

# START-UP PROCEDURE

## COVER LENS ON START-UP

The REAP-IR is a high performance military grade thermal weapon sight that requires a calibration procedure to get the optimal performance out of the system. For the best results up to 3 NUC or FFC Flat Field Calibrations may be required in the first 5 minutes the system is operating.

### STEP 1.

Push in THUMB STICK which has a push-button built into it to turn on the system.

### STEP 2.

The system auto - calibrates on start-up so make sure your objective lens is covered or looking at a FLAT FIELD on start-up for the first 5 seconds. (Flat Field explained below)



### AFTER START UP - PERFORMANCE CALIBRATING.

After the first few minutes you will most likely need to perform an additional NUC / FFC Calibration.

### STEP A.

Using the thumb stick press the button unit you get to Level 1 (L1) then down to the bottom icon which says NUC.

### STEP B.

Make sure the lens is covered with the cap or you're looking at a scene where the entire screen is uniform such as a wall, the ground or your hand.

### STEP C.

Now move the thumb stick forward or backwards and the NUC / FFC calibration is performed.



NUC ICON

All thermal systems need to calibrate in order to be accurate and to have a clean image. This is done through a process called FFC or Flat Field Calibration where the sensor needs to look at a scene that has an even surface temperature, such as a wall, lens cap or even your hand.

# ON-SCREEN INFORMATION

## ACTIVE FRAME RATE

You can select 30hz or 60hz.

## MODEL INDICATOR

Will display on start-up  
REAP-IR 35.

## LEVEL INDICATOR

Pressing the button on the thumb stick will take you to the next level.

## CURRENT SELECTION

A box or line will highlight the current selected feature to indicate adjustment.



## BATTERY INDICATOR

You have up to five hours of operating time in 30hz mode and 3.5 hours in 60hz mode with two batteries. With a single battery you will have 2 hours of operating time at 30hz or 1.5 hours at 60hz with a DL123 or CR123 battery.

## MENU ICONS

You can scroll the selected icon by pushing the thumb stick up or down. The selected icon will become large to indicate that feature is the current selection. To adjust or change the selected feature you push the thumbstick forward or backwards.



## THUMB STICK OPERATION

The thumb stick is very sensitive and knows how much pressure you use so please take the time to learn how to properly control the system using this new interface. Basic operation is done with up/down and forward/back movements and by pressing the thumb stick to use the pushbutton switch.

## THUMB STICK System Controller

The thumbstick has a 4 directional movement that is used to select the icons on the screen and adjust them once they are selected, it is also a push button for system ON/OFF control.

## WILCOX INTERFACE

A built in Wilcox Show interface allows you to use the Wilcox Flip-Mount instead of the Mini D-LOC mount. The Flip-Mount is ideal for tactical teams needing instant day sight operations.

## FLIP CAP

The front lens has a built-in flip cap that can also be used for calibrating.

## EyePiece and Eyeguard

The system comes with a Mil.Spec eyepiece with full range adjustable diopter focus.



## TURNING THE SYSTEM ON/OFF

**ON** - To power up the REAP-IR simply press the thumb stick which is also a button, the system takes about 5 seconds to start.  
**ALWAYS LEAVE THE FRONT LENS COVERED DURING START.**

**OFF** - Press and hold in the button for bout 3 seconds or until you see the screen dim down and then release, the system will shut down.

## FLIP-CAP

The built-in flip-cap allows you to fast and effectively cover the lens to perform a NUC calibration. The cap also helps to protect the new GASIR lens from normal wear and tear.





**EXTENDER**  
OPTIONAL ITEM

*The Battery Extender Tube allows the user to run on 2 each batteries with over double the run time.*



**Connector**  
Download and Video Out

**Battery Label**  
Shows Battery Polarity

## REPLACING YOUR BATTERIES

The system uses 1 or 2 each CR123 type lithium batteries. As the batteries drain during operation the on-screen indicator will show you the level of the batteries. Below are samples of single and double battery icons that will display on-screen.



**SINGLE BATTERY ICON**

**RUN TIME:** 1.5 hrs at 60hz / 2.0 hrs at 30hz



**DOUBLE BATTERY ICON**

**RUN TIME:** 3.5 hrs at 60hz / 5.0 hrs at 30hz

## BATTERY CAP INSTALLATION

*Please make sure the battery cap is snug but not overtightened. The usual tightness is when the orange colored o-ring on the battery sleeve is at least half way covered by the cap.*



**Battery Cap**

## LEVEL 2 - IMAGE CAPTURE

**PLEASE NOTE** - The REAP-IR is a high performance thermal device that has an optional camera function. The camera function is second to the thermal systems so if you experience problems viewing or downloading images please reset the power and try a second time.

