

This Manual Covers:

- Transmitter
- Command Center
- Truck Mount
- Clamp
- Tripod
- Straps
- Glare Shield



WARNING

Read all instructions and warnings before using this product. Failure to observe these instructions could result in death or serious injury.

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Transmitter - Four Channel

Using the Wireless Remote Video Transmitting Feature (optional): The Bullard Thermal Imager can be ordered with a built-in wireless remote transmitter. The transmitter sends a signal to a remote receiver, which connects to any TV or VCR. The receiver can be powered by either a 110 Volt AC adapter or a 15 volt DC adapter. The wireless remote transmitter can be set to transmit on one of four different channels. This feature allows Commanders the opportunity to monitor up to four different Bullard Thermal Imagers being used at the same site.

Selecting the Transmitting Channel: Your Bullard Thermal Imager can transmit on one of four different frequencies. To set the channel option in your Bullard Thermal Imager, simply set the channel indicator knob to the appropriate 1, 2, 3, or 4 channel.

Selecting the Channel on the Receiving Control Unit: The receiving control unit channel must be set to the same channel as the thermal imager transmitter being monitored. Select channel 1, 2, 3, or 4 by pointing the indicator knob, located on the front of the unit to the appropriate channel.

Pressing the black button on the lower left side of the thermal imager activates the transmitter. Whenever the transmitter is operating, the transmitter indicator light will illuminate in the upper left corner of the screen.

CAUTION

Putting the thermal imager in the sleep mode also puts the transmitter in "sleep." Using the remote video transmitter feature slightly reduces the continuous operation time of the battery.

Failure to note this information may effect use-time of the thermal imager.

Transmitter - Two Channel

Using the Wireless Remote Video Transmitting Feature (optional): The Bullard Thermal Imager can be ordered with a built-in wireless remote transmitter. The transmitter sends a signal to a remote receiver, which connects to any TV or VCR. The receiver can be powered by either a 110 Volt AC adapter or a 15 volt DC adapter. The wireless remote transmitter can be set to transmit on one of two different channels. This feature allows Commanders the opportunity to monitor up to two different Bullard Thermal Imagers being used at the same site.

Selecting the Transmitting Channel: Your Bullard Thermal Imager can transmit on one of two different frequencies. To set the channel option in your Bullard Thermal Imager, remove the battery and position the selector switch located on the bottom of the battery compartment. Moving the switch to the left sets the transmitter on channel A, to the right, channel B.

Selecting the Channel on the Receiving Control Unit: The receiving control unit channel must be set to the same channel as the thermal imager transmitter being monitored. Select either channel A or B moving the toggle switch on the front of the unit.

Wireless Receiver Assembly and Operating Instructions

Before assembling your Bullard Wireless Remote Receiver, please ensure you have the following parts.

- Omni-Directional Antenna
- 50 ohm Coaxial Cable
- Receiver Control Unit
- AC Power Adapter
- DC Power Adapter
- Video Cable with BNC to RCA Adapter
- FCC Registration Form

If you are missing any of these components, please contact Bullard Sales Support at 877-BULLARD (285-5273).



Receiving Antenna Assembly

Magnetic Mount Assembly Instructions

• Position "O" ring around bushing on magnetized base. • Affix receiving antenna to base.

Permanent Mount Assembly Instructions

- Refer to Figure 1 for an assembly diagram. The mount requires a $\frac{3}{4}$ " (19mm) hole in a flat area with a thickness of (0.5mm to 1.0mm) .020" to .040".
- Feed the lead-in cable from the top until the bushing assembly is in position to drop into the hole. The bushing should be tilted at a slight angle and fed into the hole. The threaded top of the bushing will not fall through the hole.
- Thread the brass nut onto the bushing. Be sure the "O"ring is in the groove of the brass nut before tightening. The brass nut should be tightened until it comes in contact with the surface and the "O" ring is compressed.

Installing BNC Connector

- Refer to diagrams in Figures 2, 3, and 4 while performing the following steps.
- Trim cable as shown taking care not to damage the inner conductor or braid.
- Slip crimp sleeve over cable. Place inner conductor into contact. Note that the end of contact and inner dielectric must be butting and square. Crimp with appropriate tooling.

