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*An ISO 9001:2008 Certified Company*



*Wireless Technology, Inc.*

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**C-MAX Series Thermal  
T.I. 320**

*User & Installation Manual*

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# INFORMATION

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## 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](mailto: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.

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# **PRODUCT WARRANTY AND REPAIR**

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## **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**

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## **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 & TOOLS**

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## **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.

## **RECOMMENDED TOOLS AND ACCESSORIES FOR PROPER INSTALLATION**

- 1.) 9/16" Wrench for installing 3/8" Mounting Bolts
- 2.) Flat blade screwdriver or 5/16" nut driver for tightening camera tube clamps
- 3.) Wire strippers and soldering iron if field terminating camera cables
- 4.) Self sealing tape for weatherproofing connector
- 5.) Tie Wraps for cable dressing
- 6.) Hand held radios

## FEATURES & INFORMATION

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WTI's Thermal Cameras provide powerful 24-hour monitoring for critical applications. Using high-performance, revolutionary thermal technology, WTI's thermal camera systems are completely immune to direct sunlight, reflections, headlights, fog, rain, and any other severe weather conditions.



### **Features Include:**

- 320x240 pixel 37.5um x 37.5um un-cooled VOX microbolometer.
- 8 to 14 micron long wave infrared spectral band.
- Sensitivity > 50mK NEDT (Noise Equivalent Delta Temperature).
- Standard NTSC, 30 fps video output.
- Grayscale and 3 Color Palettes available for video output.
- Outdoor hardened IP66/67 enclosure for operation in all weather conditions.

# POWER & WIRING

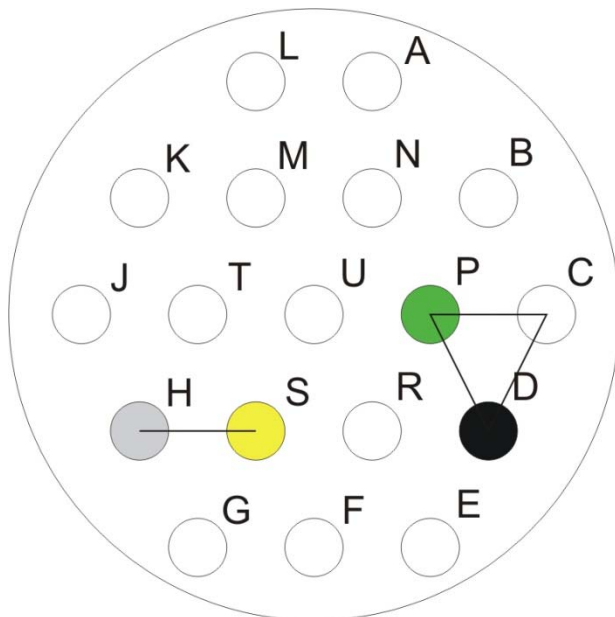
## Mounting

The C-MAX-TI camera housing is designed to be installed on industry standard 4 inch wide horizontal pole mount brackets using two 3/8" diameter by 1/2" long bolts.

Two stainless steel screw type clamps are provided to allow the front to back position of the camera tube to be adjusted within the sunshield. The camera tube should be positioned as far back in the sunshield as possible, without letting the sunshield interfere with the upper right and upper left corners of the video display.

## Power and Signal Wiring

PIN	Signal Description	Wiring Color Code and Wire Recommendations
C	AC Line Return	White 22 AWG Minimum
D	AC Line Input 85VAC to 265VAC	Black 22 AWG Minimum
P	AC Line Safety Ground	Green 22 AWG Minimum (Same or heavier than AC Line Input)
S	Video Output – 75 Ohms 1Vpp	Coaxial Cable RG-59 Center
H	Video Shield	Coaxial Cable RG-59 Shield



### Mating Connector

Female MS Connector  
 Style MIL-DTL-26482  
 Amphenol P/N MS3116F-14-18S  
 Shell Size 14  
 18 Contact Pattern

# CAMERA SETTINGS

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## User Adjustable Camera Settings

The C-MAX-TI 320 camera comes from the factory with the camera settings optimized for best performance over a wide range of situations. Various camera parameters may be adjusted for special situations in order to improve the performance. Camera parameters are adjusted using a free software program supplied by WTI in conjunction with a WTI Cable Modem or HHC-7000 coaxial data modem and a laptop computer.

**Video Output Format** – Allows changing the video output palette to accentuate different aspects of the scene for different applications. Grayscale is normally used for machine video analysis. Magenta palette is used for intruder detection. Crimson is used for high temperature industrial monitoring. Rainbow is used to accentuate small temperature differences throughout a scene.