### CAMERA ICON

When an image is captured this icon will appear for 1 second to indicate an image was saved.

### LEVEL 2 ICONS

Please see table at bottom of page for a full description of each icon and its function.



### LEVEL 2 MENU

### ITEM DESCRIPTION

#### IMAGE CAPTURE

When selected an image will be taken if the thumbstick is moved forward or back.

#### IMAGE REVIEW

When selected captured images can be scrolled and reviewed, up or down to exit.

#### DOWNLOAD MODE

When turned on this sets the system to optimal settings for downloading images.

#### DELETE IMAGES

To delete press forward as indicated and then backwards to confirm as indicated.

## Optional Download Cable Required

### IMAGE DOWNLOAD

#### STEP 1.

Use the USB Wafer Card and attach to your computers USB Port. Open up and drag the folder named "DOWNLOADER-V1.0" to your desktop. Now remove the USB Wafer Card.



#### STEP 2.

Open the folder on your desktop and double-click on the application file named "ImageDownload" which will open the Downloader program.

#### STEP 3.

Make sure the REAP-IR is turned on. It is recommended to set the Level 2 Download Mode to "ON". Now plug the download cable into the REAP-IR and make sure the program is already open on the computer. Now plug the other end of the download cable into the computers USB Port.

#### STEP 4.

If done correctly the computer should recognize the USB and within a minute or two you should see numbers appear on the top left corner of the program screen showing how many images are stored on the REAP-IR. If you only see on the top left XXX / XXX then it is not detecting the camera. If this happens please open the included PDF instructions on the USB Card for further directions.

#### STEP 5.

If you do detect the images one should show up on the downloader as seen in the image below. Now you can view the images or you can save or delete them either one at a time or all at once. The images are .bmp format so a image converter program is included on the USB Card for easy to use conversion to other formats such as jpeg or tiff.

**COMPATIBLE WITH:**  
**WINDOWS XP**  
**WINDOWS 7**  
**WINDOWS 8**  
**WINDOWS 10**



## ON-SCREEN INFORMATION LEVEL 3 - CONFIGURATION

### LEVEL 3 ICONS

Please see table on reverse side of page for a full description and function.



### FRAME RATE - 60hz / 30hz

Please note that 60hz is always going to be a smoother image but your battery life will drop by 30% as compared to 30hz.

#### Simple Instructions:

- STEP 1** Go to Level 3 by pressing the thumb stick and you will find the FRAME RATE. Select or highlight 30HZ or 60HZ.
- STEP 2** Now turn the scope off and back on and when it powers up the system will now be in the selected frame rate.
- STEP 3** Confirm with the 30HZ or 60HZ icon in the top left corner of the screen.



# LEVEL 3 - CONFIGURATION

## FRAME RATE

The Frame Rate control allows you to set the system to run at 30hz or 60hz. At 60hz you will have 60 frames per second which is very fast but the system uses more power and your batteries will drain 30% faster. Running at 30hz saves power but for head mounted applications will present some lag.

## VIDEO OUTPUT

Turning on the Video Out will send NTSC Composite video through the optional cable. When the system starts it always has the video out turned off as the video converter drains the batteries 25% faster.

## START-UP SETTINGS

You have two options for this setting, Default and User. When you select default the system will always start-up with the factory default setting for the polarity, brightness, contrast and digital focus. By selecting the User setting the system will remember your last setting for these items and apply them when you power up the system.

## SYMBOL SLEEP MODE

The icons can be set to hide after 8 or 15 seconds by using this setting, at anytime you want to see them just press the control in any direction and they will appear. You can also select off for this setting and the icons will always stay on.

## DISPLAY AUTO DIMMER

Turning on the auto dimmer will let the system slowly turn down the display brightness at a rate you will not notice. This setting will reduce night blindness and eye fatigue.

## SYMBOL ROTATION

The REAP-IR will be used rightside up or upside down depending on whether you are using the Mini D-LOC mount or the Wilcox Flip-To-Side Mount. This setting allows you to rotate the symbols and the thumb stick settings 180 degrees.

**0°**

**Mini D-LOC  
Mount**

**180°**

**WILCOX  
Flip Mount**





## RETICLE ADJUSTMENT

### THUMB STICK - UP/DOWN

To select the Icons press the thumb stick up or down and stop when selection.