Flair outer braid, and gently but firmly push the contact into the connector housing until a snap is felt, indicating the contact is in place. Slip the crimp sleeve in place, butting the flange against the connector body, and crimp with appropriate tooling.

Receiver to Receiving Antenna Assembly

Connecting the Receiving Antenna to the **Receiving Control Unit**

Connect the receiving antenna to the top of the receiver control unit using the coaxial cable supplied with the antenna.

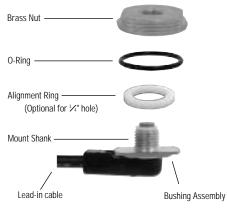


Figure 1

Connecting the Receiving Control Unit to the TV and/or VCR

Connect the receiver control unit to the TV and/or VCR using the video cable supplied. Attach one end of the cable to your TV or VCR's input ports. Connect the other end to one of the three video out connectors on the receiving control unit (note that one of the connectors is an RCA connector; the other two are BNC connectors - a BNC to RCA connector is included). The additional video output connectors can be used to send the transmission to another TV or VCR. If you are using a Transcommand system, you will not need to attach any video cables. For additional video cable, contact Bullard Inside Sales at 877-BULLARD (285-5273).

Powering the Receiving Control Unit

Connect either the AC or DC adapter to the power input port on the receiving control unit. When power is supplied, a red LED on the front panel will illuminate.

Selecting the Channel on your TV

In order to view the transmitted image, your TV should be set to video input or auxiliary channel. Some TVs require a remote control to access the video or auxiliary channel. See your TV owner's manual for further information.

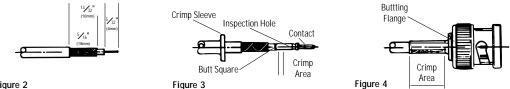


Figure 2



FCC Notice

FCC Registration Form

Fill out the Federal Communications Commission (FCC) registration form and send it to the address noted on the form. The form must be submitted to ensure the proper licensing with the FCC.

This equipment has been tested and complies with Part 90 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference.

This equipment generates, uses and can radiate radio frequency energy, and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Change receiver and transmitter channel
- Reorient or relocate the receiving antenna
- Increase the separation distance between the affected equipment and receiver
- Connect the affected equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult Bullard or an experienced radio/TV technician for help

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

To ensure licensing, you must fill out and return the FCC Registration form included with this product.

Receiver Specifications

Dimensions	. 1.5" x 4.5" x 5"
	(including protrusions)
Weight	. 16 oz.
Power Requirements	. 11-14.5 VCD (center pos.)
Power Consumption	. 250 mA
Power Input	Coaxial 2.1 mm by 5.5 mm
	center-positive connector
Receiving Frequency	2.45 GHz or 2.48 GHz.
Video Outputs	Two 75-ohm 1-Volt P-P
	video outputs (female BNC)



Transcommand Unit

Using the Wireless Remote Video Transmitter with the Transcommand Unit: Bullard offers a combination TV/VCR with a built-in remote receiver to simplify the operation of the remote video transmitter (Figure 1).

The wireless remote transmitter can be set to transmit on one of four different channels. This feature allows Commanders the opportunity to monitor up to four different Bullard Thermal Imagers being used at the same site by toggling back and forth between signals.

Using DC Power: The Transcommand Unit includes a DC power cord which may be connected to any vehicle's cigarette lighter utilizing a 12 Volt negative ground system. Simply connect one end of the cord to the DC power jack on back of the Transcommand unit (Figure 2) and insert the other end into the cigarette lighter socket of your vehicle.

Using AC Power: Use the power cord supplied and connect one end to the TV at the attachment marked AC 120 Volt (Figure 2). Attach the opposite end of the cord into any 120 Volt outlet.

A CAUTION

Your Bullard Wireless Remote Transmitter/Receiver has been designed to operate in a variety of environments. However, Bullard recommends protecting the Receiving Control Unit from high-moisture environments.

Signal quality may vary considerably depending upon location. Composition and construction of interior walls and barriers will affect range indoors. Likewise, outdoor operation could be affected by large metallic objects, structures, fences, and dense foliage. Repositioning of both transmitter and receiver may be necessary to optimize performance.

