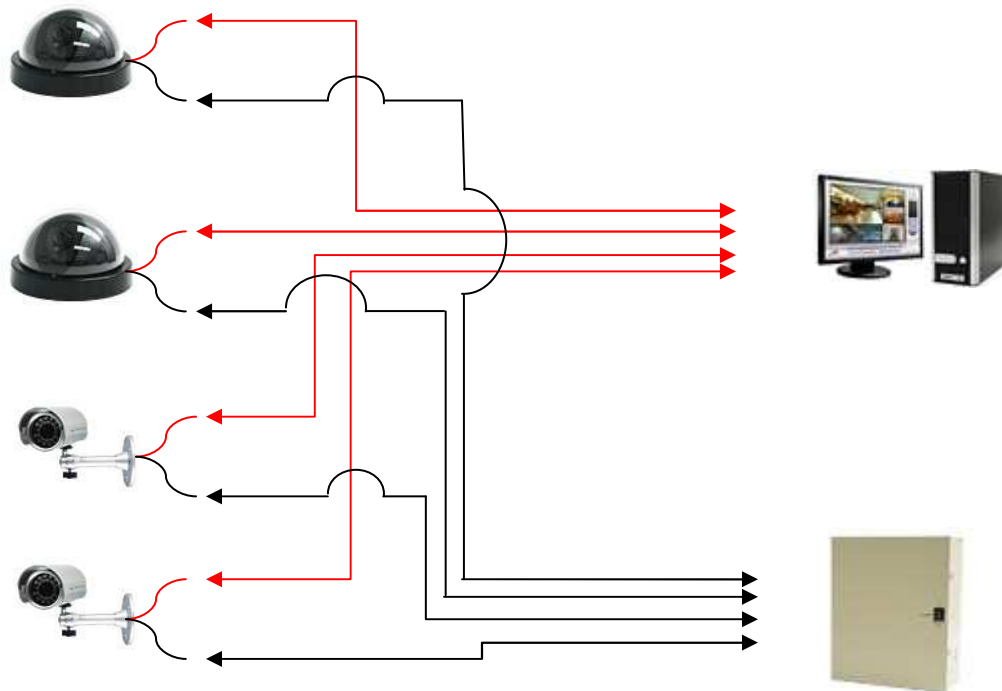
- **Wiring standard analog cameras to EZ Watch Pro or Armor Pro Standalone Recording units using pre-made Siamese video and power cable.**
- **Wiring standard analog cameras to EZ Watch Pro or Armor Pro Standalone Recording units using custom, bulk video and power cables.**
- **Wiring an IP-Based Camera system to an EZ Watch Pro 4.0 DVR system using your home network.**
- **Connecting Pan/Tilt/Zoom cameras to EZ Watch Pro or Armor Pro Standalone recording units.**
- **How to install fittings on custom cable lengths**
- **Frequently asked questions about cable lengths and connecting Recorders**

Wiring standard cameras to an EZ Watch Pro 4.0 System using pre-Made Siamese Cable:



Pre-Made cables come with the video and power connectors already installed on the cable, making the connection incredibly fast and simple. A standard analog camera will connect directly to the EZ Watch Pro 4.0 DVR using a Pre-Made Siamese cable without any modification needed. Simply plug one end of the cable into the video and power ports on the camera, to the video and power ports on the Siamese cable. On the other end of the cable, plug the video connector in to the EZ Watch Pro 4.0 DVR, and the power connector into a standard 12V DC Power Supply.