### THUMB STICK - LEFT/RIGHT

To Adjust the selected Icon press the thumb stick controller left or right.

### RETICLE POSITION READ-OUT

Shows the current reticle position in X and Y from the center of the screen.



### STEP 1.

Click the button on the Thumb Stick until you are at Level 4 as indicated on the top right corner of the screen.

### STEP 2.

Scroll down until the RETICLE LOCK icon is selected and then press the Thumb Stick left or right to set the reticle lock to OFF. Now the Icon should appear on the screen saying RETICLE UNLOCKED which means now you can adjust the reticle for boresighting.

### STEP 3.

After you shoot and determine your impact point, scroll up or down to select the Windage or Elevation Icons to adjust your windage and your elevation as needed. Please note that at 1X zoom the reticle will adjust on the screen from the center and when you are in 2x, 4x or 8x zoom the reticle stays centered and the screen adjusts up/down and left/right.

### STEP 4.

Repeat step 2 as needed to dial in your thermal sight. Please note that you will have increased adjustments when you are zoomed in. For instance in 2X mode you will have 2 times the amount of adjustment as compared to 1x.

### STEP 5.

Once you have sighted in the REAP-IR and you want to save the reticle position you can do this by clicking the button on the thumb stick to any other level. Once you have selected another level the system saves your new reticle position.

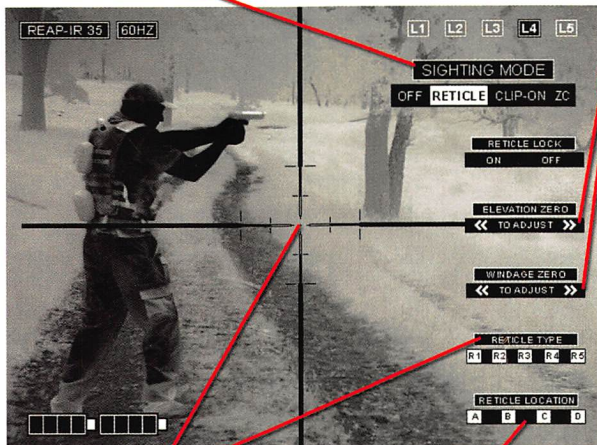
## LEVEL 4 - RETICLE

### SIGHTING MODE

Selecting sighting mode gives you 4 choices  
**"OFF"** turning off the reticle system,  
**"RETICLE"** turning on the dedicated reticle  
**"CLIP-ON"** activates the sight to clip-on mode  
**"ZC"** that allows you to align the digital zoom.

### ADJUSTMENTS

These icons control the windage and elevation adjustments for the reticle system. Once selected pressing left or right on the thumb stick will adjust.



### RETICLE PATTERN

The REAP-IR comes with five reticle patterns which can be selected by scrolling to the "RETICLE TYPE" icon. The TTR reticle is shown.

### RETICLE LOCATION

The REAP-IR has 4 different save locations for reticle positions, this feature is good if you want to use the system on different rifles..

## REAP-IR 35 MOA CLICK CHART

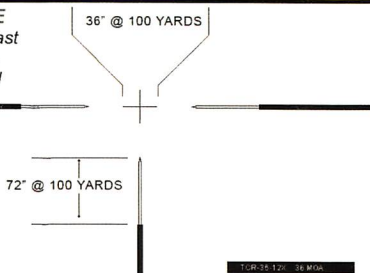
This chart defines the amount in MOA (minute of angle) that each press of the thumb stick represents when adjusting the reticle.

SENSOR	LENS SIZE	1x ZOOM	2x ZOOM	4x ZOOM	8x ZOOM
640x480	35MM	1.2 MOA	0.6 MOA	0.3 MOA	0.15 MOA

## REAP-IR RETICLE PATTERNS

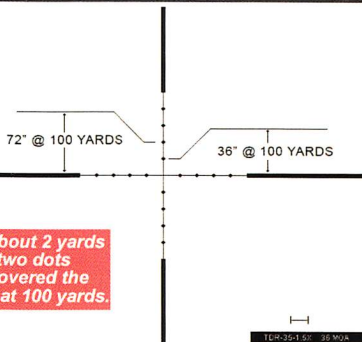
### TCR - THERMAL COMBAT RETICLE

The TCR Reticle is a simple crosshair for fast and effective aiming. The crosshair itself is exactly 36 MOA which will be 36" or 1 yard at 100 yards. The reticle is the same as a first focal plane day rifle scope meaning as you zoom in the reticle will also zoom so it remains accurate at 36 MOA.



