

# ATN TICO LTV Series

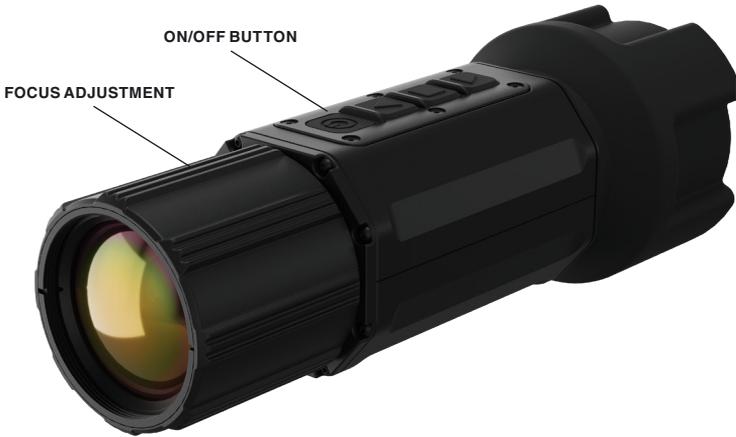
THERMAL CLIP-ON



USER MANUAL



AMERICAN  
TECHNOLOGIES  
NETWORK  
CORP.



## CAUTION!

**THIS PRODUCT CONTAINS NATURAL RUBBER LATEX, WHICH MAY CAUSE ALLERGIC REACTIONS**

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## FEATURES

- **CUSTOMIZABLE INTERFACE**
- **DIGITAL ZOOM**
- **RETENTION OF ZEROING WITH DIGITAL ZOOM**
- **MONOCULAR MODE**
- **ULTRA LOW POWER CONSUMPTION**
- **ERGONOMIC DESIGN**
- **LIGHT WEIGHT**
- **MULTIPURPOSE APPLICATIONS**

## APPLICATION

Ready to hunt or hike like a pro? Look no further than the TICO LTV thermal clip-on from ATN. Simple, reliable and super affordable, the TICO LTV is one of the lightest and easiest-to-use thermal clip-on devices on the market. Incorporating the latest, advanced 12-micron thermal sensors, a 60 Hz refresh rate, user-friendly controls and a long-lasting rechargeable and replaceable battery. Built for tough conditions, the TICO LTV is available in 3 configurations of lenses and sensor resolutions to fit any budget. Mounting the device is easy with either the QDM provided or with the Scope Mounting System adapters. The TICO LTV system is highly-versatile and can be used as a clip-on device in combination with a rifle scope or a digital camera and as a spotting monocular. Whether you're hunting, shooting targets at night, spotting birds or scanning your environment for animals, Tico LTV is the perfect thermal clip-on for the avid hunter, target shooter or keen nature observer. Get accuracy, optimal image quality, and convenience that won't break your bank account: equip your favorite weapon scope or camera with an ATN TICO LTV and see the difference.

# SPECIFICATIONS

	TICO-LTV 256 1x	TICO LTV 320 1x	TICO LTV 640 1x
Item #	TICOLTV225X	TICOLTV325X	TICOLTV650X
Sensor	Uncooled 256x192 pixels, 12µm pitch	Uncooled 320x240 pixels, 12µm pitch	Uncooled 640x480 pixels, 12µm pitch
Objective lens	25 mm		50 mm
Resolution	256x192	320x240	640x480
Magnification	1-4x		
Field of view, degrees	7.0° (H) x 5.4° (V)	8.8° (H) x 6.6° (V)	
Display Resolution	OLED 1024x768		
Eye relief	Unlimited		
Color modes	10 Palletes		
Monocular mode	Yes		
Digital zoom	2x, 4x		
Mount	QD mount or Scope Mounting System adapter		
Battery	1 cell, type 18650, removable		
Battery life	8 hrs		
Waterproof rating / IP rating	IP67		
Operating temperature	-4°F to +120°F / -20°C to 48°C		
Detection Range	1040		2080
Recognition Range	260		520
Identification Range	130		260
Dimensions	5.2" x 2.4" x 3.1"		
Weight	400 g		470 g
Warranty	3 years		

\* ATN reserves the right to change the above specifications at any time without notice.