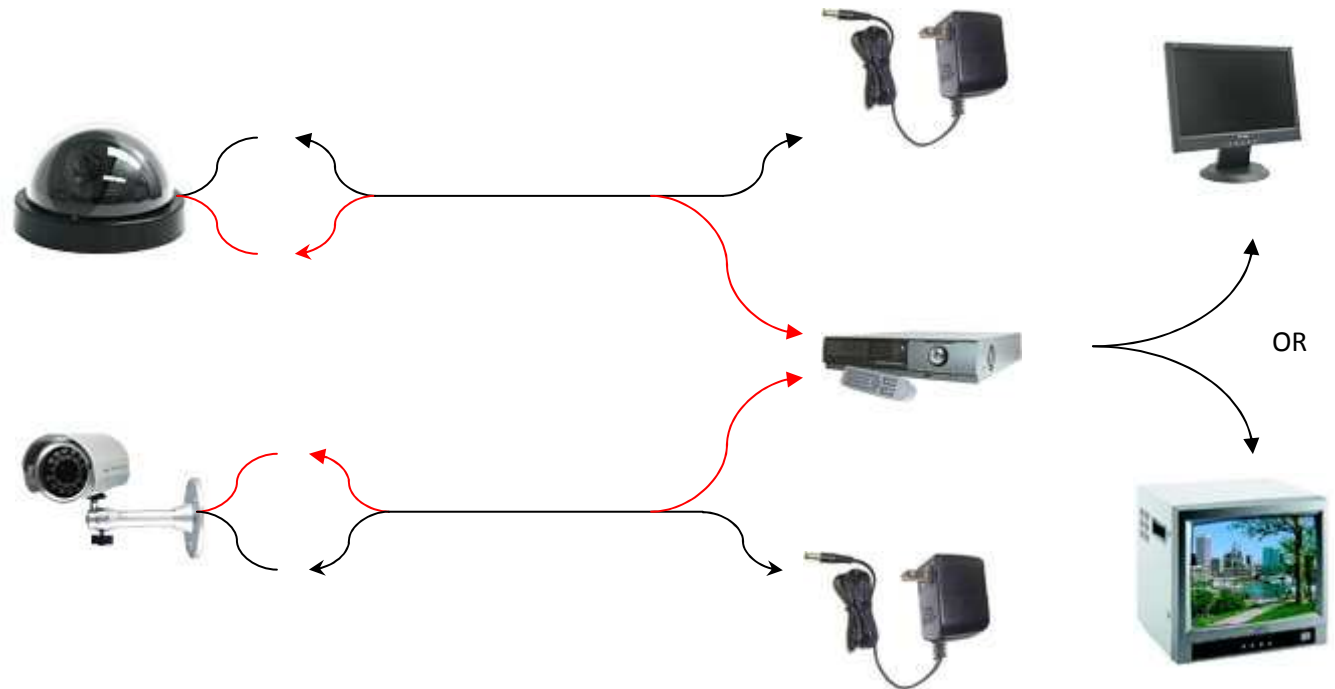
Wiring standard cameras to an EZ Watch Pro 4.0 System using custom Video and Power Cable:



Using a custom cable allows you to cut whatever length of cable is needed, ensuring no shortage or excess. To use custom cable, you simply measure the length needed, cut off an appropriate amount of cable, and install the BNC video connectors and power wire pigtailed on the end of the cable. Please see the instructions later in this guide.

Each Camera will connect to the PC and to a Multi-Camera Power supply separately. A video cable with BNC-Style connectors on either end will run from the Video connector on the camera, to the Video connector on the PC-DVR. A power cable with a Female Pigtail on the camera side will run to the multi-camera power supply, where it ends in 2 bare ends. When using a Siamese style cable, the Video/Power wires are run side-by-side and the power supply must be placed near the DVR.

