P/N 830-0079-0
OSR 14-S-1518

NIVISYS™ LLC

OPERATOR MANUAL

UTAC™ Series

Thermal Acquisition Clip-on

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OPERATOR MANUAL

for

UTAC Series

Thermal Acquisition Clip-on

PART NUMBER	MODEL DESCRIPTION (LENS, CORE)
3425-000	PHOENIX-C (19mm, 25µ)
3420-000	UTAC-16cS (19mm, 25µ)
3427-000	UTAC-16iS (19mm, 25µ)
4205-000	UTAC-32cM (35mm, 25µ)
4207-000	UTAC-32cM (35mm, 17µ)
4210-000	UTAC-32iM (35mm, 25µ)
4212-000	UTAC-32iM (35mm, 17µ)
4216-000	UTAC-32cL (50mm, 25µ)
4218-000	UTAC-32cL (50mm, 17µ)
4221-000	UTAC-32iL (50mm, 25µ)
4305-000	UTAC-64cM (35mm, 17µ)
4310-000	UTAC-64iM (35mm, 17µ)
4316-000	UTAC-64cL (50mm, 17µ)
4321-000	UTAC-64iL (50mm, 17µ)

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ADVISORY OVERVIEW

The following description categorizes the level of risk associated with each cautionary statement displayed throughout the manual.

WARNING

HIGHLIGHTS AN OPERATION OR PROCEDURE WHICH, IF NOT STRICTLY OBSERVED, COULD RESULT IN INJURY TO OR DEATH OF PERSONNEL.

CAUTION

HIGHLIGHTS AN OPERATION OR PROCEDURE WHICH, IF NOT STRICTLY OBSERVED, COULD RESULT IN DAMAGE TO OR DESTRUCTION OF EQUIPMENT OR LOSS OF MISSION EFFECTIVENESS.

NOTE

HIGHLIGHTS AN ESSENTIAL OPERATION, PROCEDURE, CONDITION OR STATEMENT.

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CHAPTER 1:
GENERAL INFORMATION

1.1 Introduction:

This manual provides operation and maintenance instructions for the UTAC. It also provides specifications and data on the performance of the weapon sight. To ensure the safety of the operator and the correct operation of the weapon sight it is recommended that this manual is read carefully in its entirety before any deployment or field application.

1.2 Equipment Description:

The UTAC Series from Nivisys is the latest development of our unity magnification clip-on thermal imager. This compact sight is weapon mounted forward of a day sight without any requirement to re-sight a weapon and allows for fast reaction in rapidly changing combat environments.

The UTAC provides the operator enhanced surveillance and targeting capability during night and adverse weather conditions. The UTAC is compatible with ACOG/RCO and many other traditional day sights. The superior optical design contributes to excellent image quality and the ability to maintain point of aim/ point of impact at significant ranges. The UTAC Series features Nivisys' "Accu-Zoom" technology, enabling the use of digital zoom in clip on weapon mounted sights with no loss of accuracy. This feature is protected by US patent # 9113061

The UTAC Series is offered in a variety of resolutions and objective lenses, providing a variety of fields of view and target detection ranges. The UTAC Series models include image capture to an internal memory and review of still images on the internal micro-display.

1.3 Standard Kit Parts List:

The standard UTAC kit comes with the items listed in the following table.

Item	Part No.	Description	Qty.
1	See page i for Part Numbers	Thermal Acquisition Clip-on	1
2	111-0009-0	Soft Carrying Case, Black (Note: This item not a standard issue with the -16 and Phoenix models. Instead, they are issued a green soft carrying case, PN: A3187392)	1
3	1407-501	Shoulder Strap	1
4	580-0002-0	Battery, CR123 Lithium	4
5	170-12	Cleaning Kit	1
6	3255-000	RS-16, Remote Switch (Note: This item not standard issue for the -16 or Phoenix Models)	1
7	830-0079-0	Operator Manual, UTAC	1
8	830-0080-0	Quick Reference Guide, UTAC	1
9	790-0015-0	Mount Adjustment Tool	1

Table 1-1 Standard Kit Parts List

1.4 Standard Kit Parts Illustration:

The illustration below is provided for quick identification of the standard parts of the UTAC kit.

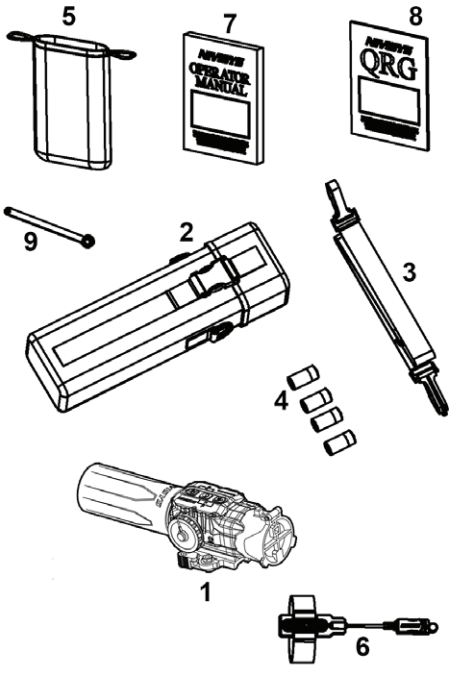

Figure 1-1 Standard Kit Parts Illustration

1.5 Optional Items List:

The UTAC is compatible with the following optional items and accessories listed in the following table.

Item	Part No.	Description
1	7B257-2F	Shipping/Storage Case
2	A3144306	Neck Cord
3	3490-000	Video Power Download Module

Table 1-2 Optional Items List

1.6 Optional Items Illustration:

The illustration is provided as a visual key to optional items that can be used with the standard UTAC.

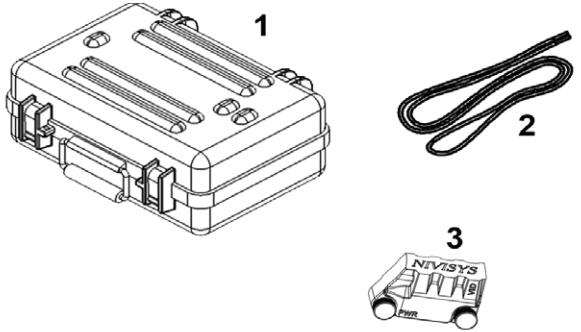

Figure 1-2 Optional Parts Illustration

1.7 System Performance and Data:

The table below lists the technical specifications and data of the UTAC system. The data contained herein is subject to change without notice.

ITEM	LIMITS		
Electrical			
Power Source	Battery (3.0V DC max.)		
Battery Requirements	CR123 Lithium (2ea.)		
Battery Life	>4 hrs @ 21°C (70°F)		
Physical			
	-S	**-M**	**-L**
Overall Dimensions (L x H x W)	14.5 x 6.6 x 6.8cm	16.9 x 6.6 x 6.8cm	22.2 x 7.6 x 7.0cm
Weight (with batteries)	487g	568g	898g
Environmental			
	"c"		**"i"**
Operating Temperature	-10º to +45º C		-40º to +55º C
Storage Temperature	-40°C to +70°C		

Table 1-3 System Performance and Data

Thermal Core				
	-16 (25μ)	**-32 (25μ)**	**-32 (17μ)**	**-64 (25μ)**
Sensor Resolution	160 x 120	324 x 256	336 x 256	640 x 480
Pixel Pitch	25μm	25μm	17μm	17μm
Sensor	Vanadium Oxide (VOx) Microbolometer Uncooled 60Hz frame rate			
Thermal Sensitivity	<50mK			
Spectral Response	7 – 14 μm			
Video Output (Optional)	Composite, NTSC			
Optical				
	-S	**-M**	**-L**	
Objective Lens Focal Length	19mm	35mm	50mm	
Objective Lens F Number	f/1.25	f/1.4	f/1.2	

Table 1-3 System Performance and Data, (cont.)