# PREPARING THE DEVICE

## UNPACKING

The following steps must be performed before using the device:

1. Open packaging box and verify that the box contain the following:
  - TICO LTV
  - Lens cap
  - Scope Mounting System connector
  - Rubber sleeve
  - Soft case
  - An allen wrench
  - 18650 Li-ion battery
  - 18650 Li-ion battery charger
  - Picatinny rail mount
  - Mount raiser with 2 sets of screws
  - Manual
  - Lens tissue

Optional accessories that can be purchased separately:

- Detachable eyepiece
  - Scope Mounting System adapter
2. Inspect the device and its accessories for damage to the optical surfaces, paint and finish, body, eyecups, operation buttons, etc.
  3. Ensure that all optical surfaces are clean and ready for use.

### **NOTE**

***If any accessories are missing or broken contact ATN's Customer Service at 1.800.910.2862.***

## BATTERY AND BATTERY REPLACEMENT

The device uses standard 18650 rechargeable batteries with voltage of 3.6 V.

The 18650 are commercially available and are distributed freely. Usually they have capacity between 2.3 Ah and 3.5 Ah.

### **ON/OFF**

To TURN ON the device, press and hold the POWER button until you see the ATN splash screen.

To TURN OFF the device, press and hold the POWER button, until the device shuts down.



# USING YOUR KEYPAD AND BUTTON COMBINATIONS



The device has 1 power button and 3 functional buttons. The concept of the keypad is to be as simple as possible and to be manipulated with 3 fingers only. The 3 functional buttons and the combinations of them have different functions depending on the mode of operation and whether or not the user is in the device menu.

**POWER BUTTON** - Turns the device ON and OFF.

## **BUTTON 1 (B1)**

While in the home screen:

- Short press - cycles the sensitivity presets of the thermal imaging sensor
- Long press (2 sec.) - cycles the color palettes of the thermal image

While in the menu:

- Navigation Up or Right.

## **BUTTON 2 (B2)**

While in the home screen:

- Short press - performs a manual NUC
- Long press (2 sec.) - enters the device menu

While in the menu:

Short press - select item, confirm.

Long press (2 sec.) - back, exit sub-menu.

## **BUTTON 3 (B3)**

While in the home screen:

- Short press - cycles the display brightness presets
- Long press (2 sec.) - cycles the image contrast presets

While in the menu:

- Navigation Down or Left

## **BUTTONS 1+2**

While in the home screen in CLIP-ON MODE:

- Long press (2 sec.) - enter MONOCULAR MODE

While in the home screen in MONOCULAR MODE:

- Long press (2 sec.) - exit MONOCULAR MODE and go into CLIP-ON MODE.

## **BUTTONS 2+3**

While in the home screen:

- Short press - cycles the digital zoom presets - 1x / 2x / 4x
- Long press (2 sec.) - enables / disabled the AUTOMATIC NUC function

While in the menu:

- Long press (2 sec.) - fully exit the menu and go to the home screen.

# FOCUSING

## SETTING THE TICO WITH THE DAY RIFLE SCOPE

After You have mounted the TICO in front of Your day rifle scope, focus Your scope to infinity and set the diopter setting of the rifle scope in accordance with Your eyesight. If everything is set correctly, You should be able to see the status icons and menu items on the TICO as sharp as possible.

Rotate the focus ring of the TICO objective lens in order to focus the thermal image at different distances.



## MOUNTING YOUR CLIP-ON

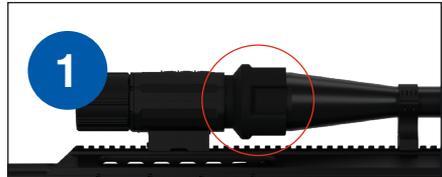
### **CAUTION!**

***Make sure your weapon is not loaded. Use safe weapon handling procedures at all times.***

You have two options to mount the TICO LTV.

1) You can use the standard Picatinny rails (MIL-STD-1913) (Included) to mount to a picatinny rail in front of your Day scopes objective.

