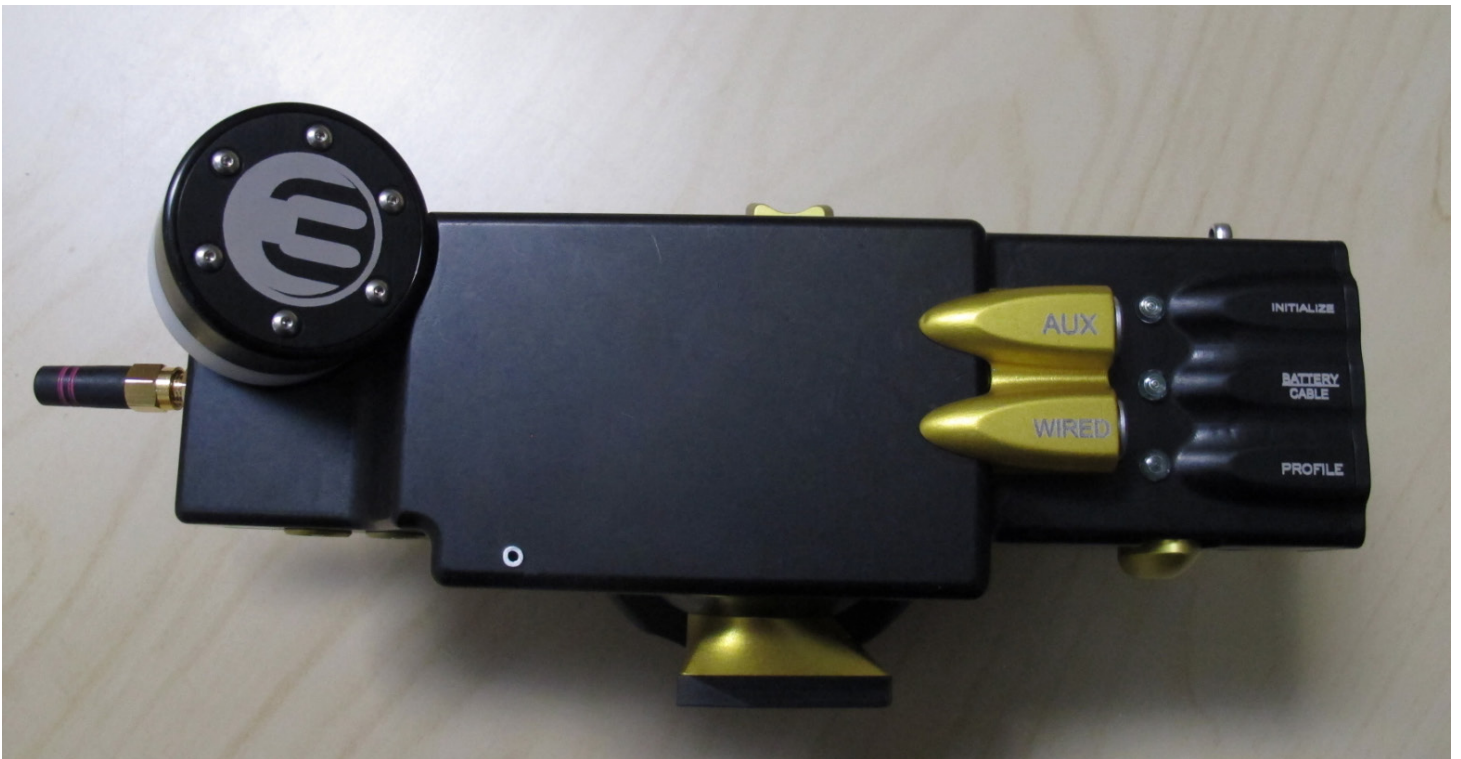




Technica Lens Control System

User Guide



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Intended Readers

Users, Operators

Subject

Care and feeding of the Technica Hand Controller and 6-axis Lens Control Box

Document Version/Date

V 1.0 – 2012

Applicable for Device Version

3ality Technica Lens Control System

Preface

This document contains instruction and reference information for the operation and use of the 3ality Technica Lens Control System, including:

6-axis Lens Control

Trademarks

Technical Support

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Hours: 9:00am to 6:00pm Pacific Time Monday through Friday

United States of America (USA)

Federal Communications Commission (FCC) Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Class rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, which the user will be required to correct at his expense. To assure continued compliance follow the attached installation instructions and do not make any unauthorized modifications.



