



Sidewinder SW720 Series Analog Cameras

Installation and Operation Manual

24VAC Power Models

Including:

Standard Definition x36 Zoom
High Definition 720p/1080p x20 Zoom
High Definition 720p/1080p x30 Zoom
Optional Electric Brakes (ENG)

TABLE OF CONTENTS

INFORMATION.....	3
<i>FCC NOTICE</i>	<i>3</i>
<i>READ THIS MANUAL</i>	<i>3</i>
PRODUCT WARRANTY AND REPAIR	4
PRODUCT WARRANTY.....	4
REPAIR AUTHORIZATION	5
RETURNS	5
SAFEGUARDS.....	6
MODELS AND FEATURES	7
GENERAL DESCRIPTION.....	8
INSTALLATION.....	9
RECOMMENDED TOOLS FOR PROPER INSTALLATION	9
INSTALLATION PLANNING	9
<i>DIMENSIONS AND MOUNTING.....</i>	<i>10</i>
MECHANICAL DIMENSIONS	10
MOUNTING	11
MOUNTING ACCESSORIES	12
SIDE EGRESS 24VAC MS STYLE PINOUTS.....	16
SIGNAL DESCRIPTIONS	17
AC POWER CONNECTIONS.....	17
ANALOG VIDEO CONNECTIONS.....	17
PTZ SERIAL CONTROL PORT	17
SURGE PROTECTION.....	18
SURGE PROTECTION.....	18
SPECIFICATIONS	19
X30 ZOOM HIGH DEFINITION 720p/1080p IMAGE SENSOR AND LENS	19
36 TIMES ZOOM STANDARD DEFINITION COLOR IMAGE SENSOR AND LENS....	20
CAMERA HOUSING MODULE	21
PAN AND TILT DRIVE ASSEMBLIES	21
ELECTRICAL.....	22
ENVIRONMENTAL.....	22
MECHANICAL	23
REVISION HISTORY	23

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@gotowti.com

INTERNET: <http://www.gotowti.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)*

©2011 Wireless Technology, Inc. (WTI)
All rights reserved.

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 24 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.

SAFEGUARDS

IMPORTANT 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.

MODELS AND FEATURES

The Sidewinder SW720 Analog camera series with 24VAC power is available in Standard Definition color versions with x36 optical zoom and High Definition 720p/1080p models with x20 and x30 optical zoom. The 24VAC camera series incorporate a side egress 18 Pin MS style power and signal connector. Optional electric brakes for securing the camera during transport are also available. The following table provides a quick reference to the major features available in each camera model.

MODEL	X36 ZOOM COLOR CAMERA	X20 ZOOM 1080P HD CAMERA	X30 ZOOM 1080p HD CAMERA	ELECTRIC BRAKES
SW720	x			
SW720-ENG	x			x
SW720HD		x		
SW720HD-ENG		x		x
SW720HD30			x	
SW720HD30-ENG			x	x

GENERAL DESCRIPTION

The Sidewinder SW720 24VAC Series is a pan-tilt-zoom camera system that provides standard definition or High Definition 720p/1080p color video over 75 Ohm video coaxial cables. The camera provides 360 degree continuous rotation in both the pan and tilt axes, and provides an optical zoom magnification of 36 times in the standard definition model and 20 times or 30 times in the high definition model. 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 electrically conductive Indium-Tin-Oxide coating is provided on the inside of the front lens window to heat it and prevent fogging.

The Sidewinder SW720 series of 24VAC cameras operates on AC power within a voltage range of 18VAC to 30VAC measured at the camera and an operating frequency of 47Hz to 63Hz. Power, control and video signals are brought out of the side of the camera on an 18 Pin MS style male connector.

Camera PTZ control is implemented using an RS-485 serial data port which supports several industry standard camera control protocols, including Pelco D protocol and COHU protocol. Standard definition models are provided with an NTSC 1Vpp video output. High definition models are provided with 3 75 Ohm 1Vpp analog video outputs in Y-Pb-Pr format.

The Sidewinder SW720 series of 24VAC cameras are also available with an electric brake option to hold the camera in position during transport.

INSTALLATION

RECOMMENDED TOOLS FOR PROPER INSTALLATION

- 1) Tie wraps to secure cable runs.
- 2) Set of open end wrenches including 7/16" for mounting bolts.
- 3) Cordless power drill for mounting some brackets.
- 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
- 2) The Sidewinder SW720 camera draws up to 50 Watts maximum, which translates to about 3.0 Amps at the low line voltage limit of 18VAC. The maximum cable run using 4 x #20 power wiring is 150 feet.
- 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.

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.

