datavideo

ZOOM CONTROL KIT
FOR TILTA NUCLEUS-M
MOTOR

ZEK-2
Instruction Manual

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FCC Compliance Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

Warnings and Precautions

1. Read all of these warnings and save them for later reference.
2. Follow all warnings and instructions marked on this unit.
3. Unplug this unit from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use this unit in or near water.
5. Do not place this unit on an unstable cart, stand, or table. The unit may fall, causing serious damage.
6. Slots and openings on the cabinet top, back, and bottom are provided for ventilation. To ensure safe and reliable operation of this unit, and to protect it from overheating, do not block or cover these openings. Do not place this unit on a bed, sofa, rug, or similar surface, as the ventilation openings on the bottom of the cabinet will be blocked. This unit should never be placed near or over a heat register or radiator. This unit should not be placed in a built-in installation unless proper ventilation is provided.
7. This product should only be operated from the type of power source indicated on the marking label of the AC adapter. If you are not sure of the type of power available, consult your Datavideo dealer or your local power company.
8. Do not allow anything to rest on the power cord. Do not locate this unit where the power cord will be walked on, rolled over, or otherwise stressed.

9. If an extension cord must be used with this unit, make sure that the total of the ampere ratings on the products plugged into the extension cord do not exceed the extension cord rating.
10. Make sure that the total amperes of all the units that are plugged into a single wall outlet do not exceed 15 amperes.
11. Never push objects of any kind into this unit through the cabinet ventilation slots, as they may touch dangerous voltage points or short out parts that could result in risk of fire or electric shock. Never spill liquid of any kind onto or into this unit.
12. Except as specifically explained elsewhere in this manual, do not attempt to service this product yourself. Opening or removing covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks, and will void your warranty. Refer all service issues to qualified service personnel.
13. Unplug this product from the wall outlet and refer to qualified service personnel under the following conditions:
    a. When the power cord is damaged or frayed;
    b. When liquid has spilled into the unit;
    c. When the product has been exposed to rain or water;
    d. When the product does not operate normally under normal operating conditions. Adjust only those controls that are covered by the operating instructions in this manual; improper adjustment of other controls may result in damage to the unit and may often require extensive work by a qualified technician to restore the unit to normal operation;
    e. When the product has been dropped or the cabinet has been damaged;
    f. When the product exhibits a distinct change in performance, indicating a need for service.

Warranty

Standard Warranty

- Datavideo equipment is guaranteed against any manufacturing defects for one year from the date of purchase.
- The original purchase invoice or other documentary evidence should be supplied at the time of any request for repair under warranty.
- The product warranty period beings on the purchase date. If the purchase date is unknown, the product warranty period begins on the thirtieth day after shipment from a Datavideo office.
- All non-Datavideo manufactured products (product without Datavideo logo) have only one year warranty from the date of purchase.
- Damage caused by accident, misuse, unauthorized repairs, sand, grit or water is not covered under warranty.
- Viruses and malware infections on the computer systems are not covered under warranty.
- Any errors that are caused by unauthorized third-party software installations, which are not required by our computer systems, are not covered under warranty.
- All mail or transportation costs including insurance are at the expense of the owner.
- All other claims of any nature are not covered.
- All accessories including headphones, cables, batteries, metal parts, housing, cable reel and consumable parts are not covered under warranty.
- Warranty only valid in the country or region of purchase.
- Your statutory rights are not affected.

Three Year Warranty

- All Datavideo products purchased after July 1st, 2017 qualify for a free two years extension to the standard warranty, providing the product is registered with Datavideo **within 30** days of purchase.

- Certain parts with limited lifetime expectancy such as LCD panels, DVD drives, Hard Drive, Solid State Drive, SD Card, USB Thumb Drive, Lighting, Non-PCIe Card and third party provided PC components are covered for 1 year.

- The three-year warranty must be registered on Datavideo's official website or with your local Datavideo office or one of its authorized distributors within 30 days of purchase.