WARNING:

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

CAUTION:

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.



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(a) Company warrants to the original purchaser of Equipment that for the Warranty Period (as defined below), the Equipment will be free from material defects in materials and workmanship. The foregoing warranty is subject to the proper installation, operation and maintenance of the Equipment in accordance with installation instructions and the operating manual supplied to Customer. Warranty claims must be made by Customer in writing within sixty (60) days of the manifestation of a problem. Company's sole obligation under the foregoing warranty is, at Company's option, to repair, replace or correct any such defect that was present at the time of delivery, or to remove the Equipment and to refund the purchase price to Customer.

(b) The "Warranty Period" begins on the date the Equipment is delivered and continues for 12 months.

(c) Any repairs under this warranty must be conducted by an authorized Company service representative at an authorized repair facility. The customer is responsible for costs associated with shipping the equipment to and from an authorized repair facility.

(d) This warranty is for the hardware and hardware sub-systems of the equipment and specifically excluded from the warranty is all software, (which is covered under the software warranty), problems due to accidents, misuse, misapplication, storage damage, negligence, or modification to the Equipment or its components.

(e) Company does not authorize any person or party to assume or create for it any other obligation or liability in connection



with the Equipment except as set forth herein.

(f) The warranty in section (a) above is exclusive and in lieu of all other indemnities or warranties, whether express or implied, including the implied warranties of merchantability and fitness for a particular purpose.

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Limitation of Damages: 3ality Technica shall not be liable to Customer under the Warranty for any consequential, exemplary, incidental or punitive damages, regardless of whether 3ality Technica has been advised of the possibility of such damages in advance or whether such damages are reasonably foreseeable.

Force Majeure: 3ality Technica shall not be liable to Customer for failing to perform its obligations under the Agreement because of circumstances beyond the control of Customer. Such circumstances shall include, but not be limited to, any acts or omissions of any government or governmental authority, natural disaster, act of a public enemy, riot, sabotage, dispute or differences with workmen, power failure, delays in transportation or deliveries of supplies or materials, acts of God, terrorism, or any events reasonably beyond the control of Customer.

Indemnification: Customer shall release, defend, indemnify and hold harmless 3ality Technica from and against any claims, damages and liability arising from use of the Software or Documentation by Customer.

1.5 Obtaining Warranty Service and Customer Support

The following information describes our current warranty support procedures. These procedures are subject to change without notice and are expressly excluded from the Limited Warranty.

- Our Customer Support Representatives are available to provide telephone support during business hours (M-F, 9am-6pm Pacific Time), and after these hours for urgent "emergency" technical support.
- Customer Support will be provided only for products under warranty or those covered under a valid Support Agreement.
- Before returning the Product for repair, it is necessary to obtain a Return Merchandise Authorization (RMA) number or service case number by calling (818) 333-3000. You will be asked to provide the system's serial number.
- The non-functioning part should be properly packed and shipped pre-paid to 3ality Technica with the RMA number clearly displayed on the outside of the package and on the accompanying RMA form. We will refuse to accept any package without a valid RMA number or service case number.
- Repairs outside the scope of the Limited Warranty require a valid and valid Support Agreement prior to any repairs. 3ality Technica does not offer time and materials based repair services.
- Customer support can also be contacted by submitting your request to support@3alitytechnica.com



2. Introduction

3ality Technica's Lens Control System is a fully-customizable device for controlling lens functions, including focus, iris, zoom on one or two lenses, start/stop on supported cameras.