EQUIPMENT SUPPLIED WITH UNIT

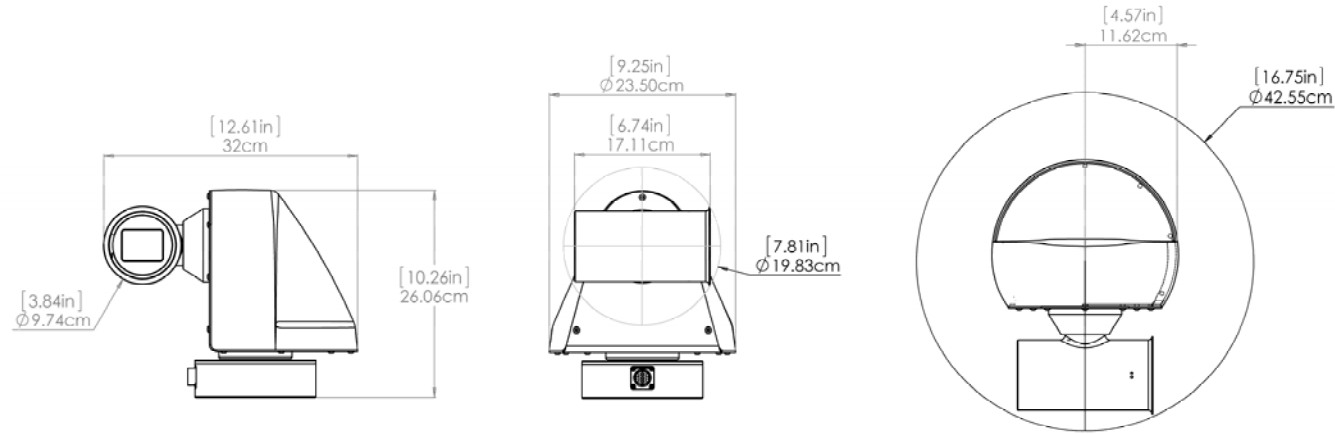
- 1.) Camera
- 2.) 4 each 1/4-20 x 3/4" mounting screws with washers
- 3.) Quick Start Manual

EQUIPMENT THAT MAY BE REQUIRED, BUT NOT SUPPLIED WITH UNIT

- 1.) Mating connector and strain relief for umbilical extension cable
- 2.) Camera mounting bracket
- 3.) Interconnect cables
- 4.) Video monitor
- 5.) PC or laptop computer
- 6.) Setup software

DIMENSIONS AND MOUNTING

MECHANICAL DIMENSIONS



Side Egress

MOUNTING

The Sidewinder SW720 camera should normally be mounted in an upright orientation, as shown 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.

