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Wireless Technology, Inc.

**SIDEWINDER Series
SW720A : 120VAC**

Installation Manual

TABLE OF CONTENTS

INFORMATION Page 3

PRODUCT WARRANTY & REPAIR Page 4

SIDEWINDER SERIES: SW720A Page 6

SAFEGUARDS, TOOLS & INSTALLATION Page 7

MOUNTING Page 8

SIGNAL CONNECTIONS Page 10

SEALING & PRESSURIZATION Page 14

TECHNICAL SPECIFICATIONS Page 16



INFORMATION

FCC NOTICE

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

- 1.) This device may not cause harmful interference.
- 2.) This device must accept any interference that may be received, including interference that may cause undesired operation.

READ THIS MANUAL

Every effort has been made to insure that this WTI system is of the highest quality. This product has been carefully inspected to comply with rigid quality standards before shipment to you. In consideration of your investment and the desire to obtain full performance capability engineered into your new WTI product, we recommend that you read this manual before attempting to operate your system.

FOR MORE ASSISTANCE OR MORE INFORMATION

WTI (Wireless Technology, Inc.)
2064 Eastman Avenue, Suite 113
Ventura, CA 93003-7787

TOLL FREE. 866/gotowti (468-6984)
TEL. 805/339-9696
FAX. 805/339-0932

EMAIL: sales@wirelesstech.com

INTERNET: <http://www.gotowti.com> or
<http://www.wirelesstech.com>

The software / firmware furnished with the equipment is confidential to and is copyrighted by *Wireless Technology, Inc.* (WTI) It is not to be copied or disclosed in any manner without the consent of *Wireless Technology, Inc.* (WTI). The software/firmware is furnished to the purchaser under a license for use on a single system.

Information furnished by *Wireless Technology, Inc.* (WTI) is believed to be accurate and reliable. However, no responsibility is assumed by *Wireless Technology, Inc.* (WTI) for its use or for any infringements of other rights of third parties, which may result from its use. No license is granted by implications or otherwise under any patent or patent rights of *Wireless Technology, Inc.* (WTI)

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PRODUCT WARRANTY AND REPAIR

PRODUCT WARRANTY

We appreciate your purchase of *Wireless Technology, Inc.* (WTI) security products. We take pride in the quality of our products and have manufactured each new WTI product to exacting quality standards. In normal use, it will provide you with years of satisfactory performance. However, should you experience difficulty; you are protected under the provisions of this warranty.

WTI warrants to the original user a product that is free of defects in materials and workmanship in normal use. WTI warrants to the original user that WTI's products will be free of defects in materials and workmanship in normal use for a period of 12 months from the date of sale. WTI's obligation under this warranty shall be limited to the repair, including all necessary parts and the cost of labor connected therewith, or at our option, the replacement of any product that shows evidence of a manufacturing defect within the warranty period.

This warranty is extended to all WTI products purchased and used within the United States of America and is valid only when service is rendered by the authorized WTI (*Wireless Technology, Inc.*) Warranty Station.

This warranty shall not apply to appearance or accessory items including, but not limited to, knobs, connectors, cabinets and connecting cables. This warranty shall not, in addition, apply to repairs or replacements necessitated by any cause beyond the control of WTI including, but not limited to, acts of nature, improper installation, misuse, lack of proper maintenance, accident, voltage fluctuations, unauthorized repairs or modifications.

This warranty becomes void in the event serial numbers are altered, defaced or removed, or an attempt is made to field service or alter performance of any WTI products.

WTI reserves the right to make changes in design, or to make additions to, or improvements upon, products without incurring any obligation to install the same on products previously manufactured.

The foregoing is in lieu of all other warranties expressed or implied and WTI neither assumes nor authorizes any person to assume for it any other obligation or liability in connection with the sale of our products. In no event shall WTI or its Authorized Dealers be liable for special or consequential damage arising from the use of this product, or any delay in the performance of this warranty due to causes beyond its control.