Failure to note this information may affect operation of the thermal imager.

Connecting the Antenna:

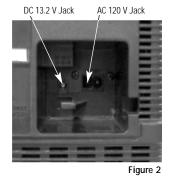
Connect the Receiving Antenna to the side of the Transcommand Unit: Using the coaxial cable supplied, connect the Receiving Antenna to the Receiver Control Unit. The connector on the mount for the receiving antenna attaches to the antenna input connector located on the left side of the Transcommand Unit. (Figure 3).

Select A Channel: For instructions on how to select a transmitting channel, refer to page 1.

Select the Channel on the Receiving Control Unit: For instructions on how to select the channel on the receiving control unit, refer to page 1.



Figure 1



Channel Switch

Antenna Input Connector

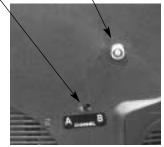


Figure 3

Turning on the Transcommand Unit:

- 1. Turn on the Transcommand: Press POWER.
- 2. Select the channel on your TV: To view the transmitted image, your TV should be set to A/V IN.
- **3. Activate the transmitter:** To activate the transmitter, press the black button on the lower left side of the thermal imager. An indicator light in the upper left corner of the LCD screen will illuminate to signal that the transmitter is operating. The thermal image should now be visible on the Transcommand.
- 4. Set the channel setting: Coordinate the setting inside the camera with the switch on the TV.

To Record:

- **1. Prepare equipment:** Go through the steps on page 2 to connect the antenna and set up the transmitter.
- 2. Load tape: Load a cassette tape into the Transcommand Unit.
- **3. Set tape speed:** Press the SPEED button to select the desired tape speed SP, LP or SLP. The counter and tape speed will appear on the screen.
- 4. Set the TV/CATV option: Press the ENTER button to select the TV mode.
- **5. Record:** Press the REC/OTR button. The REC/OTR indicator will light.
- **6. Stop or pause:** Press STOP or PAUSE if you want to stop recording.
- **7. Prevent erasure:** After recording, to prevent accidental erasure of your tape, break off the erase prevention tab on the front spine of the tape.

Maintenance: The Transcommand Unit uses only VHS formatted video cassettes. Make sure any light adhesive stick-on notes are removed from the video cassette tape before putting the tape into the VCR. Removable labels like these can jam the VCR. Periodic maintenance is required to maintain your Transcommand Unit. The Transcommand Unit has an automatic head cleaning system. However, the video heads will eventually require cleaning or replacement. Only an authorized service center should perform this service.

Cleaning: The polycarbonate shield covering the television screen may be removed for easy cleaning. To remove the shield, simply locate the black tabs at the bottom of the television screen. Slide the buttons inward toward each other and pull the screen forward. Replace after cleaning.

Warranty: Bullard warrants to the original purchaser that the Transcommand Unit is free of defects in materials and workmanship under normal use and service for a period of 90 days from date of purchase. Bullard's obligation under this warranty is limited to repairing or replacing, at Bullard's option, articles that are returned within the warranty period and that, after examination, are shown to Bullard's satisfaction to be defective, subject to the following limitations:

- a. Article must be returned to Bullard with shipping charges prepaid
- b. Article must not be altered from its original configuration

In no event shall Bullard be responsible for damages, loss of use, or other indirect, incidental, consequential or special costs, expenses, or damages incurred by the purchaser, notwithstanding that Bullard has been advised of the possibility of such damages.

ANY IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO 90 DAYS FROM THE DATE OF PURCHASE OF THIS PRODUCT.

Service: Should your Transcommand unit require service, simply call Bullard Sales Support at 877-BULLARD (285-5273). Please have the TV Model number and Serial number available. These numbers can be located on the back of your television set.

For Customer Use

Enter below the Serial No. which is located on the rear of the cabinet. Retain this information for future reference. Model No.

Serial No.