2.1 Technica Hand Controller models

- 3D THC specifically for controlling interaxial and convergence while on a stereoscopic 3D system
- Lens THC (THC-L) for controlling either one or two lenses.

2.2 This document describes

- 3-Axis Lens Control
- 6-Axis Lens Control

2.3 This document does not describe

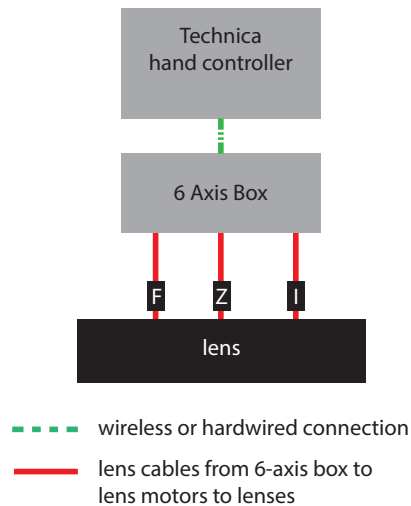
- Working with a stereoscopic 3D rig system

2.4 Prerequisites

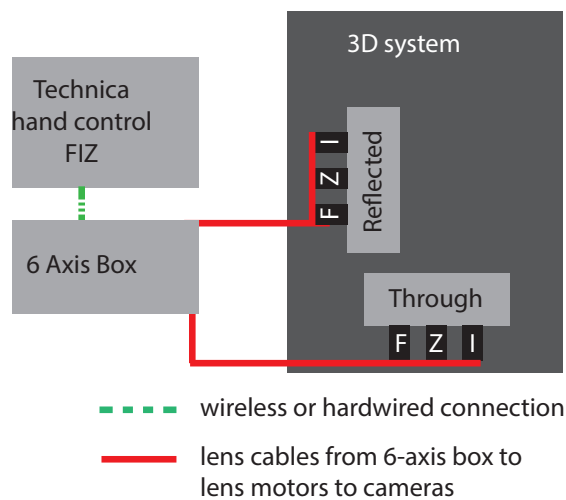
- An introductory knowledge of the Technica Hand Control
- An introductory knowledge of the 6-Axis Lens Control System

3. Configuration

3.1 Configuration for 3-Axis lens control



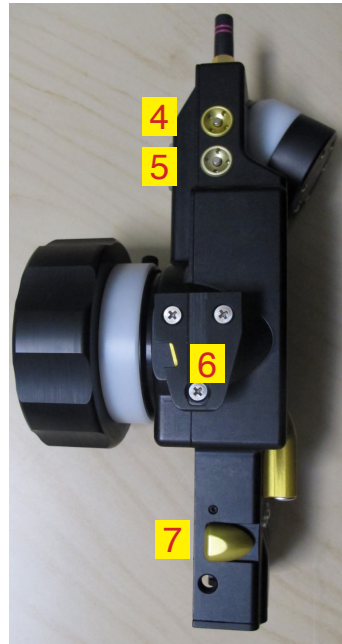
3.2 Configuration for 6-Axis lens control



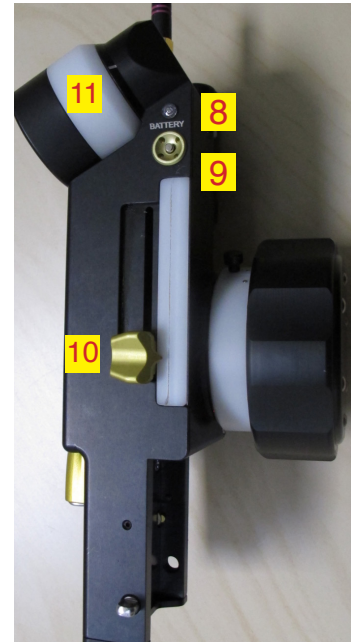
4. THC — Lens Control



- A. Wireless LED
- 1. Focus wheel
- 2. Battery compartment
- 3. MicroSD slot




- 4. Iris limit button
- 5. Focus limit button
- 4 + 5 Start/stop when pressed together and used in conjunction with dedicated start/stop cable
- 6. Vmount
- 7. Battery release