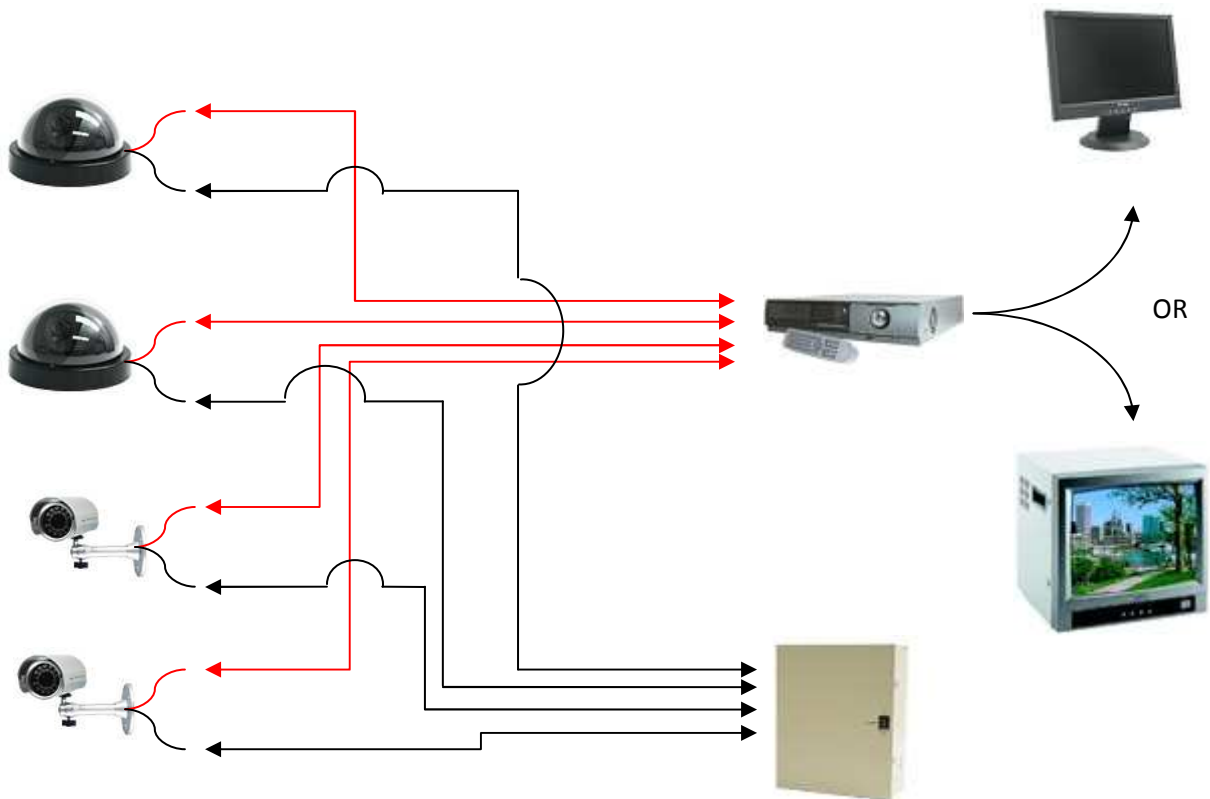
Wiring a standard camera to an Armor Pro System using pre-Made Siamese Cable:



A standard analog camera will connect directly to the Armor Pro Standalone DVR using a Pre-Made Siamese cable without any modification needed. Simply plug one end of the cable into the video and power ports on the camera, to the video and power ports on the Siamese cable. On the other end of the cable, plug the video connector in to the Armor Pro Standalone DVR, and the power connector into a standard 12V DC Power Supply.

The Armor Pro Standalone DVR will then connect to any standard CCTV monitor using the BNC connectors on the back of the unit, or will connect to a standard PC Monitor using the VGA connector present on the back.