Magnification and Field of View by Model			
Model	**Pixel Pitch**	**MAG**	**FOV (H x V)**
PHOENIX-C	25µ	1.0	12° x 9°
UTAC-16cS			
UTAC-16iS			
UTAC-32cM			13° x 10°
UTAC-32cM	17µ		9° x 7°
UTAC-32iM	25µ		13° x 10°
UTAC-32iM	17µ		9° x 7°
UTAC-32cL	25µ		9° x 7°
UTAC-32cL	17µ		6.5° x 5°
UTAC-32iL	25µ		9° x 7°
UTAC-64cM	17µ		18° x 13°
UTAC-64iM			
UTAC-64cL			12° x 9°
UTAC-64iL			

Table 1-3 System Performance and Data, (cont.)

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CHAPTER 2:
PREPARATION FOR USE

2.1 Introduction:

This section contains instructions for installing and attaching various components and accessories to the UTAC for operation under normal conditions.

2.2 Battery Precautions:

WARNING

DO NOT MIX OLD AND NEW BATTERIES. DO NOT MIX BRANDS OF BATTERIES. DO NOT MIX DISPOSABLE AND RECHARGEABLE BATTERIES. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN DEATH, INJURY OR IMPOSITION OF LONG-TERM HEALTH HAZARDS.

WARNING

INSPECT BATTERIES FOR BULGING PRIOR TO USE. IF THE BATTERY SHOWS SIGNS OF BULGING, DO NOT USE.

WARNING

DO NOT HEAT, PUNCTURE, SHORT CIRCUIT, ATTEMPT TO RECHARGE OR OTHERWISE TAMPER WITH THE BATTERIES. TURN OFF THE UTAC IF THE BATTERY COMPARTMENT BECOMES UNDULY HOT. IF POSSIBLE, WAIT UNTIL THE BATTERIES HAVE COOLED BEFORE REMOVING THEM.

CAUTION

OBEY THE BATTERY MANUFACTURER'S DIRECTIONS FOR BATTERY DISPOSAL.

2.3 Battery Installation:

The electronic circuit is powered by two (2) Lithium CR123 cells. Install the batteries as follows.

1. Remove the battery cap by turning it counter-clockwise.
2. Check to ensure the orange o-ring is present and undamaged. Replace o-ring if necessary.
3. Insert batteries into the battery compartment, negative (-) ends first, positive ends toward the battery cap.
4. Replace battery cap, turning it clockwise until a stop occurs. When fully engaged the orange o-ring should no longer be visible.

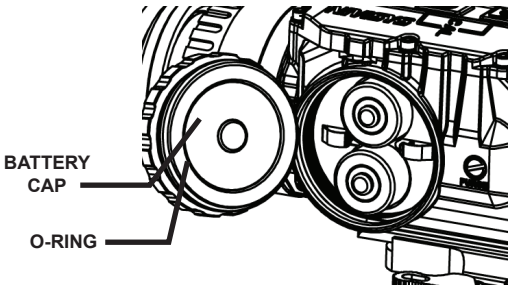

Figure 2-1 Battery Installation

2.4 Coupling Hood Installation:

When the UTAC is used as a clip-on sight, the hood blocks out stray light between the two optical sights. When the UTAC is

used as a hand held thermal device, the hood may be folded back and used as an eyecup. Perform the following procedure to install the hood onto the collimating lens of the UTAC.

1. Hold the hood near the circular opening.
2. Place the hood over the large beveled diameter of the collimating lens.
3. Push and stretch the hood completely over the entire collimating lens.
4. Rotate the hood so that “Nivisys” in located on top of the unit.

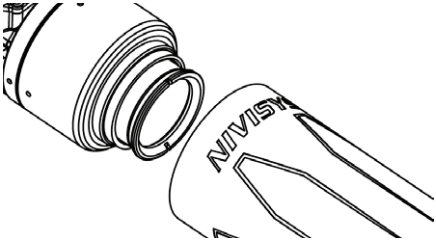

Figure 2-2 Hood Installation Alignment

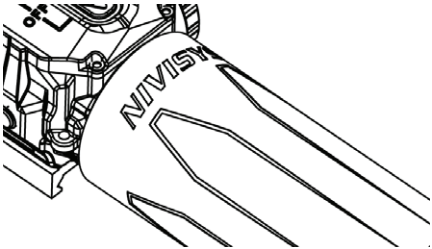

Figure 2-3 Hood Installation Complete

2.5 19mm Lens Cover Installation:

The UTAC units are issued with the lens covers pre-installed. In the event installation or re-installation is necessary, perform the following procedure.

1. Close the lens cover assembly.
2. Press the lens cover assembly onto the lens housing of the objective lens.
3. Gently rock the lens cover assembly back and forth while continuing to press firmly onto the lens housing.
4. The lens cover is fully seated as the rear edges of the lens housing and lens cover assembly meet.

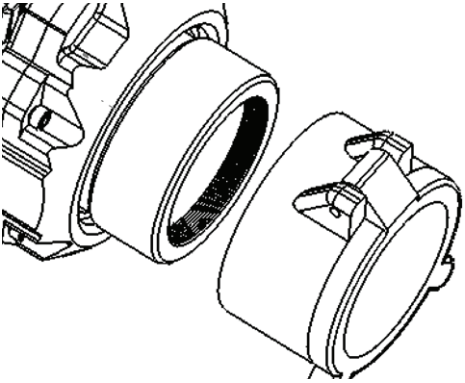

Figure 2-4 19mm Lens Cover Installation

2.6 35mm Lens Cover Installation:

The UTAC units are issued with the lens covers pre-installed. In the event installation or re-installation is necessary, perform the following procedure.

1. Close the lens cover assembly.
2. Ensure the lens cover catch is facing up.
3. Press the lens cover assembly onto the objective lens.
4. Gently rock the lens cover assembly back and forth while continuing to press firmly onto the objective lens.
5. The lens cover is fully seated as the lens cover base and the UTAC body meet.

NOTE

PROPER INSTALLATION OF THE LENS COVER MATCHES THE PROFILE OF THE LENS COVER BASE TO THE PROFILE OF THE UTAC BODY.

