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Wireless Technology, Inc.

HHC-SW
Hand-Held Controller

Installation and
Operation Manual

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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>

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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.

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.

INTRODUCTION

The HHC-SW handheld controller was designed for use with WTI's Sidewinder series of cameras and provides all of the functions required for controlling and programming the various camera features.

The following features are supported:

- Controlling the Pan, Tilt, Zoom and Focus camera functions.
- Programming camera preset positions.
- Programming camera tour sequences.
- Set-up of advanced sensor functions and features.
- Re-programming of HHC-SW and Sidewinder camera firmware.



BASIC FUNCTIONS

SWITCHING THE CONTROLLER ON/OFF

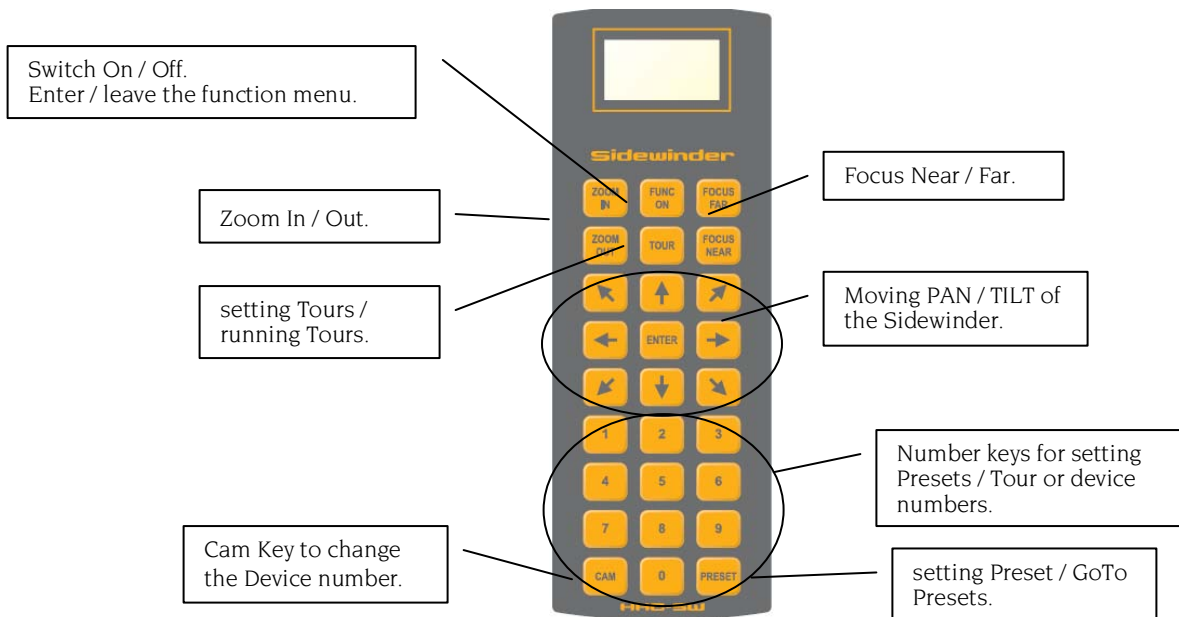
Press the FUNC/ON key for more than 3 seconds to switch the controller on. Likewise, pressing the FUNC/ON key for more than 3 seconds will switch the controller off.

After switching the HHC-SW on you will see the firmware version displayed for 2 seconds. You may also retrieve the firmware information at SYSTEM / ABOUT.

To preserve battery life, the controller switches off automatically after 5 minutes of no keyboard or data transfer activity.

DIRECT MANUAL CONTROL MODE

After switching on the controller, the default mode is that of manual Sidewinder camera control. All of the basic Sidewinder camera control functions are available directly from the keyboard.



CHANGING THE DEVICE/CAMERA NUMBER

The display will show the device (camera) address. To change the device (camera) address, input the desired address using the number keys, and then press the **CAM** key. Valid addresses are within the range of 1 to 99 (Note that the Sidewinder camera supports the address range of 1 to 32).

BASIC FUNCTIONS

CHANGING THE CAMERA PAN OR TILT ANGLE

After setting the device address to match the camera to be aimed, use the up, down, right, left and/or the diagonal arrow buttons to change the pan and tilt camera angles.