Transcommand Unit Specifications

General

CRT	.9 inch in line gun
Television systems	.NTSC-M
Video heads	.two heads
Tape width	.1⁄2 inch (12.65 mm)
Tape speed	.SP: 33.35 mm/sec.
	LP: 16.67 mm/sec.
	SLP: 11.12 mm/sec.
Operating temperature	.41° F (5° C) to 104° F (40° C)
Relative humidity	.10% to 75%
Power requirement	.AC 12V/DC 13.2V, 60Hz
Power consumption	.65 W (AC/DC)
Sound output	.0.8 W
Dimensions	.13" (H) x 12⅓" (W) x 13" (D)
	330 mm x 308 mm x 330 mm
Weight	.18.8 lbs. (8.5 kg)

Safety Precautions

WARNING

To prevent fire or shock hazard, do not expose this equipment to rain or moisture. Failure to follow these instructions could cause death or serious injury.

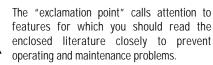
Federal Communications Commission (FCC) Warning: Any unauthorized changes or modifications to this equipment void the user's authority to operate it. This TV/VCR, equipped with a High Quality (HQ) system, is compatible with existing Video Home System (VHS) equipment.

Know these SAFETY symbols





This "bolt of lightning" indicates uninsulated material within your unit may cause an electrical shock. For the safety of everyone in your household, please do not remove product covering.



WARNING

To prevent electric shock, match wide blade of plug with wide slot, and fully insert. Failure to follow these instructions could result in death or serious injury

Truck Mount Direct Charge System

Mounting the Truck Mount Direct Charge System: The truck mount unit (Figure 4) can be mounted to a truck or on a wall by using the mounting gasket and attachment hardware provided. On each side of the truck mount there are 4 holes. The holes on the top, right, and left panels are for attaching the unit to a truck. The hole at the bottom is for the power supply cable.

Begin the installation process by finding a location to mount the direct charge system and drill the appropriate holes. Remember that a power supply will need to be located close to the truck mount in order to charge the unit.

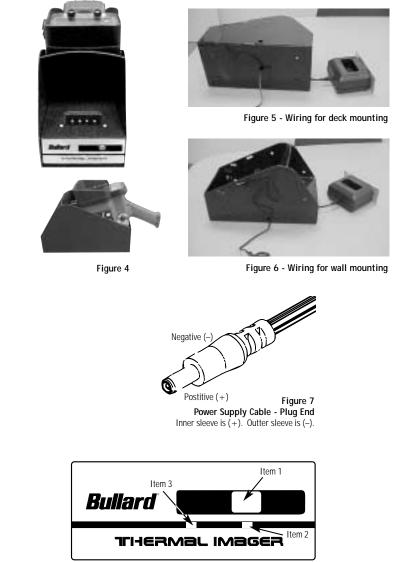
Power Supply Cable Installation: Use the following procedures for installation of the power supply cable to the vehicle. The power supply cable is provided with two free wire ends for ready hardwire installation.

- 1. From the outside, pass the power supply cable (plug end first) through the pass-through hole in the selected side of the truck mount.
- 2. Select the appropriate anti-rattle pad for the mounting location chosen. Pass the free end of the power supply cable through the large hole near the center of the anti-rattle pad and through the appropriate hole in the vehicle panel. Place the truck mount in position on the panel and secure it with the 1/4"-28 stainless steel flat head screws and nuts provided (four screws are used for horizontal panel mounting; three for vertical panel mounting). Tighten the screws securely. Install the inner anti-rattle pad by peeling off the paper backing and pressing the pad into place in the bottom of the truck mount. Press firmly to set the adhesive.
- 3. Once the truck mount is attached, the charger unit needs to be assembled. Begin by making sure the charger system is positioned in the truck mount correctly. The faceplate on the charger should be facing outward and the Bullard logo should be on the left. Once the charger is positioned correctly, it will be held in place by snapping in the two black fasteners provided. Remove the charger from unit and insert AC or DC adapter cord into charger. Place the charger back into the truck mount unit and reattach plate with the black fasteners provided.
- 4. Cut the free end of the power supply cable to length as required. Connect the free end of the cable to a 3 Ampere fuse in a vehicle fuse box providing 12V DC.

A CAUTION

The power supply cable must be connected correctly to properly function. The power cable should be connected so that the inner sleeve of the power plug is (+) and the outer sleeve of the power plug is (-) (Figure 7). Incorrect connection of the power supply cable may damage the unit. Failure to follow these instructions may result in minor injury and/or equipment damage.