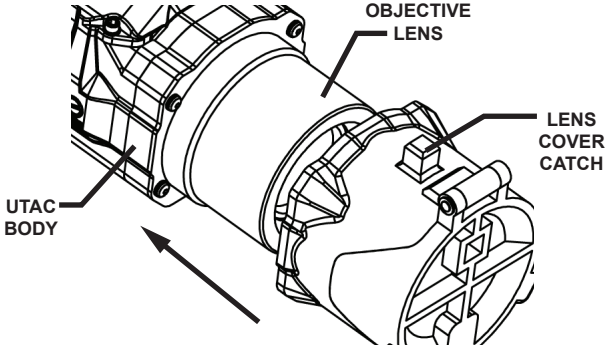

Figure 2-5 35mm Lens Cover Installation

2.7 50mm Lens Cover Installation:

The UTAC units are issued with the lens covers pre-installed. In the event installation or re-installation is necessary, perform the following procedure.

1. Stretch the lens cover base over the lens housing.
2. Push the lens cover base onto the lens housing until it is securely seated.
3. Ensure the lens cover operates properly before use.

NOTE

THE 50MM LENS COVER CAN BE ROTATED FOR OPERATOR PREFERENCE.

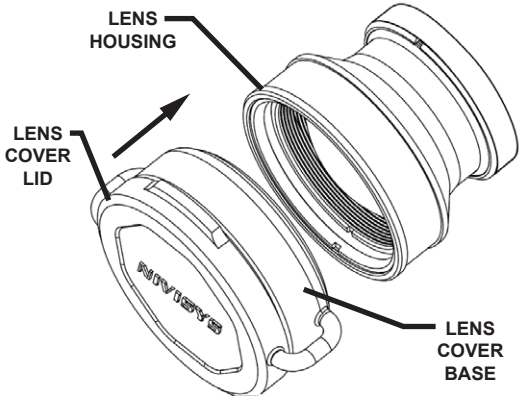

Figure 2-6 50mm Lens Cover Installation

2.8 Weapon Mount Installation:

The UTAC units are issued with the throw lever mount pre-installed. When installation or reinstallation is necessary, perform the following procedure.

1. Arrange the weapon mount v-block so that it sits in the receiving v-block of the weapon mount adapter.

NOTE

WHEN THE WEAPON MOUNT IS CORRECTLY ATTACHED, THE THROW LEVER WILL BE ON THE BATTERY CAP SIDE OF THE UTAC.

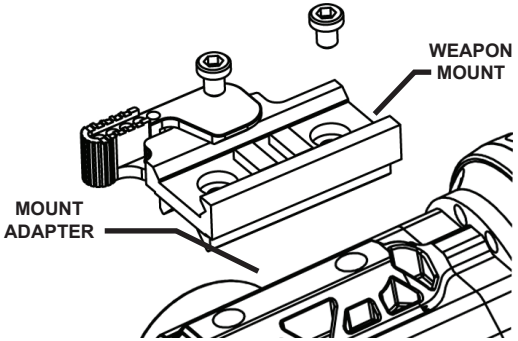

Figure 2-7 Weapon Mount Installation

2. Using a 3/32” hex key, fasten the throw lever mount onto the mount adapter using 2 ea. 10-32 x .375” socket low-head cap screw. (Loctite 242 is recommended.)
3. Ensure that the mount is securely fastened to the weapon

before firing.

2.9 Attaching the UTAC to a Weapon:

To attach the UTAC to a MIL-STD-1913 rail system perform the following procedure.

NOTE

WHEN USING AS A CLIP-ON, MOUNT THE UTAC IN FRONT OF THE DAY SIGHT. TO ENSURE THE BEST PERFORMANCE, THE UTAC SHOULD BE MOUNTED AS CLOSE AS POSSIBLE TO THE DAY SIGHT WITHOUT TOUCHING.

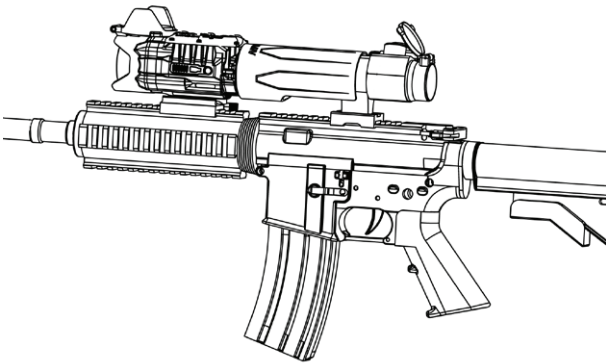

Figure 2-8 UTAC Mounted as a Clip-on

1. Ensure that the mount is securely fastened to the UTAC.
2. Set the slide lock to the unlocked position by pulling it back.

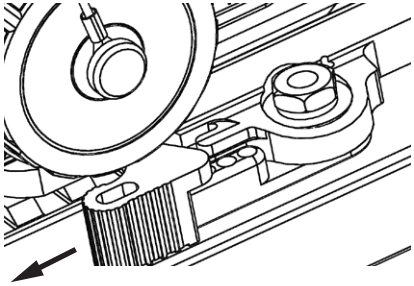

Figure 2-9 Slide Lock in Unlocked Position

3. Rotate the throw lever mount to the open position.

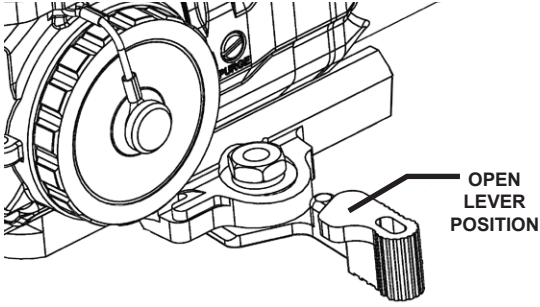

Figure 2-10 Throw Lever in Open Position

4. Place the UTAC on the rail system of the weapon so that it seats squarely on the rail.
5. Rotate the throw lever to the closed position.

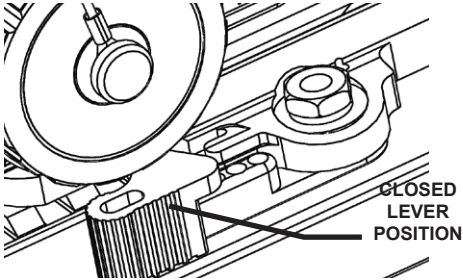

Figure 2-11 Throw Lever Closed

6. Secure the slide lock to the locked position by pushing it forward.

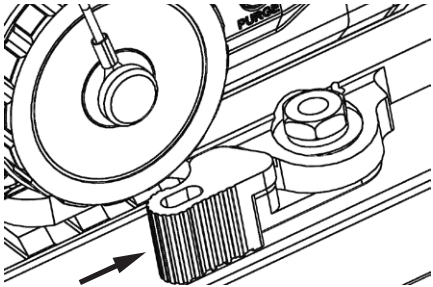

Figure 2-12 Throw Lever Mount Closed and Locked

7. If needed, tighten the tension of the locking lever with the provided mount adjustment tool. Turning the locknut clockwise makes it more difficult to open or close the

levers. Turning the locknut counter-clockwise makes lever positioning easier.

NOTE

LOCKNUT REQUIRES ONLY SLIGHT MOVEMENT FOR TENSION ADJUSTMENT.

CAUTION

NEVER REMOVE THE LOCKNUT.