PRODUCT WARRANTY AND REPAIR

REPAIR AUTHORIZATION

Please contact *Wireless Technology, Inc.* (WTI), to obtain a repair authorization number (RA) and provide the following information:

- 1.) Product Model & Serial Numbers.
- 2.) Date of shipment, purchase order number, sales order number or WTI invoice number.
- 3.) Details of the defect or malfunction. If there is a dispute regarding the warranty or product, which does not fall under the warranty conditions stated within the description of the written warranty, please include a written explanation with the product when returned.

SHIP FREIGHT PRE-PAID TO:

WTI (*Wireless Technology, Inc.*)
2064 Eastman Avenue, Suite 113
Ventura, CA 93003-7787
TEL 805/339-9696
FAX 805/339-0932

RETURNS

No unauthorized returns will be accepted. All returns must have an authorized (RA) number issued by the factory (CA number if returned for credit and RA number if returned for repair). Products returned for repair or credit will be rejected if no authorization number has been issued or freight has not been pre-paid. All merchandise returned for credit will be subject to a 20% restocking and refurbishing charge.

SIDEWINDER SERIES: SW720A



The Sidewinder SW720A is a pan-tilt-zoom camera system that provides day/night color or black and white standard definition NTSC (PAL optional) video. The day/night feature can be set for manual or automatic operation. The camera provides 360 degree rotation in both the pan and tilt axes, and provides an optical zoom magnification of 35 times. A self-cleaning hydrophilic coating is provided on the front lens window of the camera to ensure clear, crisp video images and to reduce maintenance. An Indium-Tin-Oxide coating is provided on the inside of the front lens window to heat it and prevent fogging.

The Sidewinder SW720A camera operates on AC line voltages within a voltage range of 85VAC to 265VAC and an operating frequency of 47Hz to 63Hz. All camera signals, including power, communication and video, are provided on a 16 pin circular plastic connector or an 18 pin circular MS style connector mounted at the end of a 36 inch umbilical cable exiting from the bottom of the camera.

The Sidewinder SW720A camera uses a 4 wire full duplex RS-485 or RS-422 compatible communication link to provide pan-tilt-zoom control and to allow setting of all of the presets, tours and other camera features. While basic pan-tilt-zoom operation can be implemented with only a two wire uni-directional interface, it is recommended that the camera be provided with the full 4 wire interface to enable the more advanced features, such as remote firmware uploading and camera status queries.

The SW720A camera supports industry standard COHU and Pelco setup and command codes sets. NTCIP Code support can be provided as an option. Please contact the factory for code support information.

Unpacking

Please examine the equipment carefully when unpacking the shipping container. If any damage is noted please be sure to file a claim with the carrier. WTI is not responsible for any damage that occurs during shipping. Please verify that all of the contents are present and carefully check the packing material for any loose items before recycling it.

SAFEGUARDS, TOOLS & INSTALLATION

Safeguards

- 1.) Read Instructions. It is important to read all safety and operating instructions before installing or using this equipment.
- 2.) Retain Instructions. Retain this manual and any supplements for future reference.
- 3.) Follow Instructions. Follow all instructions herein for use of this equipment.
- 4.) Heed all warnings. Adhere to all warnings on the equipment, and in this manual.
- 5.) To reduce the risk of electric shock or equipment damage, work on the unit only when the power is shut off and is unplugged from its power source to prevent accidental activation. Also take precautions to avoid contact between the equipment and other electrical wires or power sources that may be present at the installation site.
- 6.) Some internal components of this camera are static sensitive. When performing work on the inside of the camera unit, work only at an approved static free work station.

Recommended tools and accessories for proper installation

- 1.) Tie wraps to secure cable runs.
- 2.) Set of open end and socket wrenches.
- 3.) Cordless power drill.
- 4.) Safety cable recommended (prevents camera falling during overhead installations).
- 5.) Self-sealing connector tape to weatherproof all cable connections.

