

Bushnell®

EQUINOX™ 

DIGITAL NIGHT VISION

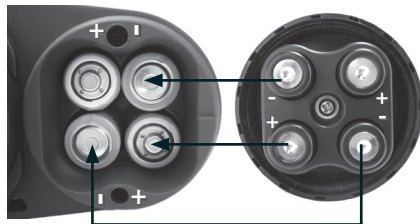
4.5x40 / 6x50

INSTRUCTION MANUAL

Model #s: 260140 / 260150

12-13

PARTS AND CONTROLS GUIDE



Observe battery polarity marks inside battery compartment when inserting batteries, and ensure polarity marks on cap match polarity in battery compartment when replacing cap (+ to + and - to -).

Under Interface Cover Flap



ABOUT BUSHNELL® EQUINOX Z™ DIGITAL NIGHT VISION

Congratulations on the purchase of your Bushnell® Equinox Z™ Digital Night Vision. Comprised of high quality electronics and optics, the Bushnell Equinox Z is a hand-held digital night vision viewing system that utilizes an infrared sensitive CMOS sensor, providing edge-to-edge resolution and outstanding image quality. Fully multi-coated optics increase light transmission and decrease glare. The Equinox Z 4.5x40 and 6x50 Digital Night Vision monoculars are versatile enough for many applications including hunting, camping, boating/fishing, caving, paintball, stargazing, rescue/recovery, security surveillance, law enforcement, and video recording in continuously changing light conditions – from dawn to absolute darkness. Not only can you view your subject at night, you can also record its image as a still photo or video clip, and store it on micro SD card. The 4.5x40 and 6x50 Equinox Z Digital Night Vision units also include a video output port **(G)** (user switchable to NTSC or PAL standard), which allows connection to video or computer equipment for recording or "live" monitoring. A built-in accessory mounting rail **(N)** enables the user to attach a more powerful IR illuminator or other compatible accessories.

HOW DIGITAL NIGHT VISION WORKS

Bushnell Digital Night Vision products collect existing light through the objective lens. The image is then processed through a digital CMOS sensor module and transferred to the micro liquid crystal display (LCD). Images viewed on the LCD are magnified 4.5 or 6 times (depending on model). Equinox Z Digital Night Vision models are equipped with a built-in powerful IR (infrared) illuminator **(D)** that enables clear viewing in low ambient light conditions or even total darkness.

CONTROLS /FUNCTIONS

POWER BUTTON (A)

The Power button (Power icon) turns the unit on or off.

- Press and hold the power button for 2 seconds to turn the unit ON
- Press and hold the power button for 2 seconds to turn the unit OFF

DIGITAL ZOOM BUTTONS (B)

The “+” and “-” buttons adjust the digital zoom power, with a range of 1.0x to 3.0x.

The displayed numbers represent a multiplication factor over the fixed optical magnification of the unit (4.5x or 6x, depending on model).

Maximum effective magnification = 3.0 x 4.5 (13.5x) for the 4.5x40 model, and 3.0 x 6.0 (18x) for the 6x50 model.

- Pressing and releasing the “+” button will gradually “zoom in” to the subject in view, by 0.1x increments
- Pressing and holding the “+” button will rapidly zoom in, until the maximum 3.0x magnification factor is reached
- Pressing and releasing the “-” button will gradually “zoom out” from the subject in view, by 0.1x increments
- Pressing and holding the “-” button will rapidly zoom out, until the digital zoom returns to the starting point of 1.0x (no digital zoom applied, view represents the original 4.5x or 6x optical magnification)

IR BUTTON (C)

The “IR” button turns on/off the Infrared LED illumination (D) for low light operation, and is also used to reduce its brightness if necessary.

- Press and release the “IR” button to turn on the infrared LED light (D) when ambient light levels are too low to provide good viewing quality. The IR illumination will be at “100%” level when first turned on, and the display will indicate “IR3”(6x model) or “IR2”(4.5x model). The 6x50 model has 3 IR brightness settings, the 4.5x40 model has 2 IR brightness settings.
- Press the “IR” button a second time to reduce the IR LED brightness level when viewing subjects at close range to avoid glare or “washout” of the image. The display will indicate “IR2”(6x model) or “IR1”(4.5x model). Press “IR” again if necessary on the 6x model, to reduce the IR LED brightness to its lowest setting, indicated by “IR1” in the display.

- Press the “**IR**” button again to switch off the IR LED light. “**IRO**” will be shown at the lower center of the display. Switching off the IR LED when ambient light levels are adequate for viewing without it (full moon, near streetlights, etc.) will extend battery life and running time. Press the “**IR**” button once again to switch to DAY Mode-no IR value will be indicated.