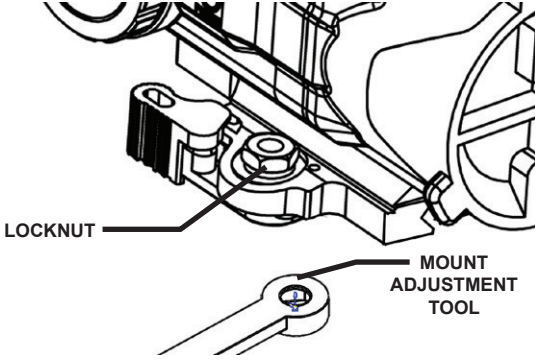

Figure 2-13 Locknut Adjustment

2.10 Calibrating the ACCU-ZOOM feature:

Calibrating the Accu-Zoom does not involve live firing and should be performed when the UTAC is being used as a clip-on in front of weapon mounted day sight. Accu-Zoom is a Nivisys patented feature that aligns the digital zoom center to the day sight reticle for accuracy in the 2X or higher digital zoom mode. Once the procedure is finished, the thermal sight can be removed and replaced without having to realign. If the day sight is moved or replaced, perform the Accu-Zoom procedure again.

NOTE

ACCU-ZOOM CALIBRATION IS REQUIRED AS A ONE-TIME PROCEDURE PRIOR TO FIRST USE AND EVERY TIME THE DAY SIGHT PLATFORM IS CHANGED.

1. Place the UTAC ahead of the day sight on the Picatinny (1913) Rail.
2. Ensure the UTAC is in 1X digital zoom mode with the lens cap closed.
3. Looking through the day sight, select AZ from the RETICLE sub-menu so the dot reticle appears.

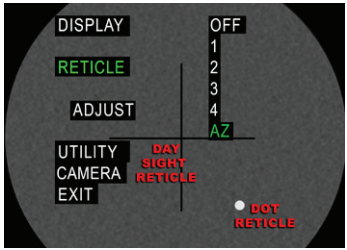

Figure 2-14 Select AZ

NOTE

THE VERTICAL AND HORIZONTAL AXIS WILL NOT APPEAR WHEN ADJUSTING THE ACCU-ZOOM (DOT) RETICLE.

4. Align the dot reticle horizontally (H) and vertically (V) with the center of the day sight reticle by using front and rear buttons.

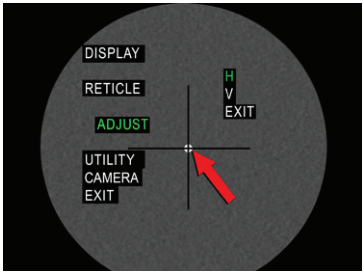

Figure 2-15 Select Adjust

5. Select EXIT.
6. The UTAC is now bore-sighted to the day optic for both 1X and digital zoom modes.

NOTE

THE ACCU-ZOOM (DOT) RETICLE MAY BE TURNED OFF IF DESIRED. SELECT OFF FROM THE RETICLE MENU

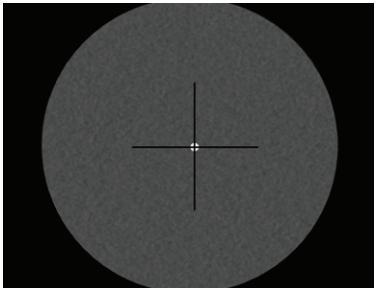

Figure 2-16 Accu-Zoom Complete

2.11 Installing the Remote Switch to the UTAC:

The RS-16 is a 16” remote switch that is issued standard to the UTAC kit. To install the remote switch perform the following procedure:

CAUTION

THE RS-16 REMOTE SWITCH IS NOT DESIGNED FOR IMMERSION OR UNDERWATER OPERATIONS.

CAUTION

ENSURE THAT THERE IS NO WATER, DUST OR DEBRIS IN THE CONNECTOR BEFORE ATTACHING THE REMOTE SWITCH.

NOTE

THE RS-16 CAN BE INSTALLED WHEN THE UTAC IS EITHER ACTIVATED OR DEACTIVATED.

1. Move the hot shoe dust cover so that it is out of the way of the connector.
2. Align the mating connectors and push the remote switch into the hot shoe receptacle.
3. Tighten the thumbscrews.

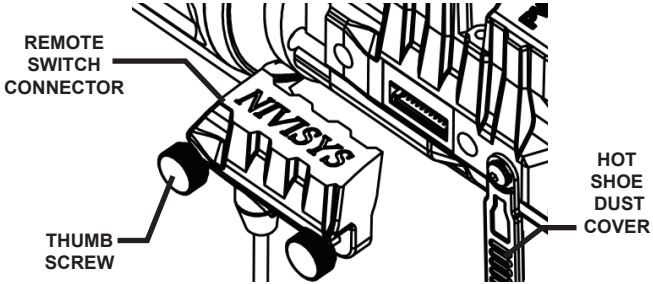

Figure 2-17 Remote Switch Installation

2.12 Attaching the Remote Switch to the Weapon:

The remote switch comes with the hook and loop tape preinstalled. When replacement is necessary perform the following procedure.

1. Determine the best placement of the remote switch to the weapon.
2. Starting from the label side, feed the hook and loop tape into one of the slots in the keypad housing.
3. Fold approximately two (2) inches of the hook and loop

tape onto itself and press firm.

4. Place the keypad housing on the weapon so that its cord travels onto the weapon heading toward the UTAC.

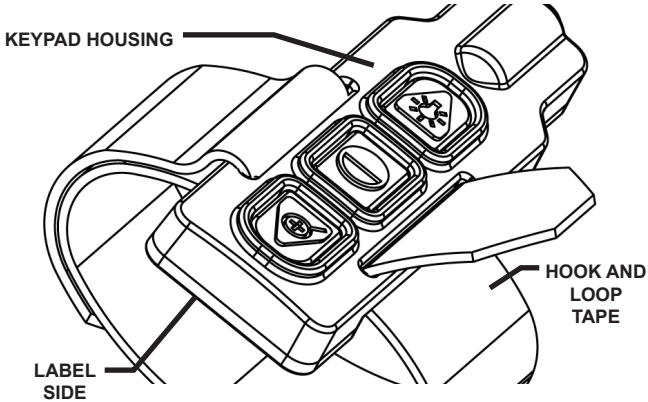

Figure 2-18 Hook and Loop Installation

NOTE

ENSURE THAT THE SMOOTH SIDE FACES THE BUTTONS OF THE KEYPAD HOUSING SO THE HOOK AND LOOP CAN ADHERE TO ITSELF WHEN FOLDED OVER.

5. Wrap the loose hook and loop tape around the weapon and feed the tape through the remaining open slot in the keypad housing.
6. Cinch tight and fold the hook and loop tape back onto itself.

7. Trim any excess.
8. Check for a secure attachment before use.

CAUTION

REMOVE SLACK IN THE CORD TO PREVENT SNAG HAZARDS.

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CHAPTER 3:
OPERATING INSTRUCTIONS

3.1 Introduction:

This chapter contains instructions for the safe operation of the UTAC under normal circumstances and environments.

3.2 Operating Precautions:

WARNING

THE THERMAL FOCAL-PLANE ARRAY UTILIZED WITHIN THE UTAC IS SENSITIVE TO EXPOSURE TO EXTREMELY HIGH LEVELS OF RADIANT FLUX. NEVER EXPOSE THE UTAC, EITHER POWERED OR UN-POWERED, DIRECTLY TO THE SUN OR ANY OTHER SOURCE OF RADIANT FLUX THAT THE HUMAN EYE CANNOT TOLERATE.

