



X
TOOLS

XT-VSP

What is the X-Tools Video Surveillance Plus (XT-VSP) system?

Designed from the ground up to simplify complex video surveillance installations, the XT-VSP system is a selection of interconnecting chassis, hot swap-able cards and camera interfaces for sending a combination of Video, PTZ* Control and Power up to 3000 feet (914 meters) over a **SINGLE** CAT5 or better cable. Structured cabling systems have recognized standards in place, making it straight forward for Telco and Data professionals to install, upgrade, modify and/or troubleshoot. The XT-VSP system follows the Telecommunications Industry Association (TIA) and Building Industry Consulting Services International (BICSI) guidelines, so the total system can be certified.

If you have ever had to troubleshoot a large conventional COAX video surveillance system you will know that you can often find the three elements of video, PTZ* control and power coming to the cameras on three separate coax cables that in turn can come over three different geographical paths, it often looks like a big mess of coaxial spaghetti!

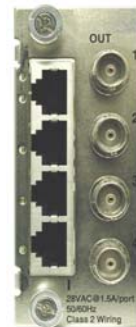
*Pan, Zoom, Tilt.



Video Surveillance Plus from **X-Tools**

- ✓ **Designed for mission critical security applications**
- ✓ **Video, power & PTZ control up to 3,000 feet (914 meters) over one UTP cable (CAT5 or better)**
- ✓ **Each card accepts 4 cameras and is housed in a choice of 10 slot or 4 slot, 2 or 1 Unit high 19" rack mount chassis**
- ✓ **Equipment is easily tailored to application requirements**
- ✓ **Fast installation using standard structured wiring techniques**
- ✓ **Hot swappable cards**
- ✓ **Redundant power supplies**
- ✓ **The most versatile link between your camera and your monitor**

Cards, slide into the chassis pictured below.



Card

The **X-Tools Video Surveillance Plus**, CCTV wiring system is modular and consists of a selection of cards that fit into a choice of chassis. This system has been designed for ultimate flexibility when bringing video, power and control to a camera over extended distances via a single UTP cable.

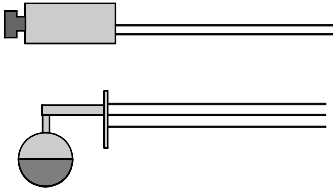
Most of these four camera cards have a row of 4 RJ45s stacked vertically on the left and a row of Female BNC's stacked vertically on the right.

In a typical installation, the video signal from a camera passes through a balun, to a run of UTP cable, to one of the RJ45 ports on the card that's, installed in the chassis. Ideally the chassis is backed up with a redundant power supply. From the BNC connector on the card, the signal would go to a video recorder and/or monitor.



TODAYS CCTV INSTALLATIONS

Fixed Camera with video and power cables

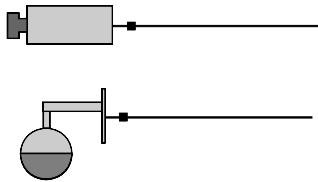


In traditional CCTV installations, bundles of cables are run the shortest distances possible. Often power is local to the camera or may come from a different direction than the video signal. The control cable can travel a separate route from the video cable. This can make moves, adds, changes and troubleshooting time consuming. In addition, this type of cabling installation often results in unwanted video noise.

PTZ Dome Camera with video, power and control cables

THE FUTURE WITH X-Tools Video Surveillance Plus

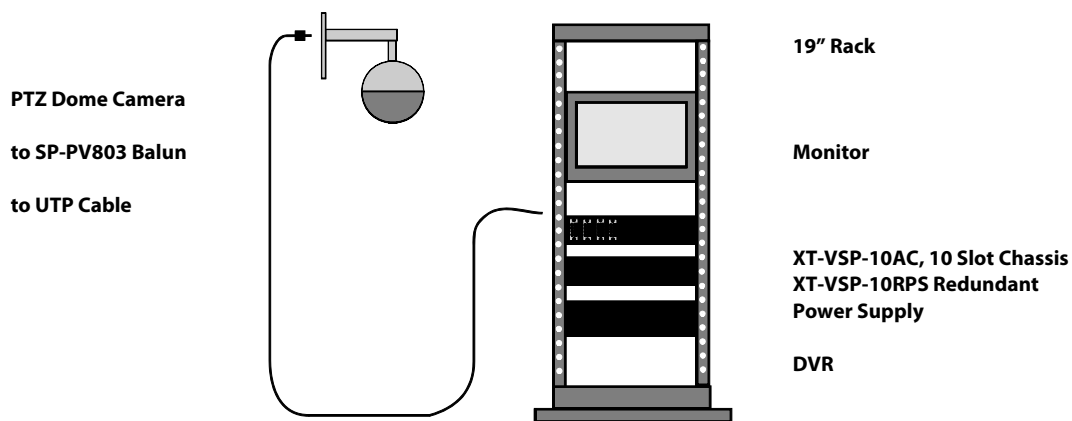
Fixed Camera with the X-Tools XT-VSP one cables solution



X-Tools introduces **Video Surveillance, Plus**, a system that combines **video, power** and **control** signals over a **single** UTP cable. It's fully consistent with established, structured wiring architecture making it familiar to IT professionals and voice/data contractors. This standards based system conforms to the ANSI/TIA/EIA/ISO and BICSI international best practice standards; so your wiring can be certified.