2) You can use the standard Scope Mounting System Adapters (optional) to mount the TICO LTV directly to your Day scopes front objective.



### **Using option 1 to mount the TICO LTV:**

The device is compatible with standard Picatinny rails (MIL-STD-1913). The device is used in combination with already mounted day riflescopes and converts them into thermal imaging scopes by projecting non-magnified, optically aligned image on the display.

In order to use the device simply mount it in front of the objective lens of the day rifle scope, using the quick release rail mount.

The height of the clip-on can be regulated using a standard spacer for the picatinny rail mount. It is advisable to have the optical axis of the TICO LTV collimator not higher or lower than 5 mm from the optical axis of the day rifle scope and the TICO LTV to be mounted as close to the objective lens of the rifle scope as possible.

### **NOTE:**

***In order to eliminate the parallax of the optical system (between the reticle of your rifle scope and the image observed through the clip-on device), the rifle scope's lens must be focused at infinity.***

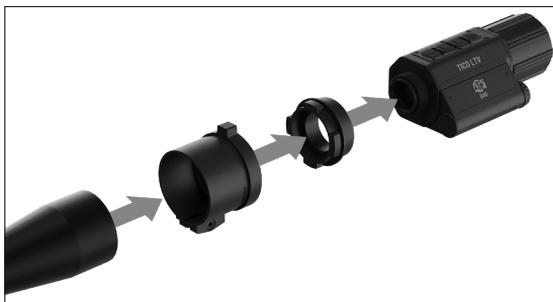
### **Using option 2 to mount the TICO LTV:**

The device is compatible with the standard Scope Mounting System Adapters available on the market and uses a special adapter connector provided with the device set. The device is used in combination with already mounted day riflescopes and converts them into thermal imaging scopes by projecting non-magnified, optically aligned image on the display.

The adapter connector is threaded and is screwed onto the TICO LTV thread at the back. The thread has 3 stopper screws. You can use them to fix the adapter connector to achieve certain position in accordance with the clip-on body or to secure it against unscrewing.

The adapter connector is connected to a Scope Mounting System Q-R modular adapter. There is only one possible orientation of attaching the connector to the adapter and afterwards the locking lever is rotated until tightening the adapter to the connector. This is the reason to have the locking screws on the connector - since the setup retains the same orientation, You may want to have the clip-on display to be always leveled in accordance with your weapon platform and the menus and status icons from the TICO to be always normally orientated for easier navigation and perception. However the rotation of the image does not change the zeroing of the rifle scope - it is not dependent on the rotation of the clip-on in accordance with the rifle scope and hence the weapon platform. The TICO LTV comes factory aligned to retain accuracy within 0.48 mRad (1.7 MOA) for TICO LTV 320 and 0.24 mRad (0.8 MOA) for TICO LTV 640.

The adapter is mounted on the objective lens of the rifle scope. Depending



on the external diameter of Your rifle scope there is big selection of Q-R modular adapters with diameter of the clamping tube from 30 mm to 64 mm. The adapter on the scope can also be rotated before tightening, so that the user can orientate the quick release lever in a comfortable position for opening it in case the whole configuration needs to be quickly released

and detached from the rifle scope.

#### **NOTE:**

***In order to eliminate the parallax of the optical system (between the reticle of your rifle scope and the image observed through the clip-on device), the rifle scope's lens must be focused at infinity.***

## **USING THE DETACHABLE EYEPIECE (OPTIONAL)**



The TICO supports MONOCULAR MODE. When activated it uses the whole display and in combination with the attachable eyepiece increases the base optical magnification to 5x.

The detachable eyepiece also has adjustable diopter setting in the range from -5 diopters to + 5 diopters. The user can rotate it in order to achieve the best possible setting for his/her eyesight.

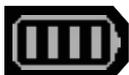
# INTERFACE

## HOMESCREEN



The home screen contains only the status bar. The status bar contains:

1. Graphical representation of the battery charge with 25% steps.



2. Icon indicating in the Automatic NUC mode is active in gray color and if the device is about to perform automatic NUC in the next 5 seconds in yellow color.