Using the Truck Mount Direct Charge System: There are three holes in the plate covering the charger. One hole is for the direct charge cable and two are to allow the user to view the LED lights. Insert one end of the direct charge cable into the hole provided on the right (Figure 8, item 1). Insert the opposite end of the direct charge cable into the direct charge port located on the handle of the thermal imager. A red light will illuminate on the charger to indicate that the camera battery is charging (Figure 8, item 2). When the light on the charger turns to green, your battery will be fully charged. You may leave the battery in the charger indefinitely. A battery in the charger and a battery installed in the camera may be charged simultaneously. There is a second indicator light for the battery in the charger (Figure 8, item 3). Charging both batteries at the same time will not cause any damage to the batteries or charging unit.





Tripod and Clamp System

The tripod system is designed to hold a thermal imager in place for extended periods of time. The tripod system consists of the tripod, mounting bracket, and security strap.

The clamp system is designed to allow the thermal imager to clamp to ladders, light towers, and command vehicles. The clamp system consists of a tripod head, clamp, mounting bracket, and security strap (Figure 6).

Attaching Tripod to Clamp: Screw tripod head onto clamp using stainless steel stud provided.

Adjusting Height of Tripod:

- 1. Pull all three legs outward away from the center post as far as they will go.
- 2. Extend each leg of the tripod by pulling the clamp lever away from the leg, drawing the lower section of the leg out fully and returning the lever to the locked position. Begin with the upper section and repeat until the desired height is reached.
- 3. If additional height is desired after the legs have been fully extended, the center post can be raised by loosening the lock screw and turning the crank clockwise as required. Retighten the lock screw once the desired height has been reached. For best stability, height should first be adjusted by fully extending the legs, then by raising the center post.
- 4. For use on uneven ground or in other unusual situations, one or more legs of the tripod may be drawn farther away from the center post by

depressing the silver button at the top of the leg while pulling the leg outward. By adjusting one leg in this manner the tripod may be placed on the side of a hill; if all three legs are fully extended in the position the tripod will provide an extremely wide, low support for stability in windy or other adverse conditions. When using the tripod in this manner it may be necessary to raise the center post slightly for adequate ground clearance.

Attaching Camera Mount Bracket: Attach the camera mount bracket to the tripod head by first removing the quick release post located in the top of the tripod. To remove the quick release post, make sure the black lever on the side of the tripod head is pointing out to the side and then pull straight up on the quick release post (Figure 7). Attach the threaded end of the quick release post to the threaded hole on the underneath side of the mounting bracket (Figure 8). Reinsert the guick release post into tripod head and push lever back so it is touching the tripod. The lever may be rotated downward toward the ground, making the bracket more secure (Figure 9).

Attaching the Camera to the Mounting Bracket: Place the camera on the mounting bracket between the two metal posts (Figure 9). The handle of the camera should rest on the mounting bracket handle. The camera may be secured with the included security strap. Attach the cord to the hole provided on one side of the mounting bracket, stretch across the camera and attach to the hole provided on the other side of the mounting bracket (Figure 10).



Figure 6



Figure 7

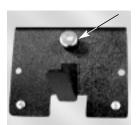


Figure 8

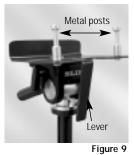




Figure 10

Field Replaceable Straps

These straps allow the customer to field replace the top and side strap without having to return the imager to the factory.

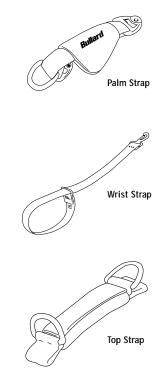
Replacing the Palm Strap: Using a ³/₆" wrench, remove the nut on the right side of the strap. Remove the strap from the screw by lifting away from the camera. Remove the left side of the strap by removing the screw with a Phillips screwdriver. The new strap should be attached by first securing the left bracket to the camera using the existing screw. The right bracket should then be secured by placing the bracket on the screw and tightening the nut. The strap is correctly attached when the Bullard logo is facing outward.