Disposal
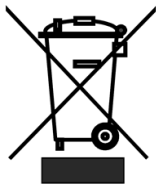
For EU Customers only - WEEE Marking

This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

CE Marking is the symbol as shown on the left of this page. The letters "**CE**" are the abbreviation of French phrase "Conformité Européene" which literally means "European Conformity". The term initially used was "EC Mark" and it was officially replaced by "CE Marking" in the Directive 93/68/EEC in 1993. "CE Marking" is now used in all EU official documents.

Introduction

ZEK-2 Zoom Encoder Kit is a mechanical device that allows you to mount the Tilta Nucleus-M motor which adds automatic zoom positioning to the Panasonic Lumix BGH-1 camcorder mounted on the **PTR-10/10T MARK II Robotic Pan Tilt Head**.

Please note that you can purchase the Tilta Nucleus-M motor from the Tilta official website https://tilta.com/shop/nucleus-m-motor-kit-i/**.**

Features
- Automatic zoom positioning
- Flexible mount positions

Assembly

There are two sections in this chapter. We will describe different parts of the ZEK-2 in the first section and the assembly procedure will be outlined in the second section.

Product Parts
The table below lists all the parts that you will find in the product package.

Name	Descriptions

Tilta Nucleus-M Motor	The Tilta Nucleus-M motor should engage with the gear ring belt wrapped around the camcorder's zoom ring. The two Ext. ports should be connected to the PTR-10/10T MARK II Robotic Pan Tilt Head's DC OUT and Zoom Sensor ports. **Note: The Tilta Nucleus-M motor is not provided as part of the ZEK-2. To purchase, please follow the link below:** https://tilta.com/shop/nucleus-m-motor-kit-i/

D-Tap Power Breakout Cable	Connect the D-Tap end of the D-Tap power breakout cable to the DC OUT port of the PTR-10/10T MARK II. On the breakout end, the Tilta 7pin connector should be connected to the Tilta Nucleus-M motor and the DC jack should be connected to the power socket on the Panasonic Lumix DC-BGH-1 camera.
Tilta Control Cable	Use the Tilta control cable to connect the zoom sensor port of the PTR-10/10T MARK II Robotic Pan Tilt Head to one of the Ext. ports of the Tilta Nucleus-M motor.
Metal Bar	The metal bar holds the Tilta Nucleus-M motor in place.

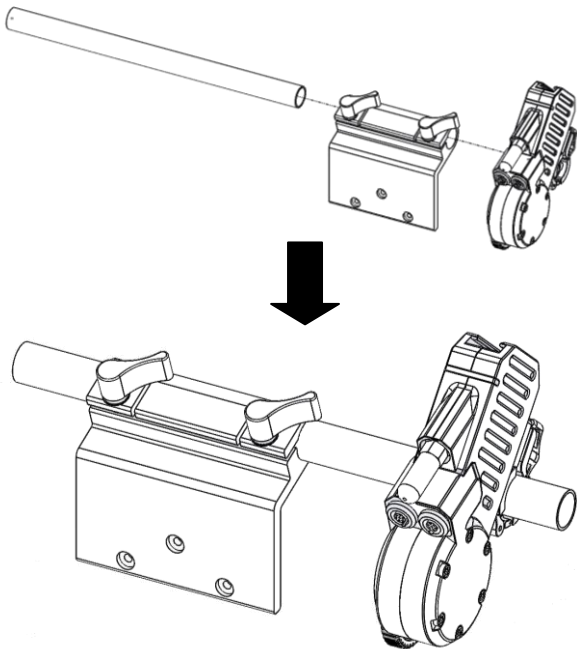| **Bar Holder**	Insert the metal bar into the bar holder then mount to the camera mount plate of the PTR-10/10T Mark II with the three screws provided in the product package.
M0.8 Gear Ring Belt	Wrap the gear ring belt around the Panasonic Lumix DC-BGH-1 camera's zoom ring then push the Tilta Nucleus-M motor towards the belt until they engage. Note: The M0.8 gear ring belt is a general-purpose part. To find a better fit for a specific application, please follow the link below: https://tilta.com/shop/seamless-focus-gear-ring/

Instructions

- **Step 1**

As shown in the diagram below, insert one end of the metal bar into the bar holder and another end of the metal bar into the Tilta Nucleus-M motor then tighten.