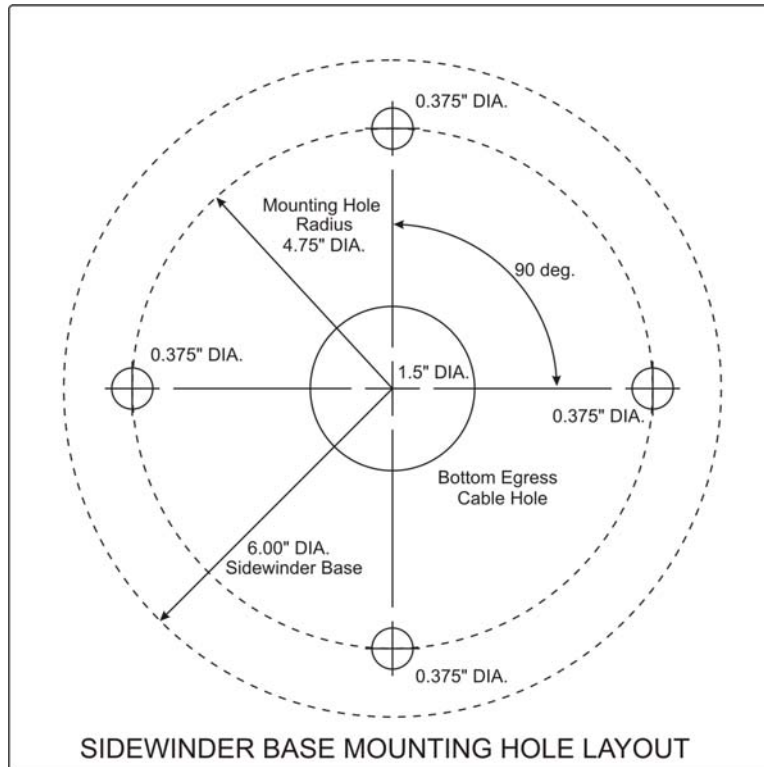


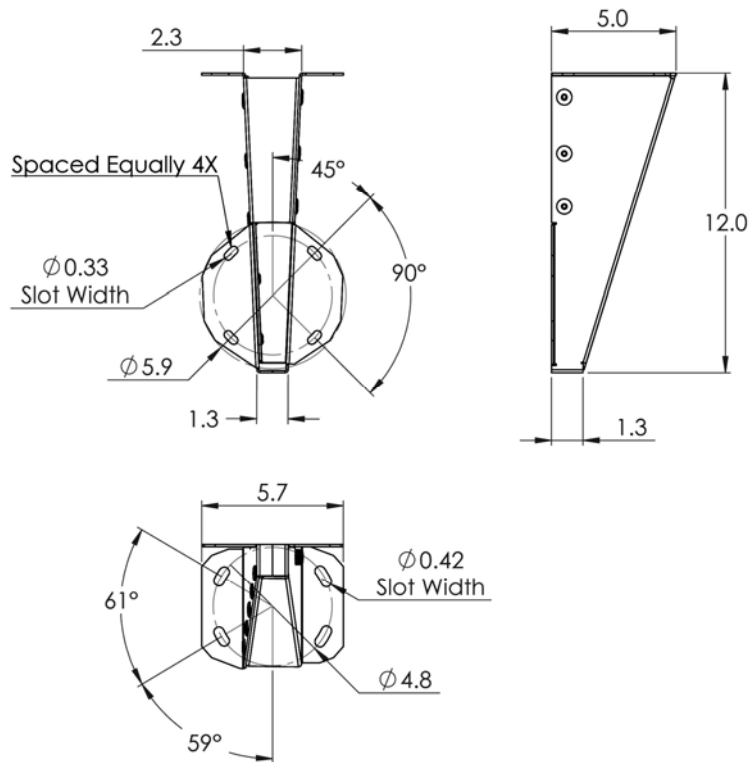
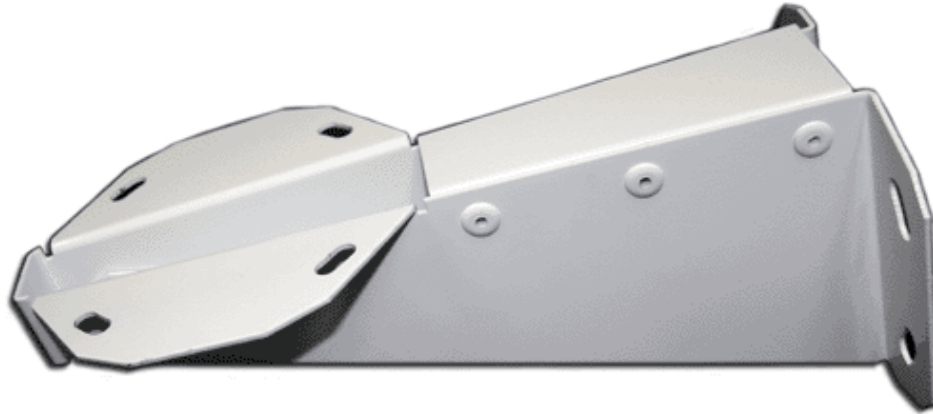
Figure 2

The base of the Sidewinder SW720 camera has four 5/16-18 screw holes that are equally spaced, 90 degrees apart, on a 4.75" diameter circle, as shown in figure 2. 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.