Installation planning

- 1.) The maximum cable length that should be planned for is 750 feet. This is primarily a limitation related to achieving acceptable video quality. Excessively long video runs will not have crisp detail in the images, due to the high frequency roll off of the long video cable.
- 2.) The Sidewinder SW720A camera draws up to 50 Watts maximum, which translates to about 0.59 Amps at the low line voltage limit of 85VAC. This will result in an AC Line voltage drop of no more than 6VAC over the maximum 750 foot umbilical cable run.
- 3.) Be sure to verify that there are no physical obstructions that might prevent the camera from turning freely in all directions.
- 4.) Be sure to verify that there are no physical obstructions in the way of any required viewing directions.
- 5.) If at all possible, utilize all 4 bi-directional interface connections, rather than a simpler 2 conductor unidirectional interface. This will allow field firmware updates without having to dismount the camera and can provide valuable troubleshooting information in the case of any problems that might be encountered during the installation process.

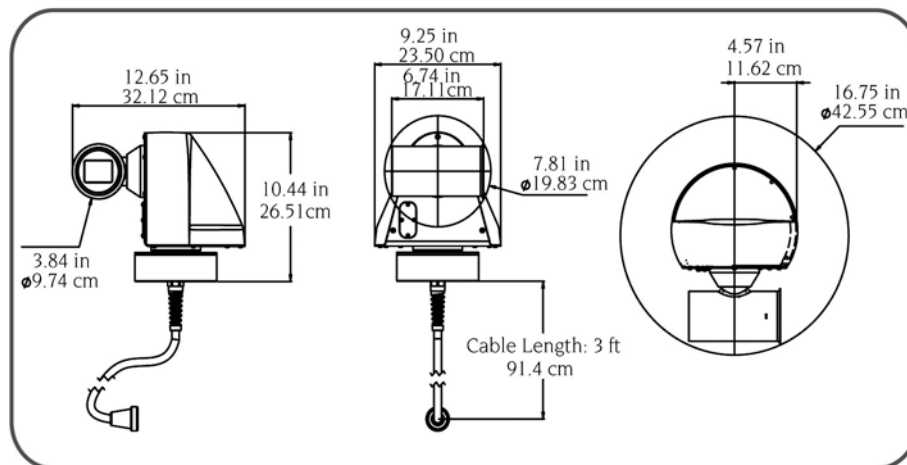
Equipment supplied with unit

- ~Camera
- ~4 each ¼-20 x ¾" mounting screws
- ~Manual

Equipment that may be required but not supplied with unit

- 1.) Mating connector and strain relief for umbilical cable
- 2.) 11 contact pins for mating connector
- 3.) Crimping tool for connector pins
- 4.) Camera mounting bracket
- 5.) Interconnect cables
- 6.) Video monitor
- 7.) PC or laptop computer
- 8.) Setup software
- 9.) Local rack mount control panel

Mechanical dimensions



Mounting

The Sidewinder SW720A camera should normally be mounted in an upright orientation, as shown in the drawing above. The camera may also be mounted upside down if desired, but a cover of some sort should be placed over the bottom of the camera, extending out to about 6 inches past the camera all around, to prevent debris, dirt or snow and ice from accumulating on the bottom of the camera housing, since the conical shaped profile of the camera will no longer be able to naturally shed material to the sides. The camera may NOT be mounted with the base facing horizontally.

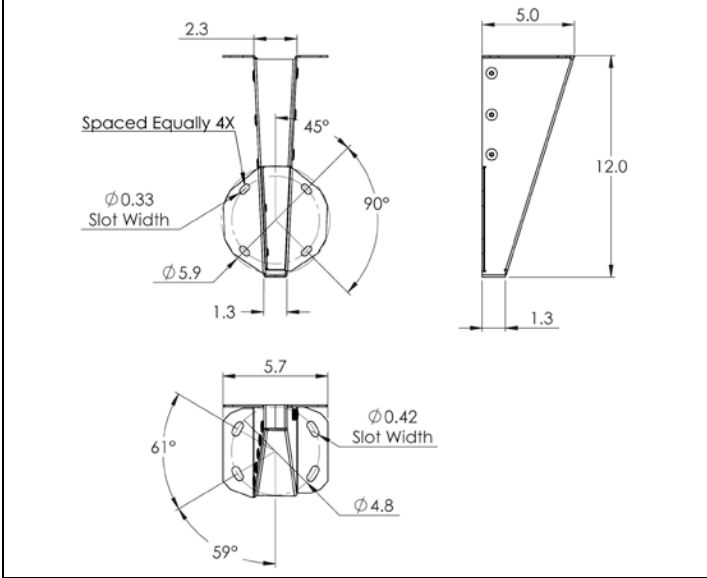
The base of the Sidewinder SW720A camera has four ¼-20 screw holes that are equally spaced, 90° apart, on a 4.75" diameter circle. If mounting screws other than those provided with the camera are used, the length of the mounting screws should be selected so that the screws penetrate no more than 0.75 inches into the base.