### TDR - THERMAL DOT RETICLE

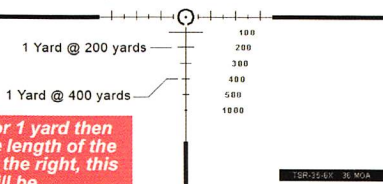
The TDR Reticle is very similar to the MILDOT except instead of it being a 1000:1 ratio it is 100:1. This works well as the distances typically shot at night are much shorter than during the day. The distance between each dot will equal 36" at 100 yards.



For example if a man sized target is about 2 yards tall and covers the distance between two dots he would be 200 yards out and if he covered the distance between 3 dots he would be at 100 yards.

### TSR - THERMAL SUBTENSION RETICLE

The TSR Reticle has a series of horizontal lines that will increase or decrease their size as you zoom in or out. Each line has a number to the right that indicates the distance in yards. The line is calibrated to represent 1 yard wide or 36 MOA at that distance.



For example if a pig is 3 feet long or 1 yard then you see which horizontal bar is the length of the pig and then look at the number to the right, this is how many yards away the pig will be.



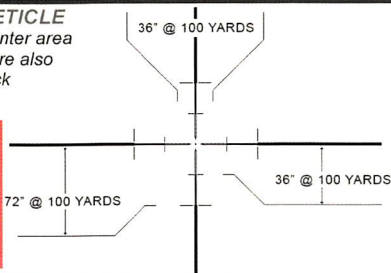
# REAP-IR RETICLE PATTERNS

## MK III RETICLES

### TTR - THERMAL TACTICAL RETICLE

The TTR Reticle has a clear open center area for fast and effective aiming. There are also several outer bands that provide quick target ballistics in all directions.

For example if a man sized target is about 2 yards tall then if at 100 yards the target would fill two segments and if at 200 yards it will fill 1 segments. Or if the target was at 50 yards it would fill all 4 of the segments.



### TMR - THERMAL MINI RETICLE

The TMR Reticle is a small precise aiming reticle that is simple and uncluttered on your display.



## RETICLE - SAVE LOCATIONS

This mode allows the REAP-IR to save up to four different reticle positions. This feature is helpful when using the REAP-IR system on multiple rifles or weapons.

### Simple Instructions:

- STEP 1** Go to Level 4 by pressing the thumb stick and you will find the RETICLE LOCATION.



- STEP 2** Now select either A, B C or D. By default all reticles will be set to the center of the screen which is X0 and Y0.

- STEP 3** When you want to set another location first go to level 4 and select another location, such as B if you selected A for your first location. Now repeat the sighting in procedure for the new location.

- STEP 4** If you need to access a saved location just go to level 4 and select that location from the menu and it will recall that reticle position.



### Clip-On instructions for use with approved day optics:

- STEP 1 Make sure your day optic is zeroed.
- STEP 2 At your zeroed range, bench your weapon with your day optic.  
(You will not need to fire the weapon to sight in the REAP-IR as a CLIP-ON)
- STEP 3 Adjust your benched weapon so that it is dead center on a target for your day optic and your target can identify with both the day optic and REAP-IR.
- STEP 4 Without moving the weapon so you don't lose alignment carefully attach the REAP-IR to the rail but try and move it as close to the day sight as you can without touching the two together.
- STEP 5 Look through the day sight and turn the eyepiece diopter until you get best focus. This is important because the more out of focus the more parallax.
- STEP 6 Go to level 4 by pressing the button on the thumb stick..
- STEP 7 Now select SIGHT MODE and adjust to highlight CLIP-ON.
- STEP 8 Now scroll down to RETICLE LOCK and select OFF.
- STEP 9 Scroll to Elevation or Windage to adjust the screen position by pressing left or right on the thumb stick. Adjust until your on target with the thermal.
- STEP 10 Now click the button to another level which will initialize a save.
- STEP 11 Remove the REAP-IR and confirm that your day optic is still on target to confirm that you did not bump the gun during the process.
- STEP 12 Reattach the REAP-IR and cycle the power, now go back to CLIP-ON mode from level 4 and confirm that it saved the position and that the REAP-IR is still on target.
- STEP 13 Move your head slightly left to right and check to see your parallax is acceptable, some day optics might create a fair bit. You should be sighted.



### MINI CROSS HAIR

This tiny reticle is used to align with the center of your day optics reticle and is adjusted similar to the dedicated reticle system.