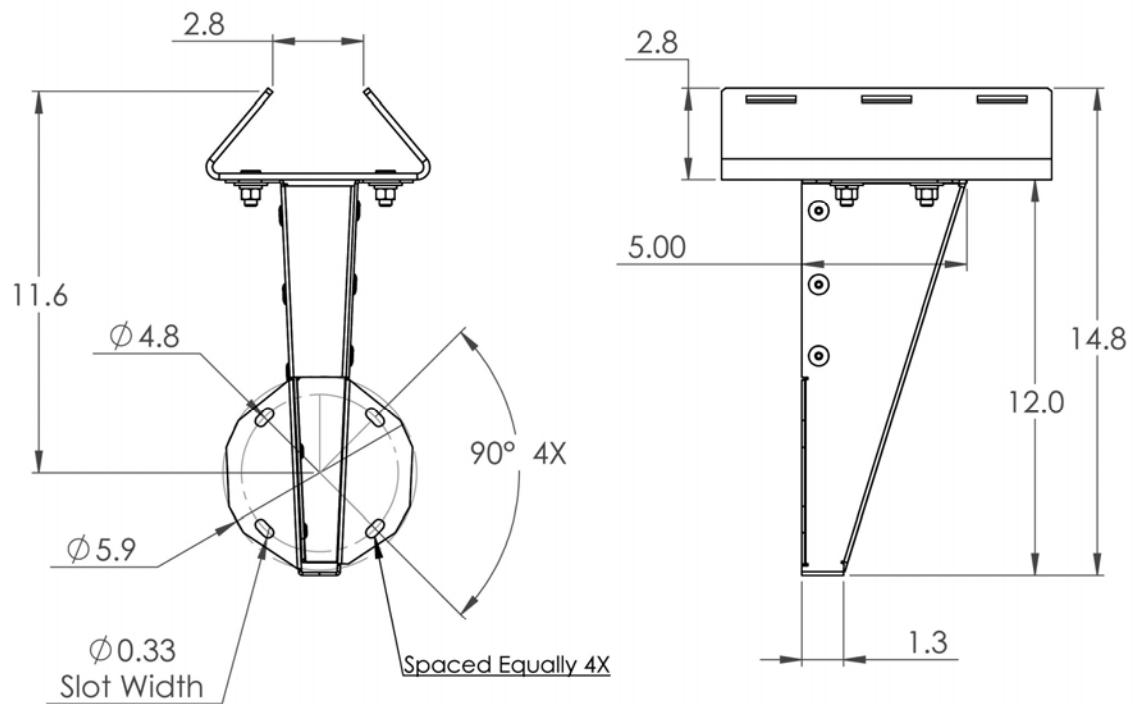
MOUNTING ACCESSORIES

WTI manufactures several different mounts for the Sidewinder SW720 that allow the camera to be attached to pole tops, horizontal poles, vertical poles and walls.