WTI manufactures several different mounts for the Sidewinder SW720A that allow the camera to be attached to pole tops, horizontal poles, vertical poles and walls (*see the following table for more information*).

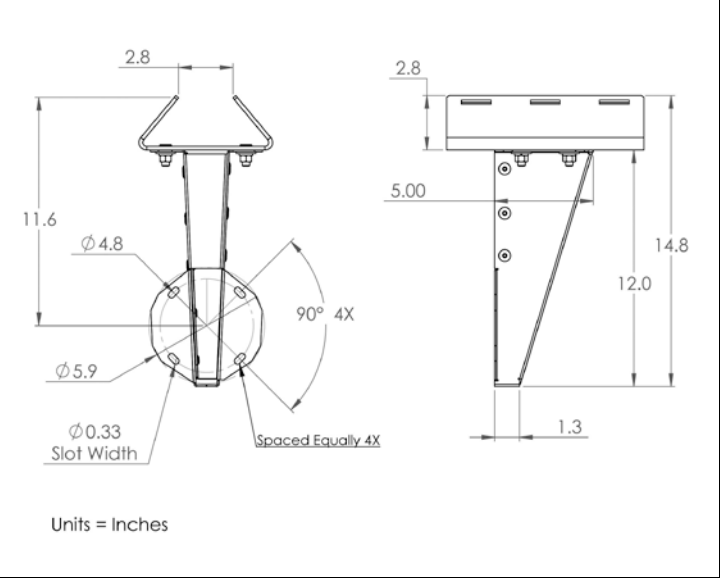
MOUNTING



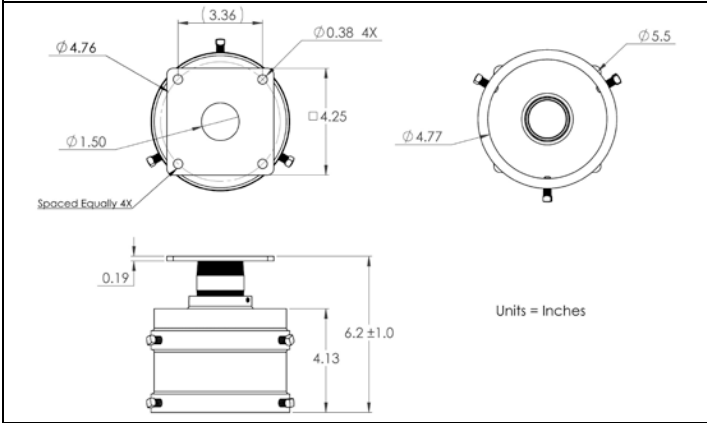
Model #SWWM1: Wall Mount



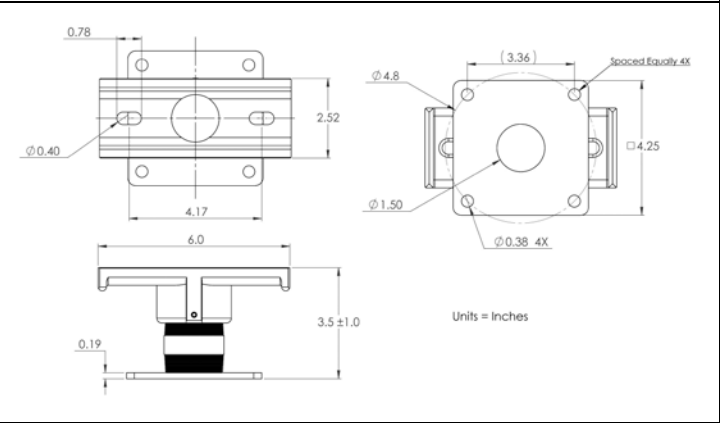
Model #SWWM1 and #SWVPA: Wall Mount with Vertical Pole Mount Adapter