3. Icon indicating if any digital zoom is applied.



## MODES OF OPERATION

The TICO LTV supports two modes of operation:

CLIP-ON mode and MONOCULAR mode.

The device is turned on in the same mode it was turned off.

The user can activate MONOCULAR MODE by a long press of the button combination BUTTONS 1+2.

When the device is in MONOCULAR MODE the user can deactivate it by a long press of the button combination BUTTONS 1+2.

When the MONOCULAR MODE is activated or deactivated there is a pictogram popping-up on the screen:

MONOCULAR MODE

CLIP-ON MODE

CLIP-ON MODE - the image does not occupy the entirety of the display and is aligned with the optical axis of the objective lens. In this mode the device is mountable on a rifle scope and is guaranteed to retain the zero of the scope.

MONOCULAR MODE - the thermal image occupies the whole display of the device and does not retain the zeroing of the rifle scope. In this mode we recommend using the detachable eyepiece in order to increase the magnification of the device to 5x and to be able to change the diopter setting in accordance with the user's eyesight.

**WARNING:**

**DO NOT ATTEMPT TO SHOOT WITH YOUR RIFLE SCOPE USING THE TICO LTV IN MONOCULAR MODE!!! THE IMAGE FROM THE CLIP-ON DEVICE AND THROUGH THE SCOPE WILL NOT RETAIN THE ZEROING WITH YOUR WEAPON PLATFORM!!!**

STANDBY MODE - turns off the display and reduces the electrical consumption of the device. When any button is pressed the device wakes up and switches to the home screen.

## DIGITAL ZOOM

The TICO LTV is capable of 2x and 4x digital zoom.

The default mode of the device is 1x (non magnified). The device's digital zoom is 1x every time it is switched on.

The user can cycle through the 1x, 2x and 4x digital zoom by a short press of the button combination BUTTONS 2+3 while on the HOME SCREEN. A pop-up pictogram will appear to inform the user of the change in digital zoom:

If a digital zoom different than 1x is used, it is shown by a symbol in the status bar of the device.



While in CLIP-ON MODE the digital magnification retains the zeroing of the rifle-scope and reduces the angular size of the reticle elements by 2 times at 2x digital zoom and 4 times at 4x digital zoom.



For example:

If the user uses MIL-DOT reticle and applies 2x digital zoom on the TICO LTV, the distance between the centers of 2 dots will be 0.5 MIL instead of 1 MIL. Analogically the same step of 1 dot to 1 dot will be equal to 0.25 MIL if 4x digital zoom is used.

This also means that if a ballistic reticle is used with 2x or 4x digital zoom applied it will be incorrect.

**NOTE:**

**In order for the digital magnification to retain the zeroing of the system, the user needs to set the scope's point of zeroing from the menu!**

While in MONOCULAR MODE, applying digital magnification does not retain any zero and the device is not usable for shooting.

## MENU ITEMS

While on the home screen a long press of the BUTTON 2 will open the device menu.

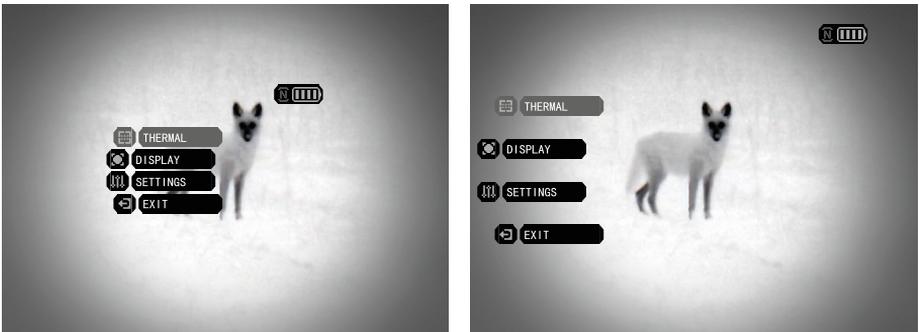
The navigation inside the menu is performed by:

- BUTTON 1 - navigation Up or Right;
- BUTTON 2 - short press - select item, confirm;
- BUTTON 2 - long press (2 sec.) - back, exit sub-menu
- BUTTON 3 - navigation Down or Left
- BUTTONS 2+3 - long press (2 sec.) - fully exit the menu and go to the home screen.