- 8. Battery condition light
- 9. Zoom limit button: zoom speed selection, zoom lockout
- 10. Iris slider
- 11. Zoom wheel



- 12. Auxiliary port (rs232 for fibre connections)
- 13. Wired Port: 4-pin Lemo CAN port for hard-wired communication
- 14. Initialize button
- 15. Battery/cable toggle to select power source
- 16. Profile button (to activate lens profiling)

(On some units this will show the  symbol. Units are physically identical, differentiated only by firmware)

5. 6-Axis Lens Control Box

Lens Control box is used for direct connection from rig to THC, and gathering metadata.



5.1 Lens Control Box Connectivity

1. Technica Motor Control Box Power Cable
T3D-C-MCB-P2; T3D-C-MCB-P8
2. Technica 232 10-pin to 10-pin Command Cable
T3D-C-232-10-C18I; T3D-C-232-10-C3
3. Technica 232 6-pin to 10-pin Serial Cable
T3D-C-232-610-C18I; T3D-C-232-610-C3
4. Technica Hand Controller 4-pin to 4-pin Command Cable
T3D-C-THC-C5 (lengths vary)



5.2 Connecting Lens Motors

When using as 3-axis, plug into DE only.



5.3 Starting and Stopping Camera

Use start/stop cable for RED Epic
(T3D-C-RESS-4BNC-C2)

or Arri Alexa.
(T3D-C-6XALSS-C4);

There are two ways to use this function:

1. Connect a cable to each camera
 - activate from Technica Hand Controller.
- or
2. Master/slave cameras
 - connect to master camera
 - activate from Technica Hand Controller

6. Connecting the THC to the 6-Axis Lens Control Box

6.1 For wired configurations

- Connect from Wired port on THC to CAN port on 6-axis Control Box or
- Connect from Aux port on THC to RS232 port on 6-axis Control Box.



Figure 6.1a Connect from Wired port on THC to RS232 on 6-axis box.

6.2 For wireless configurations

- Use a cable to connect the THC to the 6-axis box, thus exchanging MAC addresses and locking the boxes.
- Once a wired connection between the THC and the 6-Axis Lens Control Box has been established, disconnect the cable and continue operating wirelessly.
- The wireless control supports 42 channels of communication and two power levels (low/high).
- Power levels can only be set from the iPhone application (described in separate manual).



6.3 LED indicators

- When connected by cable, LED next to antenna will remain off.
- Flashing LED indicates unsuccessful wired connection.
- Solid LED indicates successful wireless connection.

6.4 Troubleshooting an unsuccessful wireless connection

- Always make sure all your firmware is current. Before continuing, download and install latest version for all devices. (section 11.1)

Powercycle device;

try a fresh battery.

If none of these things works, please continue. Wherever possible, try another device.

- If blue LED next to antenna blinks persistently, there is no connection. Test RF capabilities.

To ensure no interference, power down rig and any other RF devices.

Hardwire your device.

If device functions normally while hardwired, test wireless setup

Ensure antenna on rig, 6-Axis Lens Control Box and THC are undamaged and secure.

Change channel (page 14)

Move within a few inches of motor box; if device connects, please contact support

if you have access to the Technica Application:

Connect iPhone/iPad directly into 6-Axis Lens Control Box, select Wireless

If the wireless module is not visible, or if it indicates no wireless is installed, contact support.

If you do see the wireless module, switch wireless signal from High to Low or Low to High.

- If blue LED next to antenna is off, you are either cabled or have no power.

If you are wireless, check the battery power;

try a fresh battery;

ensure switch on bottom of device indicates battery.

If blue LED next to antenna is solid

check connection: are you connected to the correct device

Check and initialise motors.

If blue LED blinks intermittently

change channel

increase power.

In all cases, if all attempts fail, please contact support@3alitytechnica.com



7. Initialization for 3-Axis Lens Control

The initialization process detects each motor's range of motion, storing that information within the Lens Control Box.