NOTE

INADVERTENT SUN DAMAGE IS NOT CONSIDERED A DEFECT IN MATERIAL OR WORKMANSHIP, AND IS NOT COVERED IN THE PRODUCT WARRANTY.

3.3 Controls and Indicators:

The controls and indicators for the UTAC are shown in Figure 3-1 and are described in Table 3-1.

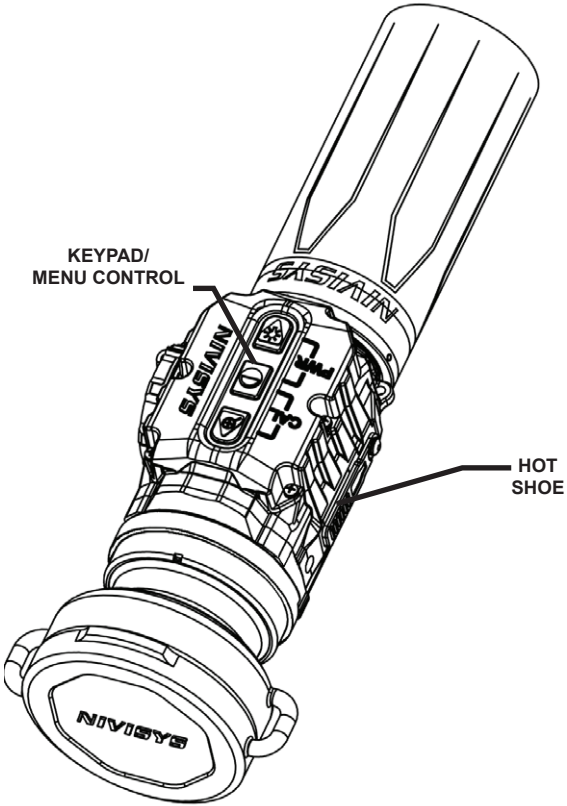

Figure 3-1 Controls and Indicators

Control and Indicators	Functions
Keypad/ Menu Control	Switches unit ON or OFF. Activates Calibration, Polarity, Display Brightness and Digital Zoom. Controls Internal Menu System such as reticle selection, azimuth and elevation adjustment.
Battery Indicator (not shown)	Icon located in the eyepiece display that shows battery life of the system.
Hot Shoe	Controls the interface between the UTAC and accessories such as the RS-16 (remote switch) and external power and video.

Table 3-1 Controls and Indicators

3.4 Powering ON the UTAC:

When the UTAC is powered ON, the circuit will energize and the start up screen will appear for a few seconds in the display. To power ON the UTAC perform the following procedure.

1. Close the objective lens cover.
2. Press and hold (approx. 2 seconds) the center and rear buttons as indicated on the keypad bezel by "PWR."

NOTE

THE OBJECTIVE LENS COVER MUST BE CLOSED WHILE POWERING ON TO ALLOW THE CALIBRATION OF THE SYSTEM. CALIBRATION IS COMPLETE WITHIN TWO SECONDS OF ACTIVATION.

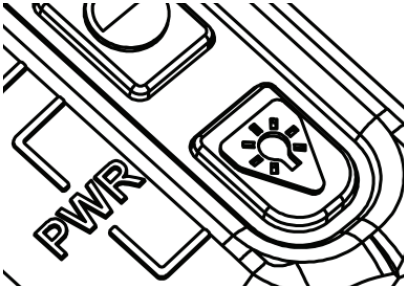

Figure 3-2 Power Buttons

NOTE
THE UNIT CANNOT BE POWERED ON USING A REMOTE SWITCH.

3.5 Battery Indicator:

To monitor available battery power, press and hold the rear button until the battery icon appears. When battery life is low, a flashing low battery indicator will appear near the center of the eyepiece display.

Figure 3-3 Battery Power Icons

Two conditions determine the length of time the unit will operate on a set of batteries:

1. The brightness setting on the display.
2. The temperature at which the unit operates.

NOTE

WHEN THE FLASHING LOW BATTERY INDICATOR APPEARS, THE UNIT HAS APPROXIMATELY 5 MINUTES OF BATTERY LIFE BEFORE AUTOMATIC SHUTDOWN.

3.6 Thermal Calibration:

The UTAC Series features shutterless core technology. For this reason the lens cover must be closed when calibrating the system. Calibration gives the user the clearest picture possible. To calibrate the system perform the following procedure.

1. Fully close the lens cover.
2. Simultaneously press the front and center buttons.

The UTAC Series will automatically perform an initial calibration at power up. For this reason it is necessary to keep the lens cover closed for a minimum of 2 seconds at power up.

A second calibration is suggested at 30 seconds after powering ON the unit. This allows the thermal sensor to adjust to the surrounding temperatures. Additional calibrations may be required as surrounding temperature changes or any time a fixed, non-uniform shading appears on the display screen.

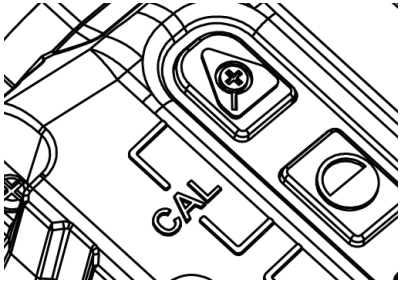

Figure 3-4 Calibration Buttons

3.7 Digital Zoom:

Press the Zoom button to cycle through the electronic zoom presets.

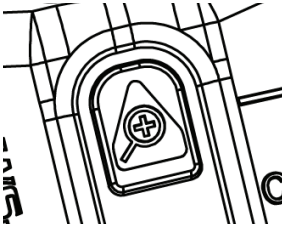

Figure 3-5 Zoom Button

3.8 Polarity (White-Hot/Black-Hot):

The UTAC Polarity button determines one of two viewing modes to identify environmental temperature differences:
HOT temperatures are seen as WHITE on the screen or
HOT temperatures are seen as BLACK on the screen.
Press the Polarity button to toggle between the viewing modes.

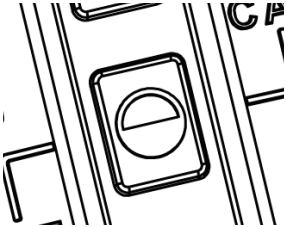

Figure 3-6 Polarity Button

3.9 Display Brightness:

When the system is first turned on, the unit activates white-hot with a midrange display brightness setting. The unit has 6 brightness settings. When adjusting the brightness, each time the Display Brightness button is pressed, the level of intensity will increase. A corresponding brightness level icon will appear in the field of view.

NOTE

AFTER THE UNIT REACHES ITS MAXIMUM BRIGHTNESS SETTING IT WILL CYCLE BACK TO ITS LOWEST SETTING.

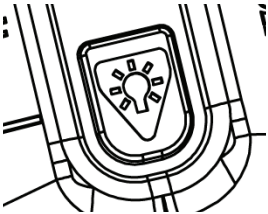

Figure 3-7 Display Brightness Button

3.10 Menu Activation and Use:

To activate Menu Mode:

1. Press and hold the center button until the menu appears on the display (approximately 2 seconds).
2. Use the front and rear buttons to scroll through the menu items.
3. Use the center button to select an item.
4. The menu mode will time out after 7 seconds of non-use, except in the Adjust sub-menu.