CHANGING THE CAMERA ZOOM MAGNIFICATION

After setting the device address to match the camera to be modified, use the ZOOM IN and ZOOM OUT buttons to change the camera magnification factor. ZOOM IN increases the camera magnification factor, making distant objects appear closer. ZOOM OUT decreases the camera magnification factor.

SETTING THE CAMERA PRESETS

After aiming the camera and setting the zoom magnification to the desired setting, enter the preset number using the numeric keypad, and then press and hold the CAM button until the new preset text appears on the video display.

SETTING THE CAMERA TOURS

After setting up all of the camera presets that will be used in the tours, enter the tour number that you wish to program using the numeric keypad and then press and hold the TOUR button until the video monitor displays "SET TOUR xx". Enter each preset in the order that you wish them to be displayed in the tour by entering the preset number using the numeric keypad and then pressing the PRESET button. After all of the presets have been entered, you save the tour information by pressing the ENTER button. The video image should display the "END TOUR xx" message.

INTERFACE DESCRIPTION

The HHC-SW standard communication interface to the Sidewinder camera is a full duplex 4-wire RS-485 format that supports all P/T/Z and camera functions. An optional full duplex dual RS-232 format for separation of P/T/Z and camera commands available on the Sidewinder camera is also supported by the HHC-SW. The same DB-9 connector is also used to transfer data between the HHC-SW and a PC for firmware uploads and downloads. The HHC-SW displays all responses from the Sidewinder in plain text or hex code format on the display screen to allow verification of command receipt and for troubleshooting communication issues.

PIN ASSIGNMENTS

PIN ASSIGNMENTS FOR THE DB-9 CONNECTOR

PIN	Description	
1	Tx Data 2 (RS-232 output)	connect to: Block Camera Rx Data
2	Tx Data 1 (RS-232 output)	connect to: Pan / TILT Rx Data or PC Rx Data
3	Rx Data 1 (RS-232 input)	connect to: Pan / TILT Tx Data, PC Tx Data
4	Rx Data 2 (RS-232 input)	connect to: Block Camera Tx Data
5	Ground	Ground for RS-232/RS-485 cable shield
6	Tx+ Data (RS-485 output)	connect to RX+ Data
7	Tx- Data (RS-485 output)	connect to RX- Data
8	Rx+ Data (RS-485 input)	connect to Tx+ Data (data monitoring) *
9	Rx- Data (RS-485 input)	connect to Tx- Data (data monitoring) *

*RS-485 data may be viewed on the HHC-SW display by connecting it to Pins 8 and 9 of the DB-9 interface connector. This can help facilitate troubleshooting of data cabling issues.

DATA FORMAT OF THE HANDHELD CONTROLLER PROTOCOL

Data	8 bits
Stop bit	1 bit
Parity	none
Baud Rate	2400 / 4800 / 9600 / 19200
Control	none

The 2400, 4800 and 9600 Baud rates are used when controlling the Sidewinder through the Sidewinder D or P protocol (extensions of the Pelco D and P codes). The 19200 Baud rate is used only for updating the handheld controller firmware or updating the Sidewinder firmware.

Updates for the handheld controller always take place via the RS-232 interface. Both the RS-485 (standard) and RS-232 (optional) interface are supported for controlling or updating of the Sidewinder.

ADVANCED SENSOR FUNCTIONS AND FEATURES

The HHC-SW provides advanced functions and features to modify the settings of the internal block camera sensor used in the Sidewinder camera and to update the HHC-SW and the Sidewinder firmware.

ADVANCED FUNCTIONS

To access the advanced features of the HHC-SW, press the FUNC/ON key. A menu will appear with the following selections:

- Preset Text
- Tour Functions
- Update Device
- Special Function (requires entering special password)
- Speed
- System

PRESET TEXT

The Preset Text feature allows the user to set the on screen text that will be displayed when a preset position is selected for the camera Pan and Tilt position. The UP and DOWN arrow keys change the character selection for the text position that is highlighted. Pressing the RIGHT and LEFT arrow keys selects the character position for adjusting the character value. After entering the desired text into the display window, exit the preset text mode by pressing the FUNC/ON key twice and then set the new preset using the numeric keypad and PRESET key as described earlier in this document. The new text string will be saved in the Sidewinder when the preset is stored and will be displayed on the screen each time the preset is called.

TOUR FUNCTIONS

The Tour Functions section of the menus allows the preset dwell time to be changed and allows the speed of the special panning tours to be selected.