Model #SWPTM1: Post Top Mount



Model #SWHPM1: Horizontal Pole Mount

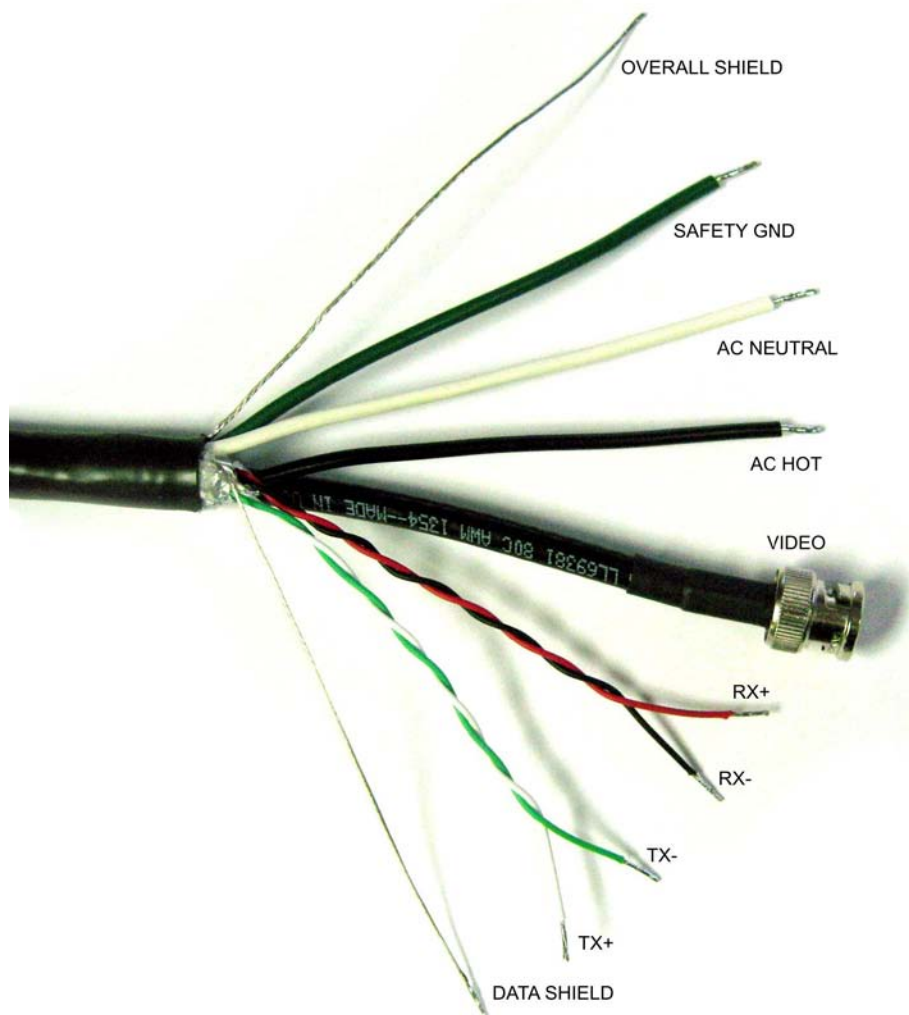


SIGNAL CONNECTIONS

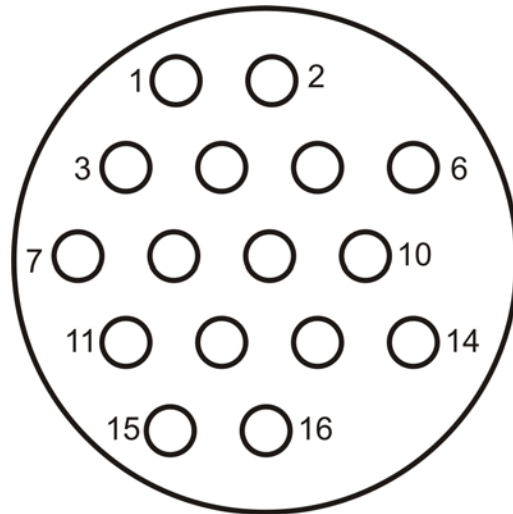
The Sidewinder SW720A camera is supplied with a 36 inch umbilical cable to allow the cable to be routed through the camera mount before the actual physical installation of the camera.