SWWM1 – Wall Mount Option

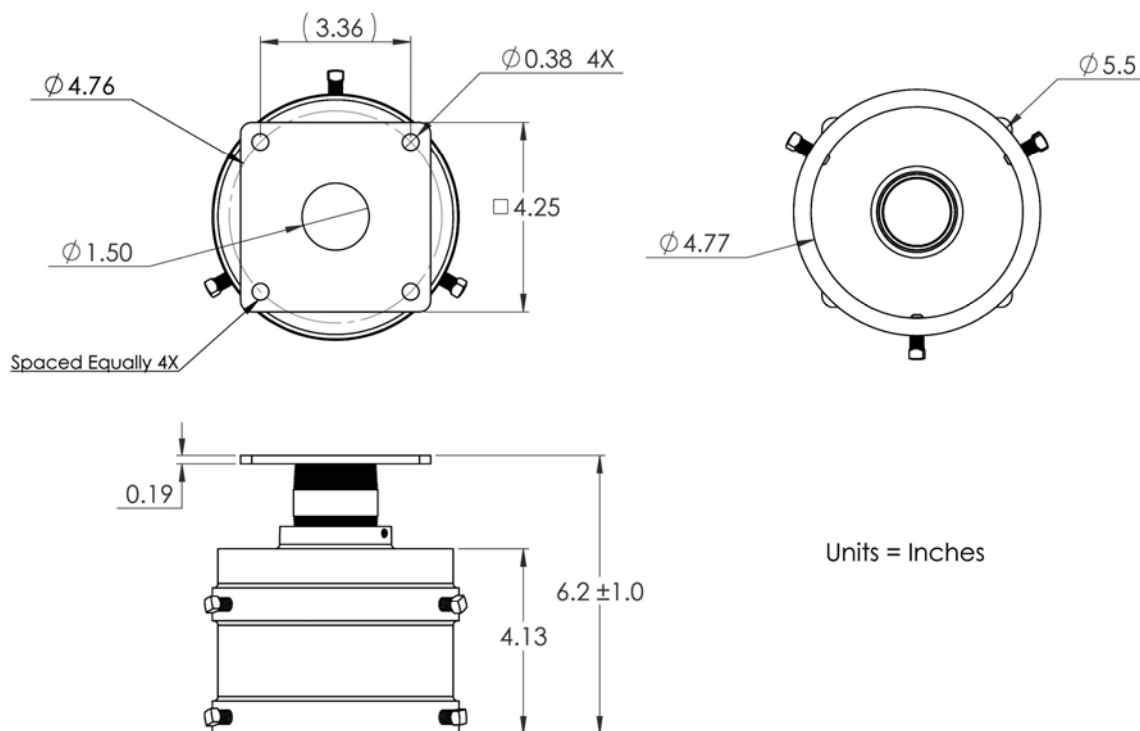


SWWM1 + SWVPA – Wall Mount with Vertical Pole Adapter

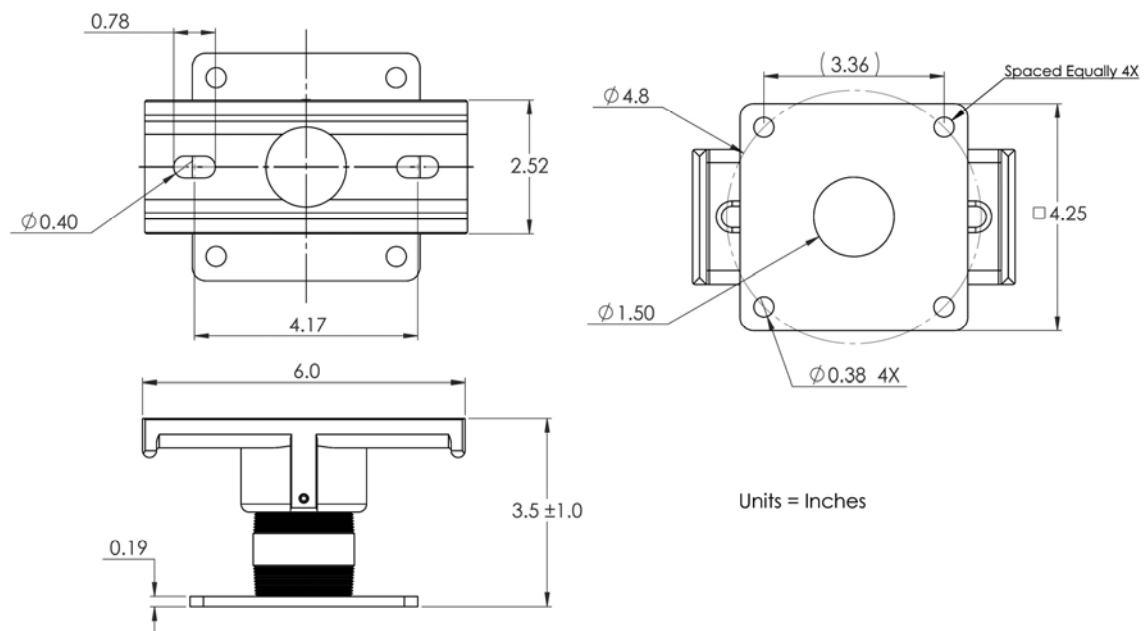
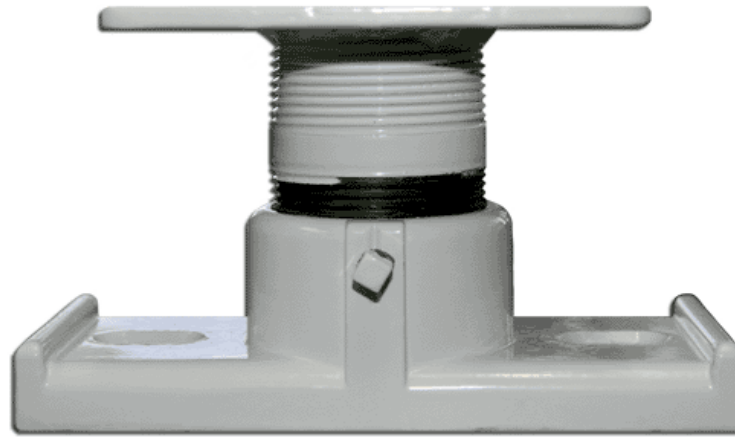


Units = Inches

SWPTM1 – Pole Top Mount

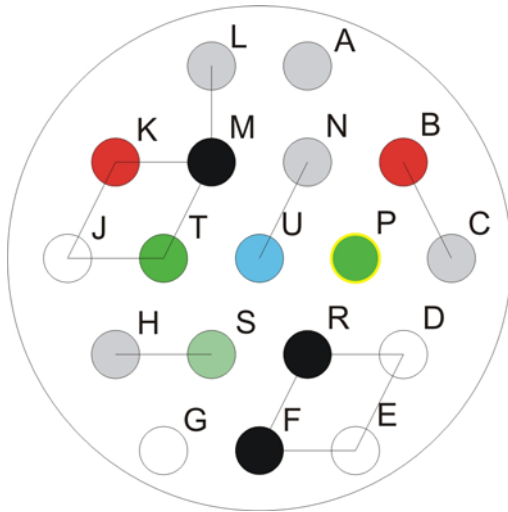


SWHPM1 – Horizontal Pole Mount



SIDE EGRESS 24VAC MS STYLE PINOUTS

All SW720 Series 24VAC cameras are provided with a Side Egress 18 Pin MS Style Connector