### ZC MODE

Selecting the **SIGHTING MODE** and adjusting it to **ZC** will activate the Zoom Centering feature and a screen similar to this one appears.

ZC or Zoom Center is used to mark the impact point of your day optics reticle so that when you use the digital zoom in the REAP-IR in CO mode it zooms correctly from the center of the reticle and not the screen center.

**PLEASE NOTE - The ZC or Zoom Center should only be done after the REAP-IR has already been aligned with your day optic. If you re-adjust your CO Clip-On mode you need to readjust ZC again.**

- STEP 1** Click the button on the thumb stick until you reach level 4 and then select the **SIGHTING MODE** icon and adjust it to **ZC** which when done will make a mini crosshair appear on the screen.
- STEP 2** Now go to **RETICLE LOCK** and select **OFF** to unlock the reticle.
- STEP 3** Select and use the **WINDAGE** and **ELEVATION** adjustments to move and position the mini crosshair to line up with the reticle in your day optic.
- STEP 4** Exit by pressing the button and going to another level which will initialize a save to record the position into memory. Now that you have aligned the **ZC** crosshair you have let the REAP-IR know where your day optic reticle impact point is so it can zoom accurately.



# REAP-IR LEVEL 5 - RANGING ON-SCREEN INFORMATION

## TARGET SIZE

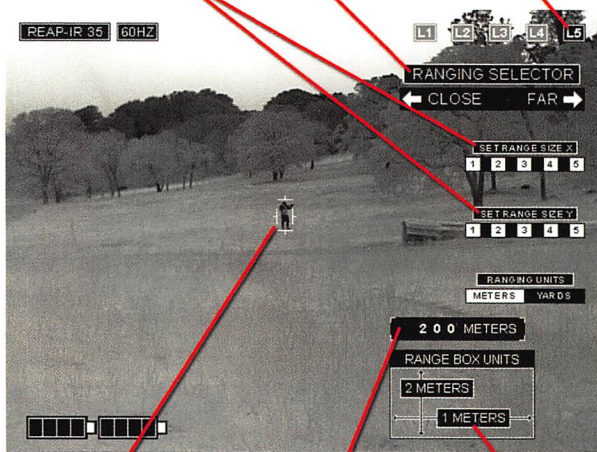
These icons are used to set your target size such as a man sized target which would be X 1 and Y 2.

## RANGE SET ICON

Moving the thumb stick forward or back will adjust the range marks that will increase or decrease the distance in the Range Read-Out.

## LEVEL INDICATOR

All the range data and read-outs is located on Level 5 in the REAP-IR.



## RANGING MARKS

These marks are used to determine the range of a target by adjusting the range selector until the marks are set to either the vertical or horizontal dimension of the target.

## RANGE BOX

The Range Box shows you what the range marks are set to. To set the units and the size please go to level 8 for adjustments.

## RANGE READ-OUT

This box will display the range to target when the units and range box are correctly configured.

## RECOMMENDATION

Try testing the ranging system on a known target size at a known distance which will allow the user to be familiarized with the system.

# REAP-IR LEVEL 5 - RANGING

## RANGING - STADIAMETRIC

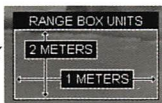
*This mode allows the REAP-IR to accurately range targets.*

### Simple Ranging Instructions:

- STEP 1** In order to accurately range your target you need to know either the length or height of the target you are ranging.
- STEP 2** Press the thumb stick until you are on Level 5 as indicated in the top right corner of the screen. Now on Level 5 set the **RANGE UNITS** to either yards or meters and then set the **SET RANGE SIZE X** and **Y** to your target size.



- STEP 3** Now go to the **RANGE SELECTOR** and press either forward or back and in the bottom right corner you will be able to confirm the settings in the **RANGE BOX** which will display the same values you set.  
(image shows 2 meters tall and 1 meter wide)



- STEP 4** Staying on level 5 you can now adjust the **RANGE SELECTOR** which will have an icon the reads **< CLOSE FAR >**. By pressing the thumb stick forward or back you will increase or decrease range. The range marks will move inward or outward as you adjust while at the same time the Range Read Out will increase or decrease the displayed distance.



- STEP 5** If you entered the correct values for your height or length and you know the size of your target then the correct range should now appear in the **RANGE READ-OUT** display.



## APPLICATION NOTE

For example if a man sized target is approximately 6 feet tall or 2 yards then you would set the height in the configuration page to 2. The range marks are now set for 2 yards and if you place them from head to toe of a person then the **RANGE READ-OUT** should display the correct distance.