Signal Connections

The Sidewinder SW720A is provided with a 36 inch umbilical cable and is available with either an AMP 16 pin circular plastic connector or an 18 pin MS Style connector at the end. The umbilical cable provides the power, video and control data signal connections for the camera. The umbilical cable is also available with the cable stripped and tinned, instead of with the 16 pin circular connector. The umbilical cable exits through the bottom of the camera housing. The connector pin outs and umbilical cable wire color code are as follows:



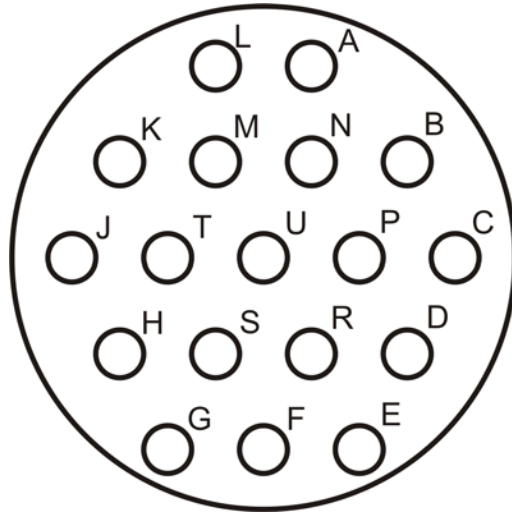
SIGNAL CONNECTIONS



AMP 16 pin circular connector pin arrangement

16 Pin AMP Cable Pin/Wire Functions		
Pin/Wire	Signal	Color
1	Video	RG-59 Center
2	Video Ground	RG-59 Shield
3	Data Ground	Data Shield
4	Tx-	Green
5	Tx+	White
6	Rx+	Red
7	Rx-	Black
8	N/C	-----
9	N/C	-----
10	N/C	-----
11	N/C	-----
12	85-265 AC Line Input (high/hot)	18AWG Black
13	AC Line Neutral (low)	18AWG White
14	Cable Shield	Overall Shield
15	115 VAC Ground	18AWG Green
16	N/C	-----

SIGNAL CONNECTIONS



MS 18 pin circular connector pin arrangement

18 Pin MS Cable Pin/Wire Functions		
Pin/Wire	Signal	Color
A	Video Ground	RG-59 Shield
B	N/C	-----
C	N/C	-----
D	N/C	-----
E	N/C	-----
F	N/C	-----
G	115 VAC Ground	18AWG Green
H	Cable Shield	Overall Shield
J	N/C	-----
K	N/C	-----
L	Video	RG-59 Center
M	Rx+	Red
N	Rx-	Black
P	Data Ground	Data Shield
R	Tx-	Green
S	Tx+	White
T	AC Line Neutral (low)	18AWG White
U	85-265 AC Line Input (high/hot)	18AWG Black

SIGNAL CONNECTIONS

AC Line Connections

The AC Line connections should be connected to an AC mains source with a voltage of 85VAC to 265VAC, operating at a frequency of 47Hz to 63Hz. The nominal operating voltage is normally 115VAC or 230VAC. The camera draws 50 Watts maximum, which translates to about 0.6 Amps at the worst case low line voltage of 85VAC.

The “hot” side of the AC mains connections should applied to pin 12 of the circular plastic connector, Pin U of the 18 pin MS connector or to the black #18 AWG conductor if a stripped and tinned pigtail is being used.

The “low” side of the AC mains connections should applied to pin 13 of the circular plastic connector, Pin T of the 18 Pin MS connector or to the white #18 AWG conductor if a stripped and tinned pigtail is being used.