IMAGE BRIGHTNESS BUTTON (E)

The Image Brightness (Sun Icon) button can be used to change the digital imaging frame rate, producing a brighter image for viewing or recording.

- Pressing the Brightness (Sun icon) button repeatedly will cycle through the available frame rates, beginning with the default frame rate (fastest), until the last (slowest, brightest) frame rate is reached. After that, the next press of the button returns back to the original fastest rate. The default, fastest frame rate in Night Mode is 25fps. Pressing the Brightness button cycles through the other frame rate settings, with the third press returning to the default again: 25fps>15fps>8fps>25fps>etc.
- In Day Mode, the default frame rate is 30fps. The frame rate cannot be changed in Day Mode, therefore the Brightness button will have no effect. The display is a color LCD, and images will appear in color in daytime use, or in strong artificial lighting conditions.

NOTE: selecting frame rates lower than the default 25fps in Night Mode will provide a brighter image, however the decreased frame rate may cause moving subjects to appear less smooth or stable when viewed.

RECORD BUTTON (F)

The Record button is used to capture still photos or videos of the image being viewed, dependent on the setting of the Photo/Video switch. The photos and/or videos are stored on a (user supplied) micro SD card, with up to 32GB capacity. The unit has no internal memory.

- When the unit is in Photo Mode, pressing the record button will take a single photo of the displayed image, standard .jpg format, at a resolution of 640x480 pixels.
- When the unit is in Video Mode, pressing the record button will start a new video recording. The Record icon in the display will begin flashing, and the Video Time display will increase as the recording continues. Video is captured in .avi format at a resolution of 640x480 pixels per frame (VGA).
- To stop recording in Video Mode, press the Record button again.

(The following items are located on the bottom of the unit, under the Interface Cover Flap)

PHOTO/VIDEO SWITCH (J)

The Photo/Video slide switch under the Interface cover flap determines whether still photos or videos are captured when using Record.

- Set the switch to the "Photo" position to select still photo recording mode when the Record button is pressed .
- Set the switch to the "Video" position to select video recording mode when the Record button is pressed .

MICRO SD CARD SLOT (I): a micro SD card (user supplied, up to 32GB maximum) must be inserted before it is possible to use the Record function. If a card is not inserted, the message "No Card" will be seen on the display when the unit is turned on.

USB PORT (H): connect a USB cable between this port and a PC/Mac to download photos/videos without removing the card. The Equinox Z is USB mass storage compliant.

VIDEO OUTPUT ("TV OUT") JACK (G): the "live" image as seen on the unit's display is output here. Connect the included video cable (1/8" to RCA) between this jack and a video monitor or recorder to remotely view or record the image from the night vision unit.

SETUP AND BASIC OPERATION

1) LOAD BATTERIES

Turn the battery compartment cover **(K)** in a counter-clockwise direction to remove it, and insert 4 AA batteries as indicated inside the battery compartment. Lithium AA batteries are recommended for maximum running time, but alkaline or rechargeable NiMh AAs may be used as well. **DO NOT MIX BATTERY TYPES, OR NEW AND OLD BATTERIES. Remove the batteries if the unit will be stored for a month or longer between uses.**

2) REMOVE LENS COVER, ADJUST DISPLAY (EYEPiece) FOCUS FOR YOUR VISION

Press the Power button **(A)** to turn on the unit. A battery level icon is displayed at the top right corner of the screen. While looking through the eyepiece **(M)** at the LCD display screen, rotate the eyepiece (eyecup) until the display icons or edges of the display screen appear sharp to your eye. Remove the lens cover from the front of the objective lens **(K)**. *Note: since the Equinox Z uses digital night vision technology (not analog "Gen 1", etc.), the unit cannot be damaged by exposure to normal indoor or outdoor light levels-however, you should avoid pointing it directly at the sun or other very bright light sources to avoid overloading the sensor.*

3) TURN ON IR LIGHT (IF NEEDED), ADJUST OBJECTIVE LENS FOCUS FOR SUBJECT DISTANCE

If the image is too dark to easily view (in most building interiors, and outdoors when away from artificial lighting), press the IR button **(C)** to turn on the Infrared LED light. If the image is too bright after turning on the IR light (when viewing at close range), press the IR button again to reduce the IR light level. If the image is still too dark after turning on the IR light, try pressing the Image Brightness button **(E)** once or twice to lower the frame rate of the digital sensor. If the image is not sharp, rotate the objective lens barrel **(L)** to change the focus until the subject appears sharp. *Do not re-adjust the Display (Eyepiece) Focus (as set in Step 2), unless the display icons are unsharp.*

OTHER OPERATIONS/FEATURES

- **AUTO POWER OFF**

If a button has not been pressed for 10 minutes, the display screen will drop to 50% brightness level. If no button is pressed within one minute after that, the unit will power off to extend battery life. Pressing any button quickly any time before the unit turns off will return the screen to full brightness level and reset the auto off countdown process, without changing any other settings.