Tour Dwell Time – The tour dwell time setting can be set from between 1 and 255 seconds. The Tour Dwell times are set only while creating a tour, while programming the preset into the Sidewinder using the numeric keys and the PRESET key. You cannot change the tour dwell times without reprogramming the tour and reselecting the presets again. To set the dwell time, select the “Change time” menu item and then enter a value between 1 and 255. Then press enter. To return to the Tour Functions menu, press the FUNC/ON key.

Panning Speed – The Sidewinder supports a special type of tour called a “panning tour”. These special tours are created by selecting exactly two presets for the tour. When the tour has exactly two presets, the Sidewinder camera will pan smoothly back and forth between the two presets (pan axis only) at a preset rate. To modify the panning rate, select the Panning Speed menu item. In the new menu window, select the “Set Speed” item, and then enter the desired panning speed, from 1 to 64. After setting the Panning Speed, you can check the tour operation by selecting the Run Pattern menu item, and then entering the tour number for the panning tour that you wish to display.

UPDATE DEVICE

The HHC-SW supports firmware upgrades of the HHC-SW itself and the ability to load and store Sidewinder firmware to be uploaded to the camera, at a later time in the field, using the DB-9 communication port on the HHC-SW and the Windows® HyperTerminal utility.

Update Mode Port Settings – This menu selection is used to change the communication port settings that are used to communicate from the HHC-SW to the Sidewinder.

Device Update Port – This setting selects whether the RS-485 or RS-232 port is being used to upload the new firmware to the Sidewinder. Normally, the RS-485 port would be the port that is used.

Device Update Baud Rate – This setting should be selected to match the baud rate setting of the Sidewinder camera. The HHC-SW will issue a reset command to the Sidewinder camera to initiate the firmware upload process. This baud rate will be used to send the reset command.

Device Update Port Termination – These settings allow the RS-485 terminations for the input and output lines to be enabled or disabled, depending on the actual configuration of the RS-485 communication wiring. Normally, the HHC-SW will connect directly to the Sidewinder for firmware updates, so the input and output terminations should both be enabled.

PC Upload Port Settings – The RS-232 port is always used for firmware uploads and downloads to and from the HHC-SW. The Baud Rate should normally be set at 19,200 bits per second.

Load Firmware from PC – This selection is used to load Sidewinder firmware into the HHC-SW in order to store it for use later in updating a Sidewinder in the field. The following section describes how to use the Windows® HyperTerminal program to upload Sidewinder firmware into the FLASH memory area of the HHC-SW:

Connect the HHC-SW to a serial communications port on your computer using the supplied crossover cable.

HyperTerminal should be located in the following program directory:

START - ALL PROGRAMS - ACCESSORIES - COMMUNICATION - HYPER TERMINAL

Selecting the HyperTerminal program will bring up a new window with a heading called "Hyper Terminal". It will open up two windows, one behind the other. The first will ask you to name your session. You can enter any name, like "SW". There is no specific name necessary, it is an option left up to you. Once you have done this, click OK. From here, it will bring you into a secondary section with the following options:

Country/Region: (not required)
Area Code: (not required)
Phone Number: (not required)
Connect Using: (select the COM port that the cable is plugged into)

The first three items are not required. You only need to select the serial COM port that you will be using to connect to the HHC-SW device itself. After your selection has been made, press OK.

The new program window will display the following options: (Please set them as follows)

Bits Per Second: 19200
Data Bits: 8
Parity: None
Stop Bits: 1
Flow Control: None

Press "Apply" when finished. You should be directed to the main program window.

Look at the top of the window for the menu options. Click where it says "Transfer" at the top, and proceed down to "Send File".

Change the protocol to "XMODEM" in the PROTOCOL section.

Click the "Browse" button to navigate to where you have the HHC-SW firmware files stored on your computer.

Once you have selected the necessary file, the file name will appear in the previous box next to the "Browse" option.

Once you have selected the proper firmware file - DO NOT HIT SEND YET. You still need to set up the HHC-SW to upload the firmware into the FLASH memory.

At this time, proceed to the HHC-SW controller. You should still be in the Upload Firmware from PC section of the menus. Navigate to the "erase" menu item and press the "ENTER" key. Now press "SEND" in the HyperTerminal program window.

You should now see a countdown ranging from 3-6 minutes in the HyperTerminal window. DO NOT TOUCH ANYTHING! Let the controller and HyperTerminal complete the file transfer process.

When finished, the Hyper Terminal download screen will disappear.