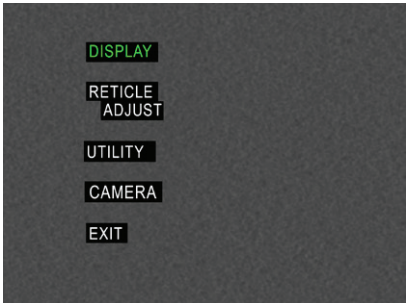

Figure 3-8 Main Menu

3.11 Selecting Display Mode:

1. Push and hold the center button until the Main Menu is displayed.
2. Press the center button to select the DISPLAY sub-menu.

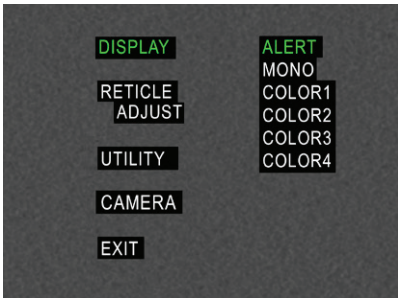

Figure 3-9 Display Sub-menu

The 6 display modes to choose from are:

- ALERT mode shows a Monochrome image with the hot spots in orange and red.
- MONO mode shows a Monochrome image.
- COLOR 1 mode shows hot as orange and cold as purple.
- COLOR 2 mode shows gradients of brown and green with hot temperatures shown in white.
- COLOR 3 mode shows gradients of white, yellows and orange with hotter temperatures in white.
- COLOR 4 is a full color spectrum with hotter temperatures in reds and orange and cooler temperatures in blue and purples.

NOTE:

WHEN ANY ONE OF THE COLOR VIEWING MODES IS ACTIVE, THE PRESSING CENTER BUTTON WILL CYCLE TO THE NEXT COLOR MODE.

3.12 Selecting a Reticle Pattern:

When the UTAC is used as a stand alone thermal weapon sight, an internal reticle is available. To choose a specific reticle perform the following:

NOTE

UPON START UP, THE UNIT WILL DISPLAY THE LAST RETICLE SELECTED BY THE USER PRIOR TO SHUTDOWN OR BATTERY REMOVAL.

1. Push and hold the center button until the Main Menu is displayed.
2. Scroll until RETICLE is highlighted.
3. Press the center button to select the RETICLE sub-menu.

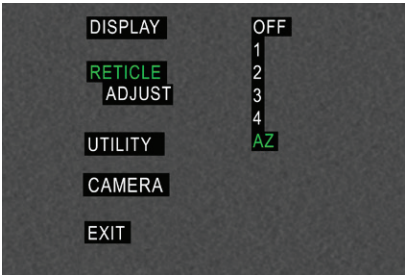

Figure 3-10 Reticle Sub-menu

4. Scroll until desired reticle appears in display.
5. Press the center button to select the reticle desired.
6. Press the center button to exit menu.

Figure 3-11 Reticle Types

NOTE

RETICLE WILL AUTOMATICALLY CHANGE BLACK/WHITE DEPENDING ON BACKGROUND TARGET TO GIVE BEST CONTRAST.

3.13 Removing Reticle:

To remove the reticle from the display screen perform the following:

1. Select OFF under the Reticle sub-menu.

NOTE

THE RETICLE TYPE AND POSITION WILL BE MAINTAINED THROUGH THE POWERING DOWN AND STARTING UP OF THE SYSTEM.

NOTE

WHEN AZ IS SELECTED, THE ACCU-ZOOM DOT RETICLE IS SHOWN. THIS RETICLE HAS INDEPENDENT AZIMUTH (H) AND ELEVATION (V) ADJUSTMENT MEMORY AND WILL BE DISPLAYED WHEREVER IT WAS LAST MOVED TO ON THE SCREEN. ADJUSTING THE POSITION OF THE AZ RETICLE WILL NOT AFFECT THE POSITION OF THE OTHER RETICLES.

3.14 Adjusting Reticle Position:

1. Push and hold the center button until the Main Menu is displayed.
2. Scroll until ADJUST is highlighted.
3. Press the center button to select the ADJUST sub-menu.

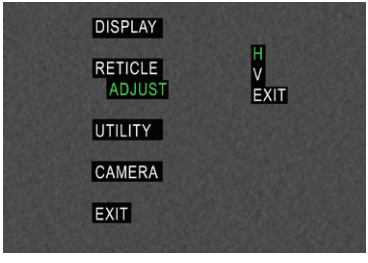

Figure 3-12 Adjust Sub-menu

4. Adjust the reticle horizontally when the H is highlighted by using the front and rear buttons.

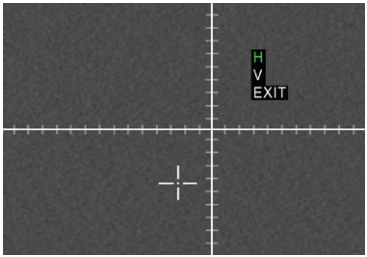

Figure 3-13 Reticle Adjustment

5. Press the center button when the desired position is reached.
6. Adjust the reticle vertically when the V is highlighted by using the front and rear buttons.
7. Select EXIT.

NOTE

EACH BUTTON PUSH MOVES THE RETICLE ONE INCREMENT. PRESS AND HOLD FOR FASTER ADJUSTMENT.

3.15 Zeroing as a Stand-alone Weapon Sight:

To zero the UTAC Series, perform the following:

1. Fix a thermal target at 100 meters distance. Ensure a sufficient thermal contrast is viewed through the UTAC Series before continuing.
2. Ensure that the weapon mount is securely fastened to the UTAC Series so there is no movement.
3. Securely fasten the UTAC Series to the weapon so there is no movement.
4. Power ON the UTAC Series.
5. Set the Digital Zoom at 2X.

6. Select a reticle type.
   NOTE: Do not use the AZ dot reticle for stand-alone weapon aiming, as zoom operation in this mode is designed for clip-on use.
7. Adjust the brightness of the display to provide a good contrast between the target and reticle image.
8. Use the center of the reticle to aim the weapon at the target and fire 3-5 rounds.
9. After clearing the weapon, visually check the center of the shot grouping on the target.
10. Find your UTAC model in the charts below. Each button press will move the Point of Impact a specific incremental distance. The data below is calculated for a target placed at 100m.
11. Make reticle adjustments as necessary according to the table below.

"c" Version Reticle Adjustment Per Click (at 100 meters)						
16cS	**32cM**	**32cM(17)**	**32cL**	**32cL(17)**	**64cM**	**64cL**
3.3cm	3.6cm	2.6cm	2.5cm	1.7cm	4.9cm	3.4cm

Table 3-2 Reticle Adjustment Per Click - "c" versions

"i" Version Reticle Adjustment Per Click (at 100 meters)						
16iS	**32iM**	**32iM(17)**	**32iL**	**32iL(17)**	**64iM**	**64iL**
2.8cm	3.0cm	2.1cm	2.2cm	1.4cm	4.1cm	2.9cm

Table 3-3 Reticle Adjustment Per Click - "i" versions

12. Fire and adjust the reticles until the center of the shot grouping and the reticle are coincident.

3.16 Determining Installed Firmware:

Perform the following to determine the firmware installed on the unit:

1. Push and hold the center button until the Main Menu is displayed.
2. Scroll until UTILITY is highlighted.
3. Press the center button to enter the UTILITY sub-menu.
4. Press the center button again to select INFO.
5. At this point the information about the system appears on the screen.
6. Press the center button again to EXIT.