Mating Connector

Female MS - Style MIL-DTL-26482

Amphenol P/N MS3116F-14-18S

Shell Size 14 - 18 Contact Pattern

PIN	Signal Description	Wiring Color Code and Wire Recommendations
A	Chassis Ground	Overall Shield Drain Wire
B	Red Video Output (HD Only)	Coaxial Cable #2 RG-59 Center
C	Red Video Shield (HD Only)	Coaxial Cable #2 RG-59 Shield
D	24 VAC - 1	White 20 AWG Minimum
E	24 VAC - 1	White 20 AWG Minimum
F	24 VAC - 2	Black 20 AWG Minimum
G		
H	SD or Green Video Shield	Coaxial Cable #1 RG-59 Shield
J	Rx-	White – Twisted Pair #1 22-26 AWG
K	Tx-	Red – Twisted Pair #2 22-26 AWG
L	Data Ground	Data Cable Shield
M	Tx+	Black – Twisted Pair #2 22-26 AWG
N	Blue Video Shield (HD Only)	Coaxial Cable #3 RG-59 Shield
P	AC Safety Ground	Green 20 AWG Minimum
R	24 VAC - 2	Black 20 AWG Minimum
S	SD or Green Video Output	Coaxial Cable #1 RG-59 Center
T	Rx+	Green – Twisted Pair #1 22-26 AWG
U	Blue Video Output (HD Only)	Coaxial Cable #3 RG-59 Center

SIGNAL DESCRIPTIONS

AC POWER CONNECTIONS

The AC Power connections should be connected to a low impedance source with a nominal voltage of 24VAC, operating at a frequency of 47Hz to 63Hz. The camera will operate within the range of 18VAC to 30VAC measured at the camera MS connector with the camera operating. The camera draws 50 Watts maximum, which translates to about 3.0 Amps at the worst case low line voltage of 18VAC. Careful attention should be given to the power wiring to avoid excessive voltage drop, which will result in unreliable operation of the camera.

The 24VAC power connections require the use of heavier gauge wiring and shorter cable lengths than a similar 120VAC model, as the 24VAC camera model draws approximately 5 times as much current through the cable wiring, due to the reduced operating voltage. Four power connection terminals are provided on the MS connector to allow paralleled power wiring. Cable runs of up to 150 feet require paralleled #20 AWG wiring (equivalent to #17 AWG) for reliable operation. Longer runs should use correspondingly larger wire gauges to minimize voltage drop along the cables. Runs of 300 feet can use #14 AWG wiring and runs of 500 feet can use #10 AWG or #12 AWG wiring.

ANALOG VIDEO CONNECTIONS

The Standard Definition camera model provides a 1Vpp NTSC compatible video output with a 75 Ohm drive impedance on Pins L and A of the 18 pin MS connector (see wiring chart).

The video outputs for the High Definition HD and HD30 720p/1080p camera model are 1Vpp with a 75 Ohm drive impedance in Y-Pb-Pr format.

PTZ SERIAL CONTROL PORT

An RS-485 port is provided on the SW720 camera for PTZ and other camera control functions. There are internal 120 Ohm termination resistors for both the TX and RX signal pairs. The factory shipped default state for the 120 Ohm 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.

SURGE PROTECTION

SURGE PROTECTION

The 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 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.

SPECIFICATIONS

X20 ZOOM IMAGE SENSOR AND LENS

Image Sensor Type	Solid State EXMOR CMOS Progressive Scan
Image Sensor Size	1/2.8" inch type
Pixel Resolution	2144 horizontal x 1588 vertical (total) – 2096(H) x 1561(V) viewable
Video Output Format	HD: 1080P30 at full resolution
Maximum Lens Aperture	F1.6 at full wide angle – F3.5 at full telephoto
Optical Zoom Range	x1 to x20
Focal Length	4.7mm ~ 94mm
Digital Zoom Range	x1 to x12 with smooth transition from optical to digital
Combined Focal Length	4.7mm ~ 1128mm
Optical Zoom Speed	0.8sec
Horizontal Angle of View	55.4 degrees (wide angle) to 2.9 degrees (tele)
Minimum Focus Distance	0.4 inches (wide angle) to 40 inches (tele)
Electronic Stabilization	None
Auto Focus	Selectable between Auto/Manual
Manual Focus Speed	1.6sec Tracking Off – 2.3sec Tracking On
Shutter Speed	Adjustable from 1 second to 1/10,000 second. Settings below 1/60 second increase integration time to improve low light sensitivity with video frame store to provide continuous video output.
Auto Iris	16 Steps
AGC Range	-3dB to 28dB – 16 steps
Minimum Illumination	0.5lux (1/30sec, 50IRE, High SENS.
Color Balance	AUTO, ATW, Indoor, Outdoor, OnePush WB, Manual WB, Outdoor Auto, Sodium Vapor Lamp.
Gamma	Normal, Straight
Signal to Noise Ratio	>50dB
Synchronization	Crystal
Features	Noise Reduction, Backlight Compensation, High Sensitivity Mode, Color Enhancement, IR Cut Filter, Wide Dynamic Range