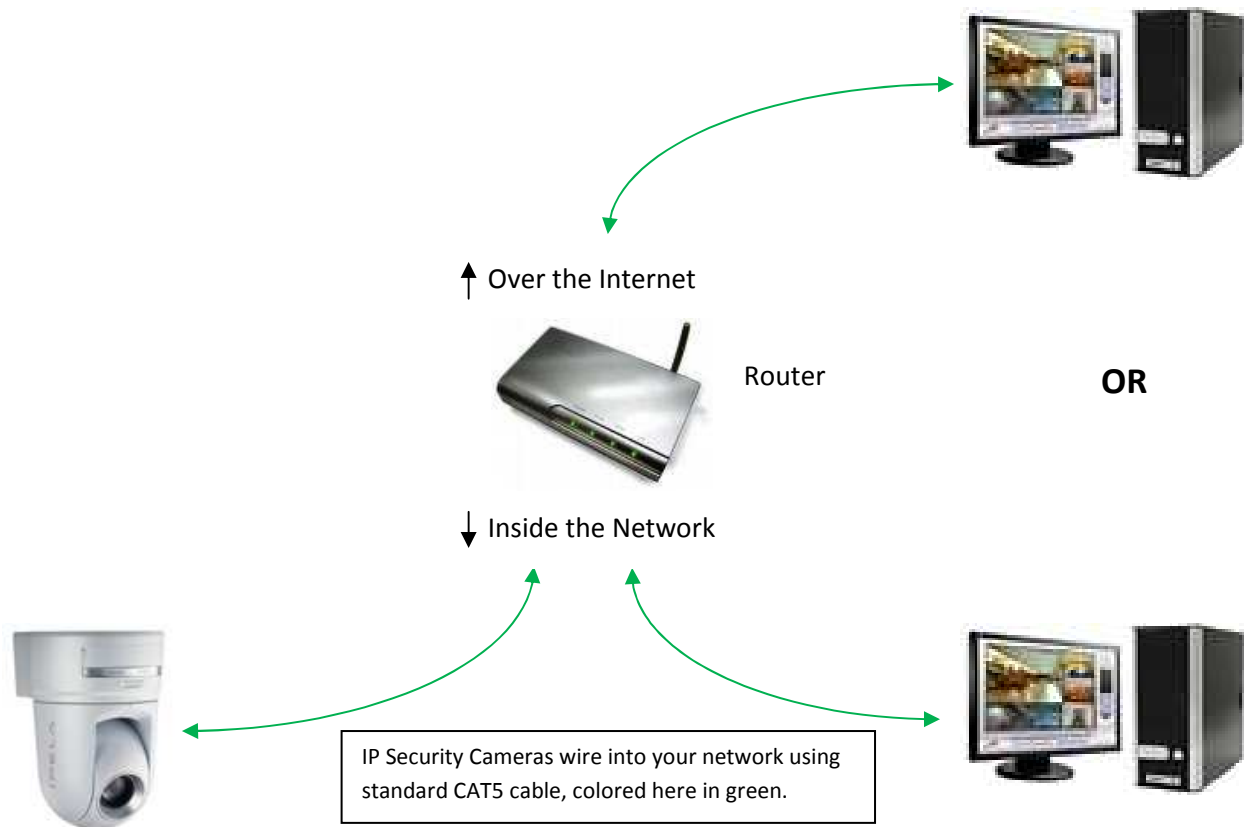
Wiring standard cameras to an Armor Pro system using custom Video and Power Cable:



Using a custom cable allows you to cut whatever length of cable is needed, ensuring no shortage or excess. To use custom cable, you simply measure the length needed, cut off an appropriate amount of cable, and install the BNC video connectors and power wire pigtails on the end of the cable. Please see the instructions later in this guide.

Each Camera will connect to the Armor Pro DVR and to a Multi-Camera Power supply separately. A video cable with BNC-Style connectors on either end will run from the Video connector on the camera, to the Video connector on the DVR. A power cable with a Female Pigtail on the camera side will run to the multi-camera power supply, where it ends in 2 bare ends. When using a Siamese style cable, the Video/Power wires are run side-by-side and the power supply must be placed near the DVR.