The AC mains safety ground connection should applied to pin 15 of the circular plastic connector, Pin G of the 18 Pin MS connector or to the green #18 AWG conductor if a stripped and tinned pigtail is being used.

Video Connections

The video signal connections provide a standard 1Vpp NTSC (or PAL) video signal with a 75 Ω drive impedance.

The center conductor of the RG-59 video cable is connected to pin 1 of the circular connector or to Pin L of the 18 Pin MS connector.

The shield of the RG-59 video cable is connected to pin 2 of the circular connector or to Pin A of the 18 Pin MS connector.

In the case of units with a stripped and tinned umbilical cable, the video cable will be terminated with a male BNC connector.

Data connections

Communications with the Sidewinder SW720A are provided through the TX+, TX-, RX+ and RX- signals which are RS-485 compatible and support multiple cameras on the same communication segment.

The RX+ and RX- signals are the camera data input lines that receive data from the pan-tilt-controller. These lines are required for all applications.

The TX+ and TX- signals are signal driving lines that send data from the camera back to the pan-tilt-zoom controller. These lines are required for certain control software programs to provide command acknowledgements and to provide handshake signals for remote firmware upgrades.

SEALING & PRESSURIZATION

There are internal 120 Ω termination resistors for both the TX and RX signal pairs that may be enabled or disabled through the use of the WTI HHC-SW hand held controller unit. The factory shipped default state for the 120 Ω terminations is for both the TX and RX terminations to be enabled. Applications that involve multiple cameras on the same RS-485 communications lines will require that the terminations on all cameras but one be turned off. Note that COHU code does not support software switching of the RS-485 terminations.

To operate the Sidewinder SW720A camera using RS-232 control signals, an RS-232 to RS-485 or RS-422 adapter should be used.

Surge Protection

The Sidewinder SW720A camera provides internal surge protection for all of the power, data and video signals.

- 1.) The AC line power connections are provided with 275 volt 135 Joule MOV surge arrestors rated for 6000 Amp pulses. A 3A slo-blo SMT fuse is included in the primary circuit to prevent catastrophic printed circuit board damage in the case of gross AC line input overloads.
- 2.) The video signal lines incorporate a two stage protection circuit consisting of a primary 90V gas discharge tube, followed by a high speed, low capacitance 6.2V 2kW peak power transient voltage suppressor.
- 3.) The data signal lines incorporate a two stage protection circuit consisting of a primary 90V gas discharge tube, followed by an 18V, 300W, 40A transient voltage suppressor.

Sealing and Pressurization – Camera Backplate

The Sidewinder SW720A camera provides two levels of sealing and pressurization. The entire camera, including the base, housing and camera tube are all sealed to IP66/67 levels to prevent any ingress of dust or moisture. In addition, the camera housing tube is pressurized to at least 5 psi with dry nitrogen gas.



SEALING & PRESSURIZATION

The Sidewinder SW720A camera is provided with a Schrader valve to allow periodic replenishment of the dry Nitrogen in the camera housing tube. Since no sealing system will remain 100% airtight indefinitely, it may be necessary to replenish the dry Nitrogen occasionally. This can be done at the same time that the regular camera cleaning is performed. A 15psi pressure relief safety valve is provided to prevent damage to the seals and to prevent blowing out the front or back plates of the camera housing if an unregulated high pressure dry Nitrogen tank were to be connected to the Schrader valve.

The camera housing tube pressure may be displayed using the COHU command provided for this query function or with the use of COHU camera setup software. The camera housing tube pressure value is derived from an absolute pressure sensor in the tube, and is corrected for both temperature and altitude. A user adjustable altitude setting is provided that may be set from 0 to 10,000 feet. An on screen low pressure alert is displayed when the pressure variable reads lower than 1 psi. Increasing the altitude setting above 0 will increase the pressure variable value, since the lower pressure at higher altitudes would increase the internal to external pressure differential.

The absolute pressure reading from the pressure sensor in the camera housing tube is normalized to 0psi at sea level at 20° Celsius (14.7psi). So, if the camera is completely depressurized at sea level, and the altitude variable is set for 0, at 20° Celsius the pressure variable will read approximately 0psi. Note that the camera housing temperature will be 10 to 15° higher than the ambient temperature after the camera has been turned on for a while.