PTZ Dome Camera with the X-Tools Security + one cables solution

This drawing details the X-Tools Video Surveillance Plus, system as it could be set up



X-Tools 10 Slot Chassis

The chassis is a two 2U high (3.5") to fit standard TIA/EIA 19" rack-mount format. The powered model has been designed to provide a Class 2 rating, while still providing 28 VAC @ 24 amps. Power is supplied to the modular cards via a common bus back plane where applicable. PTZ control is also sent over a similar common data bus back-plane.



The chassis is offered in 3 versions:

X-Tools Part Number: XT-VSP-10AC

X-Tools Part Number: XT-VSP-10DC

The DC-powered chassis contains a 12 VDC power supply for PTZ functionality. DC power is sent to a designated slot for occupation by the PTZ card.

X-Tools Part Number: XT-VSP-10NP

The non-powered version does not contain the 28VAC @ 24 amp power supply. This model has been designed to work in conjunction with the totally passive RJ45-BNC modular cards, which do not pass power and/or control.

X-Tools 4 Slot Chassis

The chassis is a two 1U high (1.74") to fit standard TIA/EIA 19" rack-mount format.

The chassis is offered in 2 versions:

X-Tools Part Number: XT-VSP-4AC

X-Tools Part Number: XT-VSP-4DC

Redundant Power Supply

The Redundant Power Supply is a 19-inch 2U rack-space device that provides primary power redundancy when connected to **X-Tools Part Number: XT-VSP-10AC**. The Redundant Power Supply will provide primary power to the **XT-VSP-10AC** chassis for powering modular cards and cameras with 28 VAC/24Amps. The power supply within the Chassis then becomes a secondary power source in the event of power failure with the Redundant Power Supply. When backup power is needed, the system automatically switches to the secondary power source (the power supply within the **XT-VSP-10AC** Chassis). This unique feature not only keeps your mission critical video surveillance system up and running, it also prevents the removal of modular cards and replacement of the Chassis. When coupled with two uninterruptible power supplies (UPS) this system design will provide 24x7 of uptime with 99% plus reliability. Both LED/Audible power failure Alerts are included in this Redundant Power Supply.

X-Tools Part Number: XT-VSP-10RPS

Central Card: Has dual vertical stacks of RJ-45 jacks to serve four cameras. This card serves to insert power (and control, when applicable) to the camera over the horizontal cabling, while passing the video signal through for connection to the backbone. The vertical stack to the left is the connection point to the cameras. The vertical stack to the right contains **video only** for pass through to the backbone.

The stack on the left has individual green LEDs per jack to indicate the presence of power. A single amber LED indicates control signal across the four ports. This card derives both power and control from the bus back plane of the chassis. Over current protection for each port is controlled by PTC circuits, as well as, individually fused in a series at 2.5 amps. These are a glass cartridge slow blow type and are cradled in clip style fuse holder on the PCBA board assembly of the card. Installation or replacement of fuses requires the removal of the card from the chassis. This procedure is capable of "hot swap" without the need for total chassis power down.

X-Tools Part Number: XT-VSP-401



4 Port Cards

Power Expander Card: This card resembles the SP-4-01 in that it has dual rows of four RJ45 sockets. It is configured to be a power-passing card with Pins 4 & 5 as AC high and Pins 7 & 8 as AC neutral. It passes power on the RJ45 jacks on the left bank of connectors. This power-passing matches other similar cards in that each of the four left side output jacks can pass 28VAC at 1.5 amp, per jack. The power passing pins are designed to power any variety of end devices, including the boosting of power to camera types exceeding 1.5 amperes, such as exterior grade cameras. Pins 1 & 2, 3 & 6 are “pass through”, non-electrically active paths for any variety of ancillary purposes. Pins 1,2,3 & 6 provide signal paths for any variety of signal beyond simply video, such as alarm circuits, voice circuits, or data circuits that do not conform to the 2 wire control circuit designed into several of the standard cards. Such data circuits would be forms of Ethernet or RS485 protocols that these open pair paths could service, while still offering a universally adaptable 28VAC on the power pairs. Pins 1,2,3& 6 are pass through in that they provide conductor continuity from the left side jack to the corresponding right side jack on the card.

X-Tools Part Number: XT-VSP-402

Power/Control Model –Short-haul Card: This card matches the design criteria of power and control insertion (where applicable) of the preceding card, with the exception that the stack to the right are BNC jacks. Internal to the card, the UTP 100 ohm video signal from the camera is converted to 75 ohm unbalanced video via onboard baluns. This card is dual use in that it is suitable for either closet conversion for CCTV appliances or for connection to a fiber backbone, or for use as a head-end conversion device. When used as a head-end device, the 750-foot rule still prevails in distance from the camera to the card. Good procedure dictates that unused ports have the glass fuses removed.