X30 ZOOM HIGH DEFINITION 720p/1080p IMAGE SENSOR AND LENS

Image Sensor Type	Solid State EXMOR CMOS Progressive Scan
Image Sensor Size	1/2.8" inch type
Pixel Resolution	2144 horizontal x 1588 vertical (total) – 2096(H) x 1561(V) viewable
Video Output Format	HD: 1080P30 at full resolution
Maximum Lens Aperture	F1.6 at full wide angle – F4.7 at full telephoto
Optical Zoom Range	x1 to x30
Focal Length	4.3mm ~ 129mm
Digital Zoom Range	x1 to x12 with smooth transition from optical to digital
Combined Focal Length	4.3mm ~ 1548mm

Optical Zoom Speed	0.8sec
Horizontal Angle of View	63.7 degrees (wide angle) to 2.3 degrees (tele)
Minimum Focus Distance	0.4 inches (wide angle) to 40 inches (tele)
Electronic Stabilization	10Hz
Auto Focus	Selectable between Auto/Manual
Manual Focus Speed	3.2sec Tracking Off – 4.6sec Tracking On
Shutter Speed	Adjustable from 1 second to 1/10,000 second. Settings below 1/60 second increase integration time to improve low light sensitivity with video frame store to provide continuous video output.
Auto Iris	16 Steps
AGC Range	0dB to 28dB – 1dB steps
Minimum Illumination	0.35lux (1/30sec, 50IRE, High SENS.)
Color Balance	AUTO, ATW, Indoor, Outdoor, OnePush WB, Manual WB, Outdoor Auto, Sodium Vapor Lamp.
Gamma	Normal, Straight
Signal to Noise Ratio	>50dB
Synchronization	Crystal
Features	EIS, De-Fog, Visibility Enhancement, Noise Reduction, Backlight Compensation, High Sensitivity Mode, Color Enhancement, Stable Zoom, IR Cut Filter, Wide Dynamic Range

36 TIMES ZOOM STANDARD DEFINITION COLOR IMAGE SENSOR AND LENS

Image Sensor Type	Solid State Interline Transfer Progressive Scan CCD
Image Sensor Size	1/4" inch type
Image Resolution	>540 horizontal TV Lines (typically 540 horizontal by 340 vertical)
Pixel Resolution	811 horizontal x 508 vertical (total) – 768(H) x 494(V) viewable
Video Output Format	NTSC, 1Vpp at 75 Ohms, unbalanced
Maximum Lens Aperture	F1.4 at full wide angle – F4.2 at full telephoto
Optical Zoom Range	x1 to x36
Focal Length	3.3mm ~ 119mm
Digital Zoom Range	x1 to x12 with smooth transition from optical to digital
Combined Focal Length	119mm ~ 1428mm
Optical Zoom Speed	2.0s for manual focus preset change - 4.6s for focus trace curve mode
Horizontal Angle of View	60.2 degrees (wide angle) to 1.8 degrees (tele)
Minimum Focus Distance	0.4 inches (wide angle) to 40 inches (tele)
Electronic Stabilization	Selectable for either 5Hz or 10Hz (reduces image resolution slightly)
Auto Focus	Selectable between Auto/Manual
Manual Focus Speed	Approximately 2.0 seconds – near to far
Shutter Speed	Adjustable from 1 second to 1/30,000 second. Settings below 1/60 second increase integration time to improve low

	light sensitivity with video frame store to provide continuous video output.
Auto Iris	Electronically controlled from F1.4 to F32 to provide optimum sensor illumination for constant video output.
AGC Range	0dB to 30dB
Gamma	0.45 (Adjustable)
Color Balance	Auto White Balance with adjustable red and blue levels.
Signal to Noise Ratio	>50dB
Synchronization	Crystal

CAMERA HOUSING MODULE

External Window Coating	High temperature vacuum deposited hydrophilic coating to reduce window cleaning maintenance.
Internal Window Coating	Electrically conductive coating to allow energy saving direct heating of window glass to prevent fogging.
Window Heat Control	Proportionally controlled closed loop window heater drive circuit with outside temperature sensor unit to provide fog free window operation under all environmental conditions.
Block Camera Heating	Temperature sensor and microprocessor controlled image sensor heater to provide reliable operation of zoom lens down to -34 degrees Celsius.