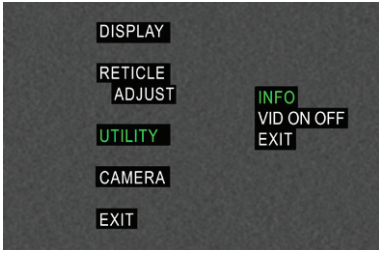

Figure 3-14 Utility Sub-menu

3.17 Enabling the Video Output (for Optional VPDM):

In order to utilize the video export feature of the unit, the video output feature must be selected from the menu.

NOTE

IT IS RECOMMENDED THAT THE VIDEO OUT SELECTION REMAINS IN THE OFF POSITION WHEN NOT IN USE IN ORDER TO MAXIMIZE BATTERY LIFE.

1. Push and hold the center button until the Main Menu is displayed.
2. Scroll until UTILITY is highlighted
3. Press the center button to select the UTILITY sub-menu.
4. Scroll until VIDEO is highlighted, then press center button to select.
5. Scroll to choose ON or OFF.
6. Press the rear button to EXIT the video enable.
7. Press the center button twice to EXIT the menu system.

3.18 Camera Operation

1. Hold the center button until the menu appears.
2. Scroll and select CAMERA.
3. Select CAPTURE to enter the camera mode.
4. Press the center button to take a picture and advance the counter located in the upper left corner of the screen.
5. Exit the Camera mode by holding down the center button and selecting CAPTURE or powering down the unit.

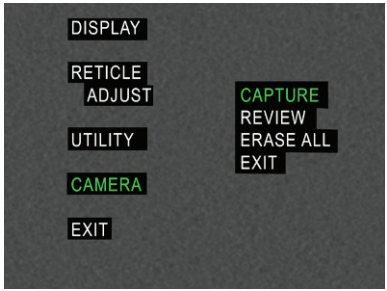

Figure 3-15 Camera Sub-menu

NOTE

THE INTERNAL MEMORY IS LIMITED TO APPROXIMATELY:
250 IMAGES FOR THE -16 MODELS
100 IMAGES FOR THE -32 MODELS
50 IMAGES FOR THE -64 MODELS

NOTE

ONCE THE MAXIMUM CAPACITY OF IMAGES HAVE BEEN STORED, THE ERASE ALL FUNCTION MUST BE PERFORMED TO CAPTURE MORE IMAGES.

3.19 Image Review

1. Hold the center button until the menu appears.
2. Scroll and select CAMERA.
3. Scroll and select REVIEW to review the stored images.
4. Use the front and rear buttons to advance through the stored images.

Figure 3-16 Image Review Counter

NOTE

THE REVIEW COUNTER IN THE UPPER LEFT CORNER OF THE SCREEN SHOWS THE SPECIFIC NUMBER OF IMAGE YOU ARE VIEWING AS WELL AS THE TOTAL NUMBER OF IMAGES CAPTURED.

5. Exit the Review mode by pressing the center button and selecting EXIT.

3.20 Downloading Images

Still images stored on the UTAC are currently exported via an analog video feed. In order to download images, the operator must have the Nivisys VPDM (Video Power and Download Module). This can be purchased as an accessory.

With a VPDM the operator can record the stored images using:

- an external DVR
- or computer equipped for analog video capture

3.21 Erasing Images

1. Hold the center button until the menu appears.
2. Scroll and select CAMERA.
3. Scroll and select ERASE ALL to erase the stored images.

NOTE

THERE IS NO WAY TO ERASE SELECTED IMAGES. ERASING IMAGES ERASES ALL STORED IMAGES AND CAN TAKE UP TO 30 SECONDS.

NOTE

THE UNIT CAN NOT BE POWERED DOWN USING THE KEYPAD WHILE ERASING IMAGES.

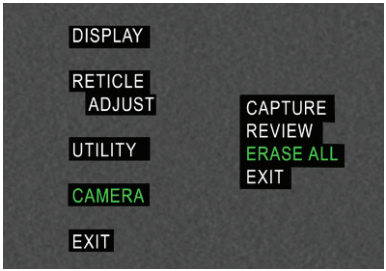

Figure 3-17 Erase All Function

3.22 Powering OFF the UTAC Series:

To power OFF the system, perform the following:

1. Simultaneously press the center and rear buttons. Visually check that the unit is OFF by looking through the eyepiece.

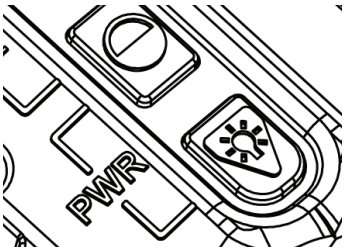

Figure 3-18 Powering OFF the UTAC Series

3.23 Use with the RS-16 Remote Switch:

The UTAC Series may be used with the supplied remote switch. When attached, all keypad functions of the UTAC Series, except for powering ON, can be executed using the remote switch.

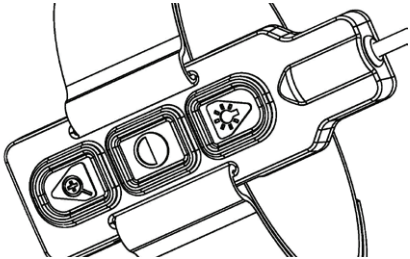

Figure 3-196 Remote Switch

3.24 Preparation for Storage:

1. Remove batteries from the UTAC Series.
2. Inspect the battery housing for corrosion or moisture. Clean and dry if necessary.
3. Replace the battery cap.
4. Install objective lens cover.

NOTE

PRIOR TO PLACING UTAC SERIES INTO CARRYING CASE, ENSURE UTAC SERIES AND CASE ARE FREE OF DIRT, DUST, AND MOISTURE.

5. Place the UTAC Series, accessories and cleaning supplies back into their storage/carrying cases. It is best to place the items in their original locations to prevent any possible damage to the unit and/or accessories.
6. Return to storage area.

CHAPTER 4:
MAINTENANCE INSTRUCTIONS

4.1 Introduction:

The UTAC is designed to be used in diverse environments and rugged conditions. It is recommended that regular and simple maintenance is performed for optimal system performance.

CAUTION

THIS WEAPON SIGHT IS A PRECISION ELECTRO-OPTICAL INSTRUMENT AND MUST BE HANDLED CAREFULLY.

DO NOT SCRATCH THE EXTERNAL LENS SURFACES OR TOUCH THEM WITH YOUR FINGERS.

WIPING DEMIST SHIELD WITH LENS TISSUE WHILE WET OR WITH WET LENS TISSUE CAN DAMAGE THE COATING.

4.2 Preparing for Maintenance:

Before performing any maintenance or cleaning of the system, remove all power sources from the UTAC including batteries and/or external power supplies.