Wiring an IP-Based Camera to an EZ Watch Pro 4.0 Digital Recorder:

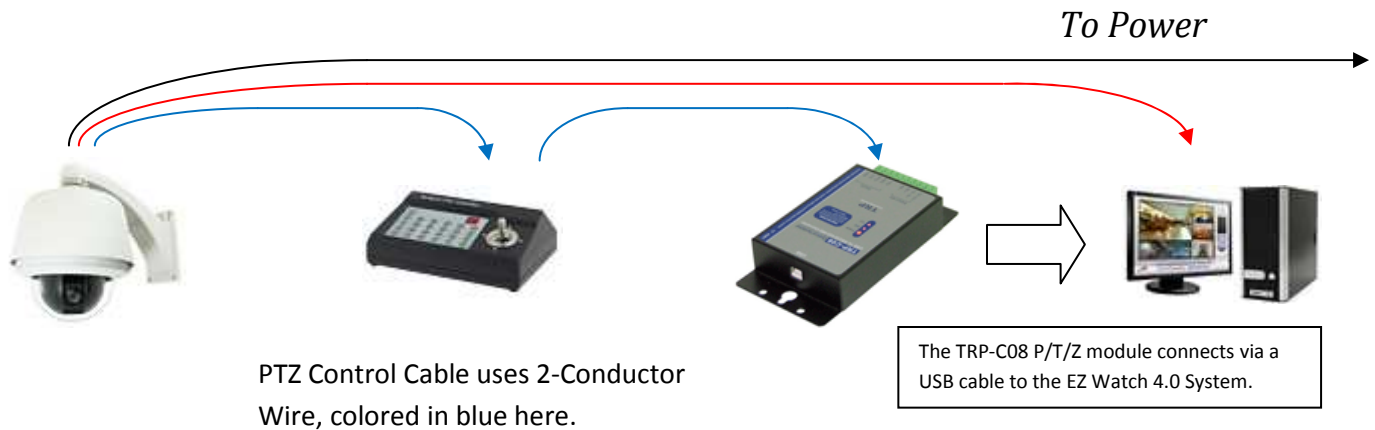


To connect an IP-Based Security Camera to the EZ Watch Pro 4.0 system, you will need to wire the camera into a home or business network. The most common method of doing so is to simply connect the IP camera to a router, using CAT5 Ethernet cable. Once connected, you can view the camera across the network by connecting on a PC on the same network, or if the router is connected to an internet connection you can view the camera remotely.

The EZ Watch Pro 4.0 software allows you to connect anywhere from 1 to 32 IP surveillance cameras to be viewed simultaneously from anywhere you have a connection. It supports a wide variety of brands and models, to ensure great compatibility for any number of camera solutions.



Wiring a Pan/Tilt/Zoom camera to an EZ Watch Pro 4.0 DVR:



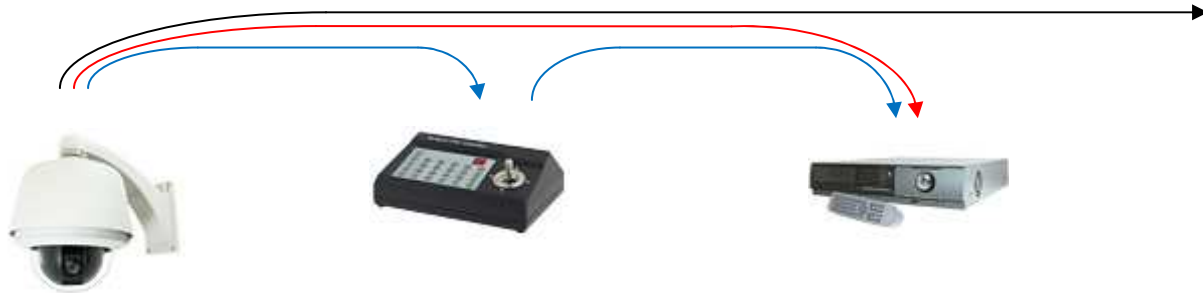
Connecting a Pan/Tilt/Zoom camera to an EZ Watch Pro 4.0 System will require a TRP-C08 module and a P/T/Z joystick such as the AU40E or AU40Z (Optional, but highly recommended. See FAQ below). You will need to connect two wires from the camera (The RS485 Positive and Negative wires) to the joystick controller. The wires will need to be run directly from the joystick to the RS485 Positive and Negative ports on the back of the joystick. Always match positive to positive and negative to negative.