PAN AND TILT DRIVE ASSEMBLIES

Drive Range	360 degrees continuous rotation (both axes)
Drive Speed	Variable from 0.0003 Deg/Sec to 100 Deg/Sec
Drive Resolution	0.005625 Degrees
Drive Repeatability	0.05 Degrees typical
Preset to Preset Time	Selectable between 2 seconds and 5 seconds for 180 degree motion in both axes
Operator Motion Speed	Pan and Tilt speeds are proportional to both operator speed commands and camera zoom setting.
Brakes	Optional electrically operated pan and tilt motor brakes with a minimum holding torque of 300 oz./in available to maintain the camera position when power is removed from the camera.
Presets	Minimum of 64 presets, each preset to store variable data for pan position, tilt position, zoom setting, focus setting and 24 characters of titling text to be displayed when the preset is recalled. Preset titling to remain on screen until subsequent preset or camera control commands are received.

Tours	Eight tours of up to 32 presets each shall be supported. Presets may be assigned to the tours in any order and may be used multiple times within one tour.
Panning Tours	Any or all of the eight tours may be used as “panning” tours by selecting exactly two presets for the tour. The first preset selected for the tour shall set the counter-clockwise panning limit and the tilt angle for the tour, and the second preset selected shall set the clockwise panning limit for the tour. The positioning system shall pan smoothly from one preset to the other and back again until a subsequent camera command is received.
Sector Zones	Up to 16 sector zones with user settable right and left pan limits may be programmed with one line of up to 20 characters of ID titling per zone.
Privacy Zones	Any Sector Zone may be utilized as a privacy zone by setting the video mode to “OFF” within that zone.
Low Pressure Warning	Provides low pressure warning indicator on video display for cameras supplied with pressurized camera housing option.
Temperature Warning	Provides an internal temperature warning indication on the video display.
Program Memory	Unit is field upgradable using FLASH non-volatile memory to store programming.

ELECTRICAL

AC Power Voltage	18 to 30 VAC 50/60 Hz
Power Consumption	<50W with all options operating
Analog Video Output	75 Ohm, 1Vpp, NTSC, EIA-170A
Video Transient Protection	Gas discharge tube followed by 40A 2kW transient voltage suppressor.
Control Data	EIA RS-485 signal levels and drive capabilities.
Data Transient Protection	Gas discharge tubes followed by 40A 300W transient voltage suppressors.
Control Data Protocol	Cohu, Pelco D, WTI, NTCIP, ONVIF and others.
Power interrupt immunity	NEMA TS-2 paragraph 2.1.4.
Power transient immunity	NEMA TS-2 paragraph 2.1.6.
Interface connector	MS style 18 Pin weatherproof and corrosion resistant type with gold plated contacts or AMP style 16 pin type with gold plated contacts.

ENVIRONMENTAL

Ambient Temp. Limit	-29° F to +165° F (-34° C to +74° C) (Conforms to NEMA TS-2 paragraphs 2.1.2, 2.1.3 and 2.1.5.)
Humidity	100% relative humidity
Protection Rating	IP-67/NEMA-4X/ASTM-B117 (entire camera)
Air Contaminants	Withstands exposure to sand, dust, fungus, salt atmosphere, per MIL-E-5400T,

Vibration	paragraph 3.2.24.7, 3.2.24.8, and 3.2.24.9 NEMA TS-2 paragraphs 2.1.9 and 2.2.3 using a 0.5g amplitude signal from 5Hz to 30Hz applied in each of 3 mutually perpendicular axes for 30 minutes.
Shock	NEMA TS-2 paragraphs 2.1.10 and 2.2.4 using a 10g amplitude, 10ms duration shock pulse in each of three mutually perpendicular axes.
Water Spray Immunity	IPx6 rating - IEC 60529 section 14.2.6 using a 25 gallon per minute water stream through a 12.5mm nozzle at nine feet for three minutes. Water Immersion Immunity IPx7 - IEC 60529 section 14.2.7 using an immersion depth of 1 meter measured at the bottom of the camera and a duration of 30 minutes.
Icing Immunity	NEMA 250-2003 section 5.6.
Corrosion Immunity	NEMA 250-2003 section 5.10 and the procedure specified in ASTM-B117 Marine.
EMI Radiation	Within the limits set by FCC Regulations 47 CFR Part 15 for Class A devices.

MECHANICAL

Dimensions	12.6"L x 10.3"H x 9.25"W (32cm x 29cm x 20cm)
Weight	14.6 lbs. (6.64 kg.)
Construction	White powder coated aluminum and Kydex 550 with all stainless steel hardware

REVISION HISTORY

10/21/14 – Initial Release of SW720 Series 24VAC Power Manual