The menu of the TICO LTV is designed so that it fits the specific circular field of view of the rifle scope.

It has smaller and bigger radiuses in order to be visible by rifle scopes with higher or lower base magnifications.

Here are the example for the smallest and the biggest radii:



The menu consist of the following items:

### 1. Thermal.

#### 1.1. Contrast.

Allows the user to cycle through the contrast presets for the thermal image.

#### 1.2. Sensitivity.

Allows the user to cycle through the sensitivity presets for thermal image.

### 2. Display.

#### 2.1. Brightness.

Allows the user to cycle through the display brightness presets.

#### 2.2. Palettes.

Allows the user to cycle through the thermal image palettes.

#### 2.3. Menu items.

##### 2.3.1. Radius.

Allows the user to cycle through the different radiuses of the menu items.

## 2.4. Status bar.

### 2.4.1. Position.

#### 2.4.1.1. X

Allows the user to regulate the horizontal position of the status bar on the thermal image.

#### 2.4.1.2. Y

Allows the user to regulate the vertical position of the status bar on the thermal image.

## **NOTE**

***It is normal that the brightness of the thermal image will be reduced when you increase the optical magnification on a variable riflescope used with it. It is a direct cause of the riflescope optical system's principle of operation.***

### 2.5. Mono. mode.

Allows the user to activate the MONOCULAR MODE from the menu.

### 2.6. Zeroing.

Allows the user to set the point of zeroing with the rifle scope on the thermal image from the device. It is needed in order to shoot with digital zoom of 2x and 4x.

#### 2.6.1. X

Allows the user to change the horizontal position of the point of zeroing.

#### 2.6.2. Y

Allows the user to change the vertical position of the point of zeroing.

#### 2.6.3. SAVE AND EXIT

Saves the position of the point of zeroing, which is used in the digital zoom feature.

## 3. Settings.

### 3.1. Language.

Allows the user to change the language of the TICO interface.

### 3.2. Standby mode.

Allows the use of STANDBY MODE.

### 3.3. Img. Adjustment.

Allows the user to perform optical alignment of the thermal image.

#### 3.3.1. X

Allows the user to change the horizontal position of the image on the display.

#### 3.3.2. Y

Allows the user to change the vertical position of the image on the display.

## **WARNING:**

***The device is delivered from the factory with the thermal image aligned with the center of the optical axis. Any further change in that alignment can decrease the accuracy of the alignment and will not remain consistent when the device is rotated around its axis in the mount to the rifle scope.***

***A factory reset will return the alignment values to the ones applied from the factory personnel when the device has been assembled, adjusted and tested.***

### 3.3.3. SAVE AND EXIT

Saves the current position of the image on the display, that was set in the Image Adjustment interface.

### 3.4. Fact. settings.

Restores the default factory settings of the device. Resets the alignment to the factory-made alignment.

### 4. Exit

## **WARNINGS AND CAUTIONS**

- Always remember to turn off the device when it is not in use.
- Do not disassemble, drop, open, crush, bend, deform, puncture, shred, microwave, incinerate, paint or insert foreign objects into the device: it will void your warranty.
- Protect the device from abrasive dust, steam, and corrosive gasses.
- This device contains natural rubber latex which may cause allergic reactions.
- The device is a precision electro-optical instrument and must be handled carefully.
- Do not scratch the external optical surfaces or touch them with bare fingers.

## **CAUTION**

***Failure to follow these safety instructions could result in damage to the device!***

## **3 YEAR PRODUCT WARRANTY**

This product is guaranteed to be free from manufacturing defects in material and workmanship under normal use for a period of 3 (three) years from the date of purchase. In the event a defect that is covered by the foregoing warranty occurs during the applicable period stated above, ATN, at its option, will either repair or replace the product, and such action on the part of ATN shall be the full extent of ATN's liability, and the Customer's sole and exclusive remedy. This warranty does not cover a product (a) used in other than its normal and customary manner; (b) subjected to misuse; (c) subjected to alterations, modifications or repairs by the Customer or by any party other than ATN without prior written consent of ATN; (d) special order or "close-out" merchandise or merchandise sold "as-is" by either ATN or the