- **ICON OVERLAY ON/OFF**

The user has the option to control how the icons are displayed on the LCD screen. Normally, when any button is first pressed, ALL icons are displayed for 5 seconds, but no change to the unit's settings is made (the Record and IR buttons is an exception-image capture begins immediately the first time "Record" is pressed, and the IR light turns on at the first press of "IR"). If the same button is pressed again, the button performs its function, and the display icons remain visible for 10 seconds after the last press, before turning off automatically. To display all icons constantly, press and hold the IR button for 3 seconds. Repeat to switch back to auto icon overlay (only visible for 10 sec. max following the use of a button).

- **USING THE DIGITAL ZOOM**

Press the "+" button **(B)** to zoom in. Press the "-" button **(B)** to zoom out. Hold the button down to zoom in/out rapidly. The Digital Zoom icon at the lower left corner of the display will indicate the magnification factor, from 1.0x to 3.0x (in 0.1x increments).

- **SELECTING PAL OR NTSC VIDEO OUTPUT**

The Video Output jack (**G**) is set to NTSC format (30fps TV standard in the USA, Canada, Mexico, etc.) by default. To select PAL video output (25fps) format as used in other countries, **connect the unit to your video device first**, then hold both the IR button (**C**) and Image Brightness (**E**) buttons down for 5 seconds while viewing the display through the eyepiece. When the display changes to "PAL", release the buttons. To switch back to NTSC video output format, hold both buttons for 5 seconds until the display indicates "NTSC", then release the buttons. **Note: The "Auto Off" feature is disabled when using the Video Output jack.**

CARE AND MAINTENANCE

Your Bushnell Equinox Z Digital Night Vision device was designed to provide many years of reliable service. To ensure that you get the most enjoyment out of your Digital Night Vision device, always obey the following warnings and precautions.

- Keep the device away from any heating and air conditioning vents or other heating devices, direct sunlight, and moisture.
- Always store the unit in its carrying case in a dry well ventilated space in temperature above +15°C (60° F). Do not store near heating devices. Do not store in direct sunlight or high humidity conditions (higher than 70 %).
- Clean the optical lens with camera lens cleaning supplies.
- Clean the exterior of the device with a soft clean cloth.
- Remove the batteries if the device will not be used for longer than a few weeks.

WARNING AND PRECAUTIONS

- Avoid dropping or otherwise shocking the unit. Although designed for rugged outdoor use, this device incorporates sophisticated digital circuitry which could be damaged in extreme cases of misuse.
- Do not open the body of the device or otherwise attempt to service this device.
- Never pour alcohol or any other liquids directly onto the lens surfaces.
- Do not clean lenses and unit surfaces with paper based products, such as newspaper, textbook paper, etc. as it can damage the coating.
- Avoid removing the eyepiece as the LCD display could become damaged.
- Do not leave the device in direct sunlight or rain. The unit is water resistant, but is not designed for prolonged exposure to moisture and cannot be submerged in water.
- After the unit is operated in temperatures below zero, wait at least 3 hours at room temperature, to avoid condensation accumulating on the internal lens surfaces and the consequent fogging caused by extreme temperature differences.

DISPLAY ICONS

The photo count, remaining record time, and SD card status will be displayed here

Photo Count

When the device is in Photo mode, the number of photos remaining (memory available) will be displayed (5 digits)

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Remaining Recording Time

When the device is in Video mode and **not** recording, the remaining recording time will be displayed (hrs/min/sec)

00:00:00

Elapsed Recording Time

When the device is in Video mode and recording, the elapsed recording time will be displayed (hrs/min/sec)

00:00:00

No SD Card

When an SD card is not present in the card slot, the "NO CARD" message will be displayed

NO CARD

Record Indicator

When recording in Video mode, the Record indicator is displayed here.

HH:MM:SS



Battery Level

This icon indicates the remaining battery power level

Zoom Factor

The Digital Zoom magnification factor is displayed here, in 0.1x increments, from 1.0x~3.0x

1.6x

IR1



IR Setting

The IR LED light status is displayed here.
IR3(6x)/IR2(4.5x)=Normal, IR2(6x)/IR1(4.5x)=Low,
IR1(6x only)=Very Low, IR0=OFF, No icon=DAY Mode

Image Brightness Setting

The Image Brightness (frame rate) setting is displayed here. OFF=Day/30fps, LOW=Night/25fps, MED=Night/15fps, HIGH=Night/8fps



OFF



LOW



MED



HIGH

TROUBLESHOOTING

Unit does not turn on

1. Reinstall the batteries, making sure of the correct polarity (+/- terminals) orientation (*refer to the Parts and Controls Guide page*).
2. Replace all batteries.
3. Clean the battery compartment, especially the contact points.