Send Firmware to PC – This menu selection is used to transfer firmware from one PC to another by first uploading the firmware to the HHC-SW and then downloading it to another computer.

Set up the HyperTerminal program as described above, but select “Receive File” rather than “Send File”. This prepares the computer to accept the firmware from the HHC-SW. Enter a file name for the firmware when prompted by the HyperTerminal program.

After HyperTerminal is ready make sure that the HHC-SW display reads “Send Firmware” and then press the “ENTER” key.

Update Device – This menu selection is used to update the Sidewinder with the firmware that is stored in the HHC-SW.

Connect the HHC-SW directly to the Sidewinder by bypassing any other RS-485 communications cable connections. This prevents the new firmware from being sent to more than one Sidewinder camera.

Use the arrow keys to select the “update” menu item and press “ENTER”.

The Sidewinder camera should reset, and the HHC-SW display will show the file transfer progress. At the end of the file transfer process, the Sidewinder should go through its initialization process and return to normal operation with the new firmware installed.

Update HHC-SW – This menu selection allows new firmware to be installed in the HHC-SW itself.

Prepare HyperTerminal for sending a file, as in the “Load Firmware from PC” section and select the new firmware file to send to the HHC-SW.

When the HyperTerminal program is prepared and ready to send the new firmware file, select the “Reboot” menu item and press the “ENTER” key.

Now click the “SEND” button in the HyperTerminal window. The HyperTerminal window will provide a file transfer progress report and terminate when the file transfer is complete.

SPECIAL FUNCTIONS

SPECIAL FUNCTIONS

The special functions section of the menus requires that a special password sequence be entered. When the special functions menu item is highlighted, enter the sequence “24685” on the numerical keypad. This password is not changeable. The available features in the advanced section are as follows:

Command List – This section provides all of the low level commands for all of the settings in the Sidewinder camera, including special block camera sensor settings. Press the “ENTER” key after navigating to the desired command to execute the command. Some commands also have values that may be entered at the display prompts. The display window also shows the actual code bytes that are sent for each command. The list of supported commands is as follows:

Set Preset – This command performs the same function as that of the numerical keypad and “PRESET” button on the HHC-SW. The preset value may be set from 1 to 99.

Clear Preset – A preset may be cleared from the Sidewinder memory by using this command. The preset value may be set from 1 to 99.

GoTo Preset – A preset may be called by using this command. This command performs the same function as calling a preset using the numerical keys and the “PRESET” key on the HHC-SW. The preset value may be set from 1 to 99.

Flip – This command inverts the video display.

Flip Automatic – This command enables the automatic video inversion required to keep the Sidewinder video image right side up when the tilt axis is moved past the vertical position.

Go to Zero Tilt – This command resets the Sidewinder Tilt position to zero degrees (horizontal)

Go to Zero Pan – This command resets the Sidewinder Pan position to zero degrees.

Remote Reset – This command executes a reset of the Sidewinder camera.

Write Character – This command writes a character to the on screen display area of the video.

Clear Screen – This command clears the on screen display.

Alarm Acknowledge – This command clears the alarm settings within the Sidewinder camera.

SPECIAL FUNCTIONS

Set Tour Start – This command tells the Sidewinder camera to start saving preset commands to create a new tour. The tour sequence can be numbered from 1 to 8.

Set Tour Stop – This command ends the preset input sequence for the tour programming and stores the tour into the Sidewinder FLASH memory.

Run Tour – This command starts the Sidewinder running a tour sequence. The tour number can be from 1 to 8.

Set Zoom Speed – this command selects from one of three different block camera zoom speeds. 0 is slower, 2 is faster.

Set Focus Speed – This command allows the speed of the auto focus to be varied from slow (0) to fast (31).

Reset Camera – This command sends a reset command to the internal block camera sensor and returns the focus and zoom to the default settings.

Auto Focus Switch – This command allows the auto focus to be turned on or off.

Auto Iris Switch – This command allows the auto iris function to be turned on or off.

Set Pan Position – This command allows the Pan position to be set directly, from 0 degrees to 359.99 degrees.

Set Tilt Position – This command allows the Tilt position to be set directly, from 0 to 359.99 degrees.

Set Zoom Position – This command allows the zoom position to be set in arbitrary block camera units. The Set Magnification command should usually be used in preference to this command.

Query Pan Position – This command returns the Pan position in degrees, from 0 to 359.99

Query Tilt Position – This command returns the Tilt position in degrees, from 0 to 359.99 degrees.