- **Step 2**

Use the three screws provided in the plastic zipper bag to secure the bar holder along with the metal bar and the Tilta Nucleus-M motor to the camera mount plate of the PTR-10/10T MARK II as shown in the diagram below.

Tilt Arm

Camera Mount Plate

Metal Bar

Bar Holder

Tilta Nucleus-M Motor
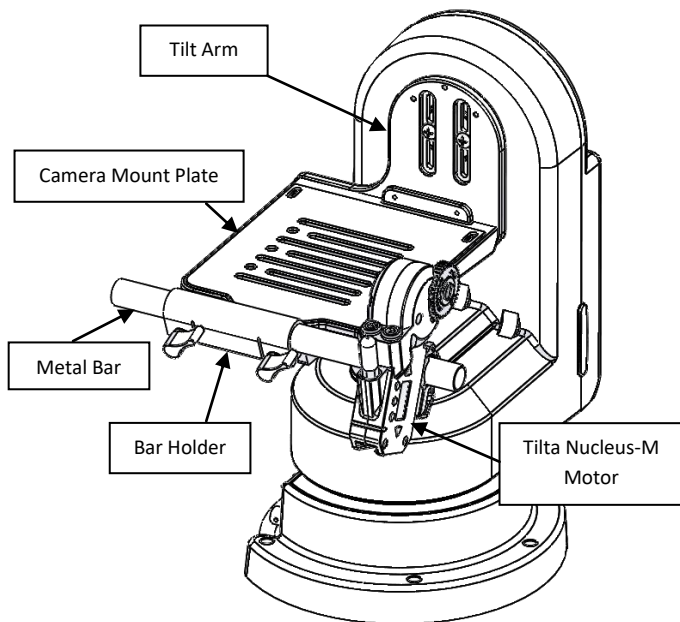
- **Step 3**

Wrap the gear ring belt around the Panasonic Lumix DC-BGH-1 camera's zoom ring then push the Tilta Nucleus-M motor towards the belt until they engage.
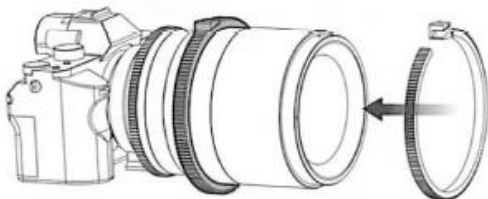
- **Step 4**

Connect the three cables listed below for operation and power supply.

D-Tap Power Breakout Cable

Connect the D-Tap end of the D-Tap power breakout cable to the DC OUT port of the PTR-10/10T MARK II. On the breakout end, the Tilta 7 pin connector should be connected to one Ext. port on the Tilta Nucleus-M motor and the DC jack should be connected to the power socket on the Panasonic Lumix DC-BGH-1 camera.

Tilta Control Cable

The Tilta control cable should connect between the Zoom Sensor port of the PTR-10/10T MARK II and one Ext. port on the Tilta Nucleus-M motor.

Remote Cable

The remote cable is a standard cable shipped with the PTR-10/10T MARK II Robotic Pan Tilt Head. The remote cable can be used to connect the Remote port of the PTR-10/10T MARK II to the REMOTE terminal of the Panasonic Lumix DC-BGH-1 camera. **The 8pin snap-and-lock mini-din connector of the remote cable will be securely fastened once plugged into the Remote port. To remove, use two fingers to gently hold the part of the plug labelled by two arrows then pull the connector outward.**

The diagram below illustrates the wire connections from the side panel of the PTR-10/10T MARK II to the Panasonic Lumix DC-BGH-1 camera and the Tilta Nucleus-M motor.
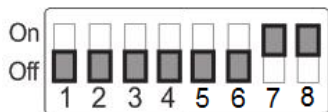