Install the TRP-C08 P/T/Z control module by connecting the included USB Cable from the P/T/Z module to an available USB port on your computer. Run another pair of wires from the joystick to the TRP-C08 module. The wire coming from the RS485 Positive port on the joystick needs to be connected to the 'TX+/D+' port on the TRP-C08 controller. The wire coming from the RS485 Negative port on the joystick needs to be connected to the 'TX-/D-' port on the controller.



Wiring a P/T/Z camera to an Armor-Pro Standalone D VR:

To Power



To connect a Pan/Tilt/Zoom camera to an Armor Pro Standalone DVR, you will need to connect two wires from the camera (The RS485 Positive and Negative wires) to the joystick controller. The wires will need to be run directly from the joystick to the RS485 Positive and Negative ports on the back of the joystick. Always match positive to positive and negative to negative.

Run another pair of wires from the Positive and Negative RS485 ports on the joystick to the RS485 ports located on the back of the Armor Pro unit. The wire from the positive port on the joystick needs to run to the RS485 + port, and the negative port on the joystick needs to run to the RS485 – port. If you have a 16-channel Armor Pro unit, the ports are labeled A (positive) and B (negative)

Multiplexer or DVR without P/T/Z Control:

To Power



To connect a Pan/Tilt/Zoom camera to a recorder or multiplexer that does not provide its own Pan/Tilt/Zoom control, a P/T/Z joystick is required. Connect the video cable from the camera to the recorder/multiplexer, then connect two wires from the camera (The RS485 Positive and Negative wires) to the joystick controller. The wires will need to be run directly from the joystick to the RS485 Positive and Negative ports on the back of the joystick. Always match positive to positive and negative to negative.

Wiring Multiple Pan/Tilt/Zoom Communication Cables:

Daisy Chain Wiring Setup :



Run a cable from the RS485 +/- ports on the joystick to the corresponding wires on the first camera. Then run a cable from the RS485 +/- wires on the first camera to the second, and from the second to the third, etc. This is ideal for cameras that are spaced close together to each other, but may be far away from the joystick individually.

Star Wiring Setup :



Run a cable individually from the RS485 +/- ports on the joystick to the corresponding wire on each of the cameras. This is ideal for cameras that are placed far apart from one another but are near the joystick.

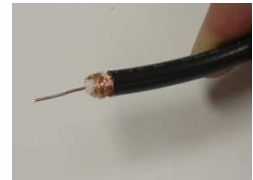
Installing a twist-on BNC Video Cable Fitting:

Kits that come with 8 or more cameras normally include bulk boxes (500') of video and power cable. The video fittings on this cable must be installed by hand on both sides of the cable – one fitting connecting to the camera, the other connecting to the DVR. This section details how to install a twist-on BNC video fitting.

Step 1: Strip away all of the cable and shielding so you have ½” of the center conductor is exposed as shown.



Step 2: Then strip away the black outer jacket so you have ¼” of the Shielding exposed. Do not allow any of the copper shielding to touch the center conductor.

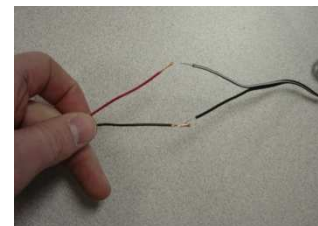


Step 3: Insert the cable into the fitting and gently find the hole for the center conductor before you press the fitting on the wire. Now just twist the fitting on the wire while firmly pressing down until the fitting is firmly on the cable.



Installing a power wire pigtail for multi-camera setups:

Step 1: At the camera location, take the power cable and strip away the outer sheathing to expose the inner two wires (black & red). Then strip away about ¼” of the wires jacket to expose the copper wire. Do the same to the power wire pig tail which connects to the camera power connection as shown. Note: Do not strip or cut the power lead coming directly from the camera. You should strip the “pig tail” power cable which came with your kit. You should have one “pig tail” for each camera.