4.3 Cleaning the UTAC:

When necessary, use a moistened clean cloth to wipe the outside of the unit, EXCEPT FOR THE OPTICAL SURFACES. Be sure to wipe away excess dirt and dust that may restrict the performance or damage moving and mating parts. If needed, the use of a very diluted detergent solution is permissible. Dry with a soft clean cloth, or allow unit to air-dry before storing it.

4.4 Cleaning the Optics:

When cleaning of the lens is required, first blow any loose dirt or grit away from the surface of the lens. Use the supplied lens tissue lightly moistened with water or lens cleaning fluid to lightly wipe the optical surfaces, using a circular motion. Discard each lens tissue after one use to avoid transferring grit or foreign matter onto the lens surfaces. If the lens remains dirty, use a cotton swab lightly moistened with lens cleaning fluid to remove the foreign matter from the lens. Dry with a clean unused lens tissue.

4.5 Checking for Damage and Corrosion:

As a general guideline, conduct an inspection of the UTAC, accessories, and the case after every use. Look for heavy wear and cracks in rubber or plastic. Inspect for moisture or corrosion in the battery compartment. Check for scratches, condensation and foreign matter on optical surfaces. Report missing or damaged items, for replacement.

CHAPTER 5:
TROUBLESHOOTING

5.1 Troubleshooting Procedures:

Table 5-1 lists common malfunctions that may occur with the equipment. Perform the tests, inspections and corrective actions in the order they appear in the table.

This table cannot list all the malfunctions that may occur, all the tests and inspections needed to find the fault, or all the corrective actions needed to correct the fault. If the equipment malfunction is not listed or actions listed do not correct the fault, notify your maintainer.

Malfunction	Test or Inspection	Corrective Action
Unit fails to power ON.	Visual.	Power OFF the system and then ON.
	Check for defective, missing or improperly installed battery.	Replace battery or install correctly. Tighten battery cap until the orange o-ring is no longer visible.
		If UTAC still fails to power ON, refer to higher level of maintenance.

Table 5-1 Troubleshooting

Flickering Image on firing.	Check for loose battery cap that may cause the battery to lose contact during weapon fire.	Tighten battery cap until the orange o-ring is no longer visible.
No display in eyepiece.	Visual check to see if lens cover is still on.	Open Lens Cover.
Poor image quality.	Check for fogging or dirt on objective lens or collimation lens.	Clean optics.
Light visible around hood.	Check hood for resiliency.	If hood is defective, refer to higher level of maintenance.
Remote Switch keypad not working.	Check to ensure connectors are free from debris, dirt and corrosion. Check to ensure hot shoe connector is completely installed into unit.	Firmly push connector into mating connector on UTAC unit and tighten thumbscrew. Clean connectors. If remote switch keypad is still not working, refer to higher level of maintenance.

Table 5-1 Troubleshooting, (cont.)

Will not zero.	Check to see if UTAC is securely fastened to weapon mount.	Tighten the weapon mount to the UTAC.
	Check to see that weapon mount is correctly and securely fastened to weapon.	Correctly and securely fasten to weapon mount to weapon.
	Check to see if zeroing is being done in digital zoom mode.	Press the digital zoom button to enter digital zoom mode when zeroing.
	Check to see if mount adapter rail is loose or missing fasteners.	Replace screws and/or tighten with appropriate driver.
		If problem persists, refer to higher level of maintenance.

Table 5-1 Troubleshooting, (cont.)

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APPENDIX A:
SPARE AND REPAIR PARTS LIST

A.1 Introduction:

This section provides information needed to identify, contact and order spare and/or repair parts for the UTAC.

A.2 Contact Information:

To order spare or repair parts for the UTAC or any other night vision products contact:

Nivisys, LLC
1465 Henry Brennan
El Paso, Texas 79936 USA

Phone: 1-480-970-3222
Fax: 1-480-970-3555

A.3 Spare Parts List:

The following is a list of parts that may be ordered for spare parts for the UTAC.

Part No.	Description	Qty.
7B257-2F	Shipping/Storage Case	1
830-0079-0	Operator Manual, UTAC Series	1
830-0080-0	Quick Reference Guide, UTAC Series	1
830-0057-0	Quick Reference Guide, RS-16	1
4200-900	Single Throw Lever Mount	1

Table A-1 Spare and Repair Parts List

790-0015-0	Mount Adjustment Tool	1
3255-000	RS-16 (Remote Switch, 16”)	1
111-0009-0	Soft Carrying Case	1
1407-501	Shoulder Strap	1
580-0002-0	Battery, CR123 Lithium (2ea. required for operation)	1
170-12	Cleaning Kit	1
4200-404	Coupling Hood	1
A3144306	Neck Cord	1
A3144315	Purge Screw	1
A3144316	Purge Screw O-Ring	1
3200-620	Battery Cap	1
784-0025-A	O-Ring, Battery Cap	1
3200-112	Hot Shoe Dust Cover	1
640-0003-0	Hook and Loop Tape, 16in	1
4200-800	35mm Lens Cover Replacement Kit	1
220-0013-0	Lens Cover	1
A3187392	Soft Carrying Case, Green	1
07-0BJ	19mm Lens Cover	1

Table A-1 Spare and Repair Parts List, (cont.)

APPENDIX B:
WARRANTY INFORMATION

Equipment Warranties And Remedy:
Seller warrants that each newly manufactured item sold hereunder and such portion of a repaired/refurbished item as has been repaired or replaced by Seller under this warranty, shall be free from defects in material or workmanship at the time of shipment and shall perform during the warranty period in accordance with the specifications incorporated herein. Should any failure to conform to these warranties be discovered and brought to Seller's attention during the warranty period and be substantiated by examination at Seller's factory or by authorized field personnel, then at its own cost, Seller shall correct such failure by, at Seller's option, repair or replacement of the non-conforming item or portion thereof, or return the unit purchase price of the non-conforming item or component. Buyer agrees that this remedy shall be its sole and exclusive remedy against Seller and that no other remedy shall be available or pursued by Buyer against Seller. In no event shall the Seller be liable for any cost or expense in excess of those described in this paragraph and expressly excluding any liability or damages for special, incidental or consequential damages.

The warranty period for newly-manufactured items shall extend 24 months from the date of shipment by Seller unless a different warranty period is agreed in writing to by Seller. The warranty period for repaired/refurbished electronic components shall extend for the unexpired warranty period or 90 days, whichever is longer, of the item repaired or replaced.

This warranty shall not extend to any item that upon examination by Seller is found to have been subject to:

A. Mishandling, misuse, negligence or accident.

B. Installation, operation or maintenance that either was not in accordance with Seller's specifications and instructions, or otherwise improper.

C. Tampering, as evidenced, for example, by broken seals, damaged packaging containers, etc.

D. Repair or alteration by anyone other than Seller without Seller's express advance written approval.

Failure to promptly notify Seller in writing upon discovery of any non-conforming item during the warranty period shall void the warranty as to such item. Buyer shall describe any such non-conformity in detail, expressing its position as to return of any article under the remedy provided herein. No returns shall be accepted without prior approval by Seller.

Return Material Authorization Number (RMA#):
Warranty and non-warranty items returned to Nivisys for repair or replacement require a RMA#. Email support@nivisys.com, call 1-480-970-3222 or fax 1-480-970-3555 with a serial number and detailed information to obtain a RMA#.

THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTY, EITHER EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

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