The pressure reading is also corrected for temperature, so that if the camera tube temperature goes up or down, the pressure reading will remain constant (after the temperature has stabilized). Otherwise, a situation would arise where the pressure would read lower at night, when it is cooler, than it would during the day, when it is warmer. This could lead to intermittent pressure alarm condition warnings. Camera temperature and pressure readings are updated at ten minute intervals and are averaged over ten readings.

Code Support

The SW720A Sidewinder camera supports COHU, Pelco D and Pelco P code. Optional support is available for NTCIP code when using the SWRCU Rack Control Unit.

Setup Software

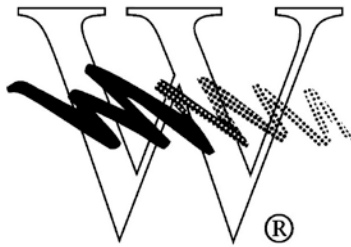
The SW720A Sidewinder camera is fully compatible with COHU WinMPC setup software, in order to provide compatibility with existing installations.

TECHNICAL SPECIFICATIONS: SW720A

Camera		Mechanical	
Imager	¼" color progressive scan, interline transfer CCD	Weight	15.3 lbs. (7.0 kgs.)
Resolution	NTSC or PAL, 520 horizontal TV lines	Vibration (less lens)	3g (rms) random, 5 to 1000 Hz, any axis
Effective Pixels	NTSC @ 768 x 494, PAL @ 768 x 582	Air Contaminants	Withstands exposure to sand, dust, fungus, salt atmosphere, per MIL-E-5400T, paragraph 3.2.24.7, 3.2.24.8 and 3.2.24.9
Lens	High durability 35X optical zoom, F1.4 with 12X digital zoom	Positioner	
Lens Horizontal Angle of View	55.8° w, 1.7° t	Pan / Tilt Drive	Pan Angle Range: Continuous 360° Tilt Angle Range: Continuous 360° Pan Speed: 100°/sec – proportional to zoom Tilt Speed: 50°/sec – proportional to zoom Pan/Tilt Encoder Resolution: 0.01° Pan/Tilt Repeatability: 0.05°
Wide Dynamic Range	On/off	Sector Zones	Up to 16 in the horizontal plane
EIS @ 5 Hz Suppression	-12 dB @ 5 Hz	Privacy Zones	8 programmable zones can be set for video blanking
Focal Length	3.4mm ~ 120mm	Preset	64 preset positions
S/N Ratio	>50 dB	Title Generation	5 lines of 24 characters for camera ID and preset ID
Iris	Auto or manual override	Compass / Position	1 line, includes compass direction and absolute setting
White Balance	Auto or manual	Tours	8 tours of 32 presets with individual dwell settings per preset
Shutter	Auto or manual override	Communications	
Focus	Auto or manual override	Communication / Physical Layer	RS-422 or RS-485 standard
Sync	Internal	Protocol	Cohu, Pelco or optional NTCIP
IR Cut Filter	Auto or manual (on/off)	Firmware	Field upgradable flash memory
Sensitivity	0.5 Lux typical down to 0.01 Lux in IR mode	Environmental	
Electrical		Ambient Temperature Limit	-29° F to +165° F (-34° C to +74° C); Conforms to NEMA 2.1.5.1 standard TS2 for traffic control systems
Power Input	85 – 265 VAC	Humidity	100% relative humidity
Power Consumption (with heater on)	50W	Protection Rating	IP66 and NEMA 4X; camera housing sealed and pressurized to 5 PSI (34 kPa) with dry nitrogen. IP67 pan/tilt assembly.
Power Transients / Interruptions	Conforms to NEMA TS2, paragraph 2.1.6	Shock	Conforms to NEMA TS2, paragraph 2.2.10



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Due to Wireless Technology, Inc. (WTI) continuing efforts to engineer the best product that is most responsive to our customer's needs, the above specifications are subject to change without notice.