Step 2: Now take the red power cable lead and twist it together with the black & white lead from the power wire pig tail. Now take the black lead from the power cable and twist it together with the all black lead from the power wire pig tail. Use the gray wire nuts provided with your system and twist them onto the wires until they are firmly secured.



Step 3: Now connect the other end of the extended power cable to the power supply. First strip the wires back as detailed in step #1. The power supply designates which terminal is positive and negative. Insert the red wire under the positive terminal and the black wire under the negative terminal. Now tighten down the terminal screws.



Step 4: Last connect the power pig tail to the cameras power lead as shown.





Frequently Asked Questions:

Q. If my DVR unit will control the P/T/Z camera, why do I need a joystick?

A: , P/T/Z joysticks often offer smoother, more fluid and often more finely-tuned control over the cameras. Many DVR units have basic P/T/Z control, such as calling presets (Normally 1-16 or 1-32), movement controls, zoom, and focus. Many P/T/Z cameras require additional capabilities to fully configure the camera. An example is the EZ-TRACK domes, which require you to be able to call and set presets 80 and 95 to be able to begin the motion tracking and menu features.

By connecting wires to both the Joystick and the DVR controller, you gain the most amount of control possibly, by allowing yourself to use the joystick for configuration and local control, but still allowing remote control using the DVR system (From the DVR or over the internet).

Q. How long can I run a Video Cable for my cameras?

A: The type of cable and connector used will control how long a video cable can be run. Using Coaxial video cable is the most common method of transmitting video, however for longer runs it is recommended to use Twisted Pair cables, with a powered or unpowered video Balun to convert the signal. For the absolute longest runs, Fiber optic cable is recommended. The distance that the video can be transmitted is not affected by the type of camera used. Please see the following distance chart :

RG59 Coaxial	RG6 Coaxial	Twisted Pair Balun (Unpowered)	Twisted Pair Balun (Powered)	Fiber Optic
~800 Feet	~1200 feet	1500-2000 feet	3000-3500 feet	5000+ feet

Q. How long can I run a Power Cable to my cameras?

A: The distance that a power cable can be run to the cameras is highly dependant upon the size of the cable and the amount of voltage and current passing through it. Higher voltage allows for longer runs, but the more current (measured in amps) being used decreases the amount of distance that it can be run. The following chart is a good guide for a majority of cameras :

Standard Cameras (No Night Vision, or up to 75' night vision), 500mA current

12-Gauge Wire	14-Gauge Wire	16-Gauge Wire	18-Gauge Wire
~1200 feet	~975 Feet	~600 Feet	~400 Feet



Night Vision Cameras w/ >100 foot infrared vision, up to 1.5A current

12-Gauge Wire	14-Gauge Wire	16-Gauge Wire	18-Gauge Wire
~510 feet	~315 Feet	~195 Feet	~135 Feet

Pan/Tilt/Zoom Cameras, up to 2.5A current

12-Gauge Wire	14-Gauge Wire	16-Gauge Wire	18-Gauge Wire
~320 Feet	~225 Feet	~150 Feet	~90 Feet

Q. How long can I run a Pan/Tilt/Zoom Control Wire?

A: It is recommended that you use 22 or 24 gauge wire to control Pan/Tilt/Zoom cameras. The signal will travel up to 5000 feet through such wire. If runs exceed 5000' then fiber optic cable and specialized equipment may be necessary to control the unit.

Q. Can I connect an Armor Pro DVR to my regular TV set?

A: You can use a BNC to RCA converter to connect an Armor Pro DVR to an RCA Composite input on your TV however the video will be of noticeably lower quality than connecting it to a CCTV or PC Monitor. Television sets using Composite Input have a much lower resolution than a CCTV or PC Monitor. This decrease in quality is much worse when viewing multiple cameras on the screen at the same time.