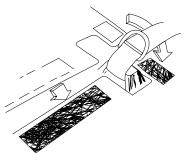
This strap can be used as a backup to keep the imager from falling if it should slip from your hand. The adjustable strap fits over the sleeve of your turnout gear and can adjust to any size wrist. The wrist strap can be easily attached to any D-ring located on the camera.

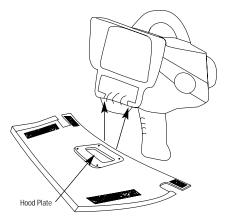
Replacing the Top Strap: Unwrap leather pad from strap to expose the ends of the strap. Remove right side of strap from Velcro[®], wrap the end around the anchor on the top of the camera, and re-attach to the Velcro. Remove the left side of the strap from the Velcro, wrap the end around the anchor on the top of the camera, and re-attach to the Velcro. Wrap leather pad around the strap ends.

Glare Shield Instructions

- 1. Place center hole in hood plate over battery door hinge.
- 2. Tuck front tabs under top handle, in front of the handle's anchor, Velcro tabs together.
- 3. Attach Velcro together along upper seam.











Ordering Information

CATALOG NUMBER	DESCRIPTION	CATALOG NUMBER	DESCRIPTION
BULLARDMX	Bullard MX Thermal Imager – includes Bullard Thermal Imager, with direct charge system, two 10V NiMH rechargeable batteries, battery charger with 110V AC, and 12V DC adapters, wrist strap, shoulder strap, product orientation CD, and carry case	MXRECEIVER	Bullard Transmitter Receiver System – includes the patch antenna, Omni- directional antenna, 4 channel receiver switch box, and all associated cabling necessary for receiving transmit video signal
BULLARDTI Bullard Thermal Imager – includes Bullard Thermal Imager, with direct	Bullard Thermal Imager, with direct charge system, two 10V NiMH	COMMAND	Combination TV/VCR – Package includes TV/VCR (110V AC and 12V DC), built-in receiver, Omni-directional antenna, and all necessary cables
	MXCOMMAND	Combination TV/VCR – Package includes TV/VCR (110V AC and 12V DC), built-in receiver, Omni-directional antenna, and all necessary cables	
TRANSCOMMAND	Package includes TV/VCR and wireless remote transmitter, TV/VCR (110V AC and 12V DC), receiver mounted inside the TV, antenna, and all necessary cables	TRUCKMNT	Truck Mounted Direct Charge System – includes vehicle mount, dual charger, mounting gasket, attachment hardware, power supply cord, and security buckle
remote tra and 12V E	Package includes TV/VCR and wireless remote transmitter, TV/VCR (110V AC	BATTERYNIMH	10V NiMH Rechargeable Battery
	and 12V DC), receiver mounted inside the TV, Omni-directional antenna, and all	BATTERY10V	10V NiCad Rechargeable Battery
	necessary cables	SHSTRAP	Replacement Shoulder Strap
TRANSMITONLY	Wireless Remote Transmitter – Receiving system not included.	STRAPKIT	Thermal Imaging Camera Replacement Strap Kit – includes wrist strap, palm strap, and top strap
MXTRANSMITONLY	Wireless Remote Transmitter – Receiving system not included.	WINDOW	Replacement Hard-coated Polycarbonate Display Cover
TRANSMIT	Package includes wireless remote transmitter, Omni-directional antenna, 2 channel receiver switch box, cable, 110V	DUAL CHARGER	24V Charger – for NiMH and NiCad rechargeable batteries
MXTRANSMIT	AC, and 12V DC adapters Package includes wireless remote transmitter, Omni-directional antenna, 4 channel receiver switch box, cable, 110V AC, and 12V DC adapters	TIDCPOWERCORD	Gray Cord Connecting Charger Base with Bullard Thermal Imagers
		GLARESHIELD	Attaches to Bullard Thermal Imager reducing glare in bright sun conditions
RECEIVER Bullard Transmitter Receiver System – includes the omni-directional antenna, 2 channel receiver switch box, and all associated cabling necessary for receiving transmit video signal	includes the omni-directional antenna, 2	TRIPOD	Heavy-duty 4 foot tripod for Bullard Thermal Imager.
	CLAMP	Thermal Imaging Clamping System – for use with tripod or as stand alone system to mount imager to almost any surface	

 Bullard

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