Query Zoom Position – This command returns the zoom position of the Block camera in arbitrary units. The Query Magnification command should usually be used instead of this command.

Set Magnification – This command is used to set the zoom magnification of the camera from x1.00 to x140.00.

Query Magnification – this command returns the zoom magnification of the camera.

SPECIAL FUNCTIONS

Query Firmware Version – this command returns the Sidewinder camera firmware version number.

Status – This command returns the alarm conditions and the internal temperature of the camera.

Set Baud Rate – This command sets the baud rate of the Sidewinder Camera. The preferred method is to use port settings menu in another section of the HHC-SW.

Switching Camera – This command toggles the internal block camera on and off.

Status – This menu selection returns the alarm condition of the Sidewinder camera, and displays the internal temperature.

Repetition Time – This menu selection allows the time interval between pan and tilt position display updates to be adjusted.

Show Position – This menu selection enables or disables the Pan and Tilt angular position display in the HHC-SW display window.

Double Click – This menu selection allows the jump to full pan and tilt speed by “double-clicking” the arrow keys to be enabled or disabled. This feature has been rendered more or less obsolete by the ability to enter the speed on the numeric keypad before pressing the arrow keys.

Show Input – This menu selection allows the HHC-SW to display incoming RS-485 data in the display window, which can be useful for troubleshooting communication problems.

Speed – This menu selection allows the camera pan and tilt speed to be modified when using the left/right/up/down arrow keys. The pan and tilt speed can also be changed by entering a value on the numeric key pad before pressing an arrow key during the normal P/T/Z mode of operation.

System – This menu selection allows some of the basic HHC-SW operational functions to be modified.

Device Port Settings – This allows the HHC-SW RS-485 port settings to be modified.

Device Control Port – This menu selection allows the HHC-SW control port to be switched from the RS-485 port to the RS-232 port. The default RS-485 port is always used to control the Sidewinder camera.

Device Control Baud Rate – This menu selection changes the baud rate at which the HHC-SW communicates with the Sidewinder camera.

SPECIAL FUNCTIONS

Change Baud Rate – This menu selection allows you to change the HHC-SW communication baud rate.

Set Sidewinder Baud Rate – This menu selection allows you to change the Sidewinder camera communication baud rate. If you need to change the Sidewinder communication baud rate, change the camera baud rate first, and then change the HHC-SW baud rate above to match.

Device Termination – This menu selection allows the RS-485 input and output terminations to be turned on and off.

Response Off – This menu selection allows the Sidewinder camera acknowledgement in the display window to be turned on or off.

Show Alarm – This menu selection allows the alarm status in the display window to be turned on or off.

Code – This menu selection allows the camera protocol to be toggled between Pelco D code at 2400 baud and Pelco P code at 4800 baud.

About – This menu selection switches the display to show the firmware revision. Pressing the “ENTER” key returns the display to the command menus again.

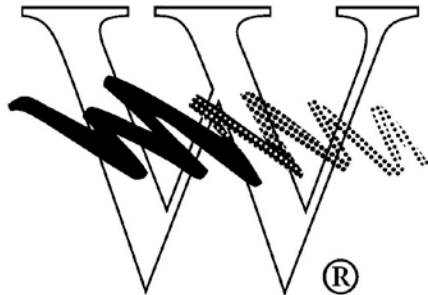
TECHNICAL SPECIFICATIONS

Electrical	
Power	4 AA Alkaline Batteries
Battery Life Active	100 Hours (18mA operational current)
Battery Life Standby	3 Years (100uA standby current)
Auto Shutdown Timeout	Approximately 5 minutes from last button push
Environmental	
Temperature	32° F to 158° F (0° C to 70° C)
Humidity	20% to 90% relative humidity (non-condensing)
Mechanical	
Weight	15.2 oz. (430 grams) including batteries
Dimensions	8.5”L x 4.0”W x 2.25”H (216mmL x 102mmW x 57mmH)
Cable	6 foot (67cm) included with unit
Communications/Physical Layer	
Interface	RS-232 and RS-422/485
Format	Pelco “D” Code and proprietary
Data Rate	2400, 4800, 9600, 19200 Baud
Basic Camera Functions	
Pan Right/Left	
Tilt Up/Down	
Zoom In/Out	
Focus In/Out	
Set Preset	
Set Tour	



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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.