Observed image is too bright

The ambient light level is too high, and/or the IR light is at 100% level (6x model: **IR3**, 4.5x model: **IR2**).

1. If you are using the IR light, press the IR button (**C**) to select a lower illumination level (6x model: **IR2** or **IR1**, 4.5x model: **IR1**).
2. Turn off the unit or place the objective lens cover over the lens.

Observed image is too dark

The ambient light level is too low.

1. Press the IR button (**C**) to activate the Infrared Light.
2. Press the Image Brightness button (**E**) to select a lower frame rate from the digital sensor.

Image is blurry

1. Re-focus by adjusting the objective lens (**L**). Adjust the diopter setting if necessary by rotating the eyepiece (**M**) until the edges of the LCD display appear sharp (*see "Focusing" in this instruction manual*).
2. Check the condition of the objective lens surface and eyepiece and clean if necessary.
3. Replace the batteries.
4. In low light conditions, activate the IR illumination (**C**).

Image disappears or its quality is reduced

Bright light sources (*e. g. street lights at night time*) may cause decreased visibility or reduced contrast.

1. Turn the night vision unit away from the light source; visibility will return momentarily.

TECHNICAL SPECIFICATIONS

Specification	260140	260150
Magnification (optical)	4.5x	6x
Magnification (with digital zoom)	5.0x-13.5x	6.6x-18.0x
Objective Size	40mm	50mm
Battery Type	4x AA, lithium, alkaline or NiMh	
Viewing Range	750 ft / 229 m	1000 ft / 305 m
Field of View @ 100 yds/m	28.5 ft / 9.5m	20.5 ft / 6.8 m
Operating Temperature Range	+14 ~+113 F / -10 ~ +45 C	
Dimensions (H x W x L)	58 x 105 x 200 mm	62 x 105 x 208 mm
Weight	22 oz / 624 g	27 oz / 765 g
Tripod Mountable	Yes	
Water Resistance Standard	IPX4	
Video Out	NTSC or PAL, 640x480 pixels per frame resolution	

Note: failure to follow the warnings and precautions as stated in this manual may damage the unit and void the manufacturer's warranty.

ONE YEAR LIMITED WARRANTY

Your Bushnell® product is warranted to be free of defects in materials and workmanship for one year after the date of purchase. In the event of a defect under this warranty, we will, at our option, repair or replace the product, provided that you return the product postage prepaid. This warranty does not cover damages caused by misuse, improper handling, installation, or maintenance provided by someone other than a Bushnell Authorized Service Department.

Any return made under this warranty must be accompanied by the items listed below:

1. A check/money order in the amount of \$10.00 to cover the cost of postage and handling
2. Name and address for product return
3. An explanation of the defect
4. Proof of Date Purchased
5. Product should be well packed in a sturdy outside shipping carton, to prevent damage in transit, with return postage prepaid to the address listed below:

IN U.S.A. Send To:

Bushnell Outdoor Products
Attn.: Repairs
9200 Cody
Overland Park, Kansas 66214

IN CANADA Send To:

Bushnell Outdoor Products
Attn.: Repairs
140 Great Gulf Drive, Unit B
Vaughan, Ontario L4K 5W1

For products purchased outside the United States or Canada please contact your local dealer for applicable warranty information. In Europe you may also contact Bushnell at:

Bushnell Germany GmbH
European Service Centre
Mathias-Brüggen-Str. 80
D-50827 Köln
GERMANY
Tél: +49 221 995568-0
Fax: +49 221 995568-20

This warranty gives you specific legal rights.
You may have other rights which vary from country to country.
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FCC NOTE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

Shielded interface cable must be used with the equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

Specifications and designs are subject to change without any notice or obligation on the part of the manufacturer.



Disposal of Electric and Electronic Equipment

(Applicable in the EU and other European countries with separate collection systems)

This equipment contains electric and/or electronic parts and must therefore not be disposed of as normal household waste. Instead, it should be disposed at the respective collection points for recycling provided by the communities. For you, this is free of charge.

If the equipment contains exchangeable (rechargeable) batteries, these too must be removed before and, if necessary, in turn be disposed of according to the relevant regulations (see also the respective comments in this unit's instructions). Further information about the subject is available at your community administration, your local waste collection company, or in the store where you purchased this equipment.