- Grayscale
- Magenta Color Palette
- Crimson Color Palette
- Rainbow Color Palette

## AGC Mode

- Full Auto
- Manual Span
- Manual Level
- All Manual

**Zoom** – The following digital zoom settings are available

- 1.00x
- 1.50x
- 2.00x
- 4.00x

# CAMERA SETTINGS

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**Frame Averaging** – This feature allows the noise in the scene to be averaged to improve the signal to noise ratio. This will introduce some delay and smearing of the image with moving objects. Adaptive averaging uses multiple frames of averaging for pixels that are not changing very much and no averaging for pixels that change more than a specified amount from frame to frame. This dramatically reduces the smearing effect of any averaging for moving objects.

- 1 Frame Average (no averaging)
- 2 Frames Averaging
- 4 Frames Averaging
- 8 Frames Averaging
- 16 Frames Averaging
- 32 Frames Averaging
- Adaptive Averaging

**Video Polarity** – This parameter allows the video polarity to be inverted for special situations.

- White Hot
- Black Hot

**Video Orientation** – This feature allows the video image to be corrected for special camera orientations

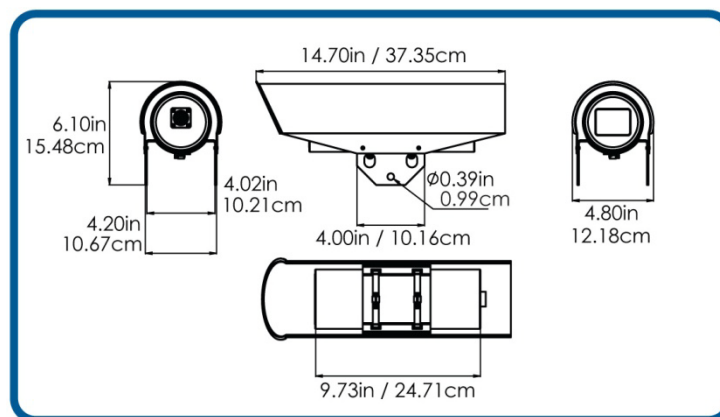
- Normal/Vertical Flip
- Normal/Left-Right Mirrored

**Calibration** – The thermal sensor pixel offsets are calibrated by moving an internal shutter in front of the sensor to provide a uniform background and then measuring and storing the offset of every pixel. These offsets are then used to correct any differences between the pixels. A secondary calibration can be performed in the lab by aiming the camera at a black body source at high temperature and then measuring and storing the value for each pixel to determine its gain. These values are then used to correct the value of each pixel in the image to provide optimum quality.

- Initiate Closed Shutter Offset Calibration (normal)
- Initiate Open Shutter Gain Calibration (use with hot black body target)

## TECHNICAL SPECIFICATIONS

<b>Video</b>		<b>Electrical</b>	
Sensor Type	320 (H) x 240 (V)	Power Options	85-265 VAC, 50/60 Hz
Sensor Pitch	37.5 $\mu\text{m}$ x 37.5 $\mu\text{m}$	Power Consumption	Max. 10.5W (22W with heater on)
Wavelength Range	7.5 ~ 13.5 $\mu\text{m}$	<b>Environmental</b>	
Video Ratio (Sensor )	30fps	Temperature	-34° C to +74° C (-29° F to +165° F)
Video Output	75 $\Omega$ analog I Vpp, composite B/W	Humidity	0 to 95% relative
NTSC or PAL		IP66 Rated	Dust and water proof
<b>Camera</b>		<b>Mechanical</b>	
Imager	7.5 ~ 13.5 micron spectral band un-cooled VOX microbolometer	Weight	4.5 lbs. (2.1 kg) $\pm$ 0.5 lbs.
Resolution	225 horizontal TV lines	Dimensions (nominal)	5.9" H x 4.3" W x 14.8" L (150mm x 110mm x 376mm)
Sensitivity	<85 mK NEdT (Noise Equivalent Delta Temperature)		
Brightness	Auto/manual	Regulatory	CE EN 55011, EN 61000-6-1, FCC Part 15, Class A
Contrast	Auto/manual		
<b>Operational</b>			
Digital Zoom	2x ~ 4x		
Polarity Function	B/W (Black & White) / W/B (White & Black)		
Communication Protocol	RS-232 Proprietary		





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[www.gotowti.com](http://www.gotowti.com)

*Due to WTI's 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.*