ATN dealer; or (e) merchandise that has been discontinued by the manufacturer and either parts or replacement units are not available due to reasons beyond the control of ATN. ATN shall not be responsible for any defects or damage that in ATN's opinion is a result from the mishandling, abuse, misuse, improper storage or improper operation, including use in conjunction with equipment which is electrically or mechanically incompatible with or of inferior quality to the product, as well as failure to maintain the environmental conditions specified by the manufacturer. This warranty is extended only to the original purchaser. Any breach of this warranty shall be waived unless the customer notifies ATN at the address noted below within the applicable warranty period.

The customer understands and agrees that except for the foregoing warranty, no other warranties written or oral, statutory, expressed or implied, including any implied warranty of merchantability or fitness for a particular purpose, shall apply to the product. All such implied warranties are hereby and expressly disclaimed.

## **LIMITATION OF LIABILITY**

ATN will not be liable for any claims, actions, suits, proceedings, costs, expenses, damages or liabilities arising out of the use of this product. Operation and use of the product are the sole responsibility of the Customer. ATN's sole undertaking is limited to providing the products and services outlined herein in accordance with the terms and conditions of this Agreement. The provision of products sold and services performed by ATN to the Customer shall not be interpreted, construed, or regarded, either expressly or implied, as being for the benefit of or creating any obligation toward any third party of legal entity outside ATN and the Customer; ATN's obligations under this Agreement extend solely to the Customer. ATN's liability hereunder for damages, regardless of the form or action, shall not exceed the fees or other charges paid to ATN by the customer or customer's dealer. ATN shall not, in any event, be liable for special, indirect, incidental, or consequential damages, including, but not limited to, lost income, lost revenue, or lost profit, whether such damages were foreseeable or not at the time of purchase, and whether or not such damages arise out of a breach of warranty, a breach of agreement, negligence, strict liability or any other theory of liability.

## **PRODUCT WARRANTY REGISTRATION**

In order to validate the warranty on your product, ATN must receive a completed Product Warranty Registration Card for each unit or complete warranty registration on our website at [www.atncorp.com](http://www.atncorp.com). Please complete the included form and immediately mail it to our Service Center: ATN Corporation, 2400 NW 95 Ave, Doral, FL 33172.

## **OBTAINING WARRANTY SERVICE**

To obtain warranty service on your unit, End-user must notify ATN service department by calling **800-910-2862** or **650-989-5100** or via **e-mail [service@atncorp.com](mailto:service@atncorp.com)** to receive a Return Merchandise Authorization number (RMA).

When returning please take or send the product, postage paid, with a copy of your sales receipt to our service center, ATN Corporation at the address noted above. All merchandise must be fully insured with the correct postage; ATN will not be responsible for improper postage or, missing or damaged merchandise during shipment.

When sending product back, please clearly mark the RMA# on the outside of the shipping box. Please include a letter that indicates your RMA#, Name, Return Address, reason for service return, Contact information such as valid telephone numbers and/or e-mail address and proof of purchases that will help us to establish the valid start date of the warranty. Product merchandise returns that do not have an RMA listed may be refused or a significant delay in processing may occur.

Estimated Warranty service time is 10-20 business days. End-user/customer is responsible for postage to ATN for warranty service. ATN will cover return postage/shipping to continental USA end-users/customers after warranty repair only if product is covered by aforementioned warranty. ATN will return product after warranty service by domestic UPS ground and/or domestic mail. Any other requested, required or international shipping method the postage/shipping fee will be the responsibility of the end-user/customer.

## **BATTERY**

- The improper use or replacement of the battery may result in explosion hazard. Replace with the same battery type only.
- The removable battery is 1 cells of type 18650. The rated voltage is 3.6 VDC.
- Use only batteries provided by a qualified manufacturer.
- DO NOT place the device near heating or fire source. Avoid leaving the device on heated surfaces under direct sunlight.
- DO NOT place the device within the reach of children.



For customer service and technical support, please contact

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