Remote Cable

D-Tap Power Breakout Cable

Tilta Control Cable
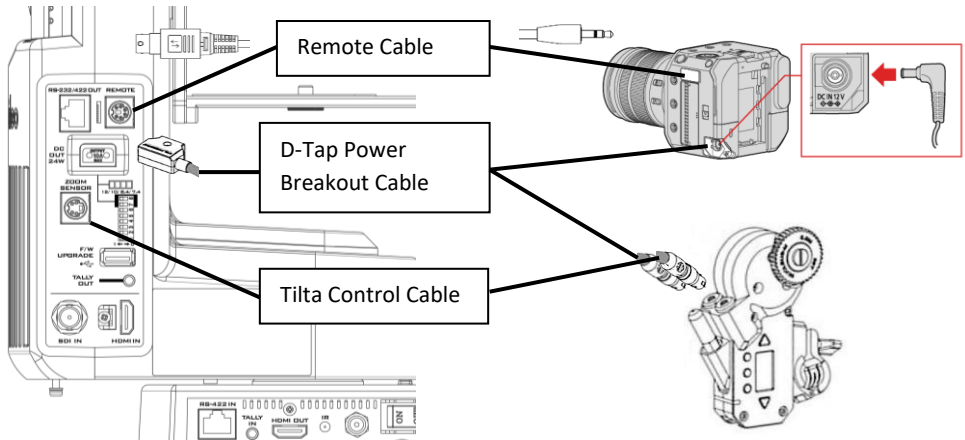
- **Step 5**

In this step, we will show you how to configure the PTR-10/10T MARK II and the Panasonic Lumix DC-BGH-1 camera.

PTR-10/10T MARK II Settings

- Toggle the DC Output to 12 V by setting positions 7 and 8 of the DIP switch to ON.

- On the OSD menu, Set Remote Out Mode to LANC Panasonic because the Panasonic Lumix DC-BGH-1 camera can be accessed via LANC interface.

    4. Remote Control
      → 6. Set Remote Out
        → 1. Remote Out mode
          → LanC Panasonic

- Set Zoom Encoder Mode to Tilta-CTL.
- Reboot the device in order for the changes to be effective.

BGH-1 Settings

The camera's OSD menu settings

- Set the Focus Mode

    Follow the menu path below and set the focus mode to **MF** to manually adjust the focus.

    [MENU/SET]➡ 🎥 ➡ 🅵🅾🅲🆄🆂 ➡ [Focus Mode]

- Set the Exposure Mode (IRIS)
  Follow the menu path below and set the exposure mode
  to **A** or **M** mode.

  [MENU/SET] ➡ 🎥 ➡ 🔧 ➡ [Exposure Mode]

  A mode is the aperture priority mode allowing you to set
  the aperture manually while the camera automatically
  selects a shutter speed.

  M mode allows you to set the aperture and shutter speed
  manually.

**Note: If you find that focus or iris cannot be adjusted, try
power cycling the BGH-1 and PTR-10 MARK II.**

- **Step 6**

Push the lens of the Panasonic Lumix DC-BGH-1 camera to the
AUTO mode so that lens movement is dependent on the
camera's OSD menu settings.

Note: Do not push the lens to the Full Manual mode.

- **Step 7**

On the remote control of the PTR-10/10T MARK II, press the Home button (enclosed in the red rectangle) as depicted in the diagram below to start calibrating the Tilta Nucleus-M motor. Calibration is complete after the motor makes one full rotation then returns to its original position. You can start adjusting the camera zoom after the motor is calibrated.
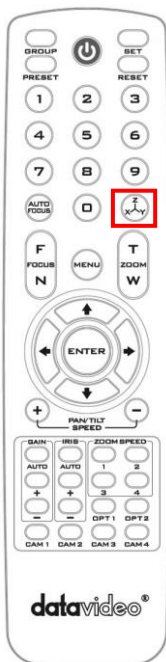
Notes

Specifications

Name	Zoom Encoder Kit
Model No.	ZEK-2
Zoom	Automatic zoom positioning
Mount	Flexible mount positions

Accessory List

No	Item	Qty
1	Tilta control cable (mini-Din 4 Pin to Tilta 7 pin)	1
2	D-tap power breakout cable (D-tap to Tilta 7 pin and DC 5.5mm)	1
3	Gear Ring M0.8	1
4	Metal Bar	1
5	Bar Holder	1
6	Gear Screw M3 x 4 mm	3

Service & Support

It is our goal to make your products ownership a satisfying experience. Our supporting staff is available to assist you in setting up and operating your system. Please refer to our web site www.datavideo.com for answers to common questions, support requests or contact your local office below.

Please visit our website for latest manual update.
www.datavideo.com/product/ZEK-2

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