X-Tools Part Number: XT-VSP-403

Passive Card: In appearance, this card looks exactly like the short-haul card and falls under the same usage criteria. It differs in that it is totally passive and does not insert power and control as the short-haul card. This card is meant exclusively for head-end application or for after-the-fact changes in which central cards are in place and some video signals are redirected to a local closet device. Without active circuitry on board, this module is incapable of powering devices and is typically only used with the non-powered and DC powered chassis at the headend. However, due to no back plane connectivity, this card maybe inserted within the powered chassis. This card also is intended only for cameras within 750 feet of the head-end. In some cases, this card may be used in closets. Examples are changes requiring conversion of camera(s) in the closet, previously served by the central card to the remote head-end, or for non-power requiring video devices such as outbound monitors. Although designed to match with the non-powered or DC-powered chassis, this card’s lack of back-plane connecting hardware makes it suitable for insertion within the powered chassis.

X-Tools Part Number: XT-VSP-404



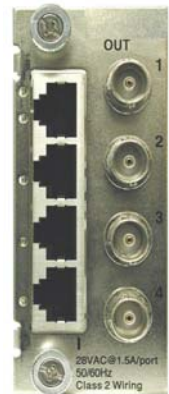
Long-haul Card, RJ-45 to BNC Cards: This video card allows the Security+ system to produce superior video quality on copper backbones that range from 750 feet to 3,000 feet. This active device utilizes post equalizing amplification for extended video distances over twisted pair technology (up to 3,000 feet from camera to receiver). In other words, its role in the Security+ system is to recondition, equalize and amplify the video signal upon arrival to the head-end/security central in order to provide superior image quality. This card is for head-end use only, as it cannot deliver power or control to the camera. This card always requires

the use of the powered chassis without regard for other cameras being served that are within 750-foot distances. This card connection to the back plane only taps to the 5 and 12 VDC provision within the back plane. This module equipped for visual video signal detection via blue LEDs adjacent to the RJ45 jack on the left side of the module. This module is equipped for both transient and ground loop protection. This video card also provides the final 100 ohm to 75 ohm conversion to accommodate traditional video surveillance equipment. BNC patch cords are used to transport the video signals to traditional security monitoring and recording equipment.

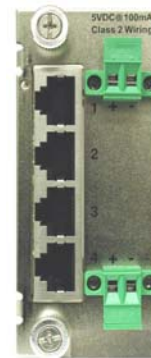
X-Tools Part Number: XT-VSP-405

Auto Gain Control (AGC) Card: is available in a four camera modular design. This component is used in combination with one of the Chassis at the head end/security central. The card utilizes a plug-and-play feature that allows the system to be custom configured for each application and provides easy expandability. Each card is hot swappable allowing the customer's mission critical video surveillance system to remain in service while routine maintenance is performed. Each Card powers 4 cameras and provides 1.5 Amps at 28 VAC to each camera. In the event of excessive current draw on any camera port, the camera port shuts down, waits, and re-tries. This component was designed for operation with UTP cable. Its unique design allows it to interface with existing video, voice or data networks without interference by using a highly balanced transmitter output design. Each card is integrated with advanced receiver electronics that provide enhanced immunity to ground loops, hum and noise to produce maximum video quality with minimum loss. It utilizes auto-equalizing Automatic Gain Control for extended video distances to 450 meters. An on board jumper extends video distances up to 900 meters over backbone cabling and UTP cable. Active Frequency Compensation tracks the Automatic Gain Control in these modules eliminating the need for any switch settings. This unique feature provides for optimum performance over the entire operating range. In design, it matches the appearance of the Passive card, 4-port RJ-45 to BNC module, except that equalization, amplification and protection circuitry has been added. Finally, BNC patch cords are used to transport the video signals from the video module on to traditional security monitoring and recording equipment.

X-Tools Part Number: XT-VSP-406



PTZ (Pan, Tilt, Zoom) Card: This card serves to insert PTZ control data into the back plane of the chassis. In this capacity, control is distributed over a common bus to every control card within the chassis. As this is a dual use card, it has been designed with four (4) RJ-45 jacks on the face to serve as an active bridge in a head-end role serving up to four backbones. Control on the jacks is found on pins 3 and 6 (white/green) with the positive white and the negative green. A feature of this card is the input and looped through output terminals. These are dual screw terminal jacks, with the upper being the master data input port and the lower, the loop through output. The purpose of this is to permit the “daisy chaining” of such cards when the systems design so requires. This card is equipped with a single green LED to indicate when control is present. This card is similarly equipped with glass cartridge slow blow fuses rated at 1.5 amperes and is also hot swappable. Since the control circuit is an active bridge, each control circuit could accomplish the TIA 4,000 foot parameter for RS422.



X-Tools Part Number: XT-VSP-409

BLANK FILLER PANELS: are supplied based on individual system designs. Although not easily accessible, the powering elements of the back plane require protection. All unused slots must be covered with these

blank filler panels. They are available in 1 and 2.5 slot widths

X-Tools Part Number: XT-VSP-BFP1.0

X-Tools Part Number: XT-VSP-BFP2.5

Balun with Video, Power, & Control for the camera end: connections for camera, power and PTZ this extended base-band balun is designed to get the best from the X-Tools Security + system.

XT-VSP-112