Once stored within the Lens Control Box, users can disconnect or replace any peripheral controllers, and/or power off the Lens Control Box: Settings will remain in the 6-Axis Lens Control Box for approximately 14 hours.

7.1 Initialization and configuration

- Power Lens Control Box (Motors can be initialized while wireless).
- Press Initialize to begin.
 - Press and hold button to initialize all motors.
 - A short press will initialize only those motors whose positions are unknown.
- LED turns green: Initialization is successful.
- LED turns yellow: Initialization has failed.
- Motors can be disconnected and reconnected while system is powered on.
- Upon initialization, motors will travel to both ends of travel before quickly returning to the handset's encoder position.

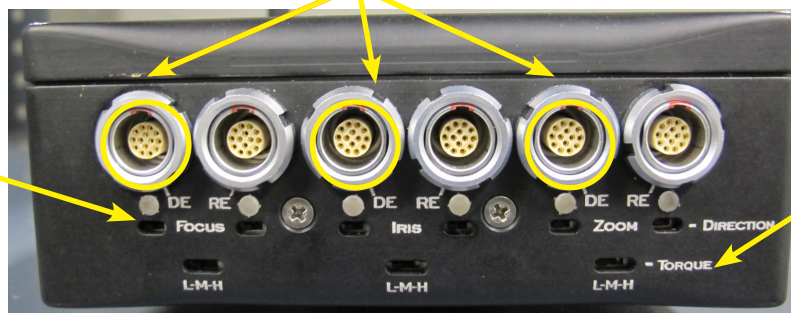
7.2 Troubleshooting an unsuccessful motor initialization

- Cycle power from the hand controller by switching from cable to battery and back (or vice versa).
- If still unsuccessful, repeat the process from the beginning.
- Reinitialize motors when you notice they are not keeping settings or behaving erratically.
- To reinitialize, powercycle 6-Axis Lens Control Box.

7.3 Additional instructions...

Switch Lens Motor Direction by changing switch direction
(also possible using iPhone application.)

When connecting to a single lens, always use DE port



Adjust motor torque by switching between Low, Medium and High.

Reinitialise for settings to take effect.



8. Programming the THC for 3-Axis Lens Control

8.1 Setting lens limits

- Move lens to one end of limit. ****Note: Direct lens is master lens.**
- Press and hold the limit button that corresponds to the function you wish to limit.
 - slider = iris limit.
 - focus wheel = focus limit.
 - battery button = zoom limit.
- Move the Lens to the far end of desired limit.
- Release the limit button.
- The limit will be set and enabled.
- The limit LED will be illuminated.
- Toggle the limit by pressing the appropriate limit button.

8.2 Adjusting torque

- Lens motor torque can be adjusted low, medium or high.
- Adjust from the front of the 6-Axis Lens Motor Box.
- Keep torque setting as low as possible.
- Increase torque if you notice resistance from the motors.
- To commit torque settings, powercycle Technica Hand Controller.



8.3 Locking lens control

- Press and hold desired limit button (for focus, iris or zoom) for 2 seconds or until LEDs flash.
 - Focus and Iris: LED will blink once every second to indicate locked control. Remove finger when LEDs start blinking.
 - Zoom: LED will blink for 10 seconds and turn off. Remove finger when LED turns off.
- To unlock control, hold appropriate limit button for 10 seconds or until blinking stops.

8.4 Changing motor direction

- Change the direction switch located under cable on 6-Axis Lens Control Box.
 - or
- Use the Technica iPhone Rig Application.
- Settings persist between reboots.



9. Channel Setting on the THC

This process will show you how to set one of the 42 available channels on the THC.

Ensure that all devices -- rigs, 6-Axis Lens Control Boxes -- are on dedicated channels.

*To change channels, devices MUST be cabled.

9.1 To enter channel select mode

- Power off THC.
- Can be performed with battery power, independent of other devices.
- Power on device while pressing Initialize button.
- THC LEDs should blink for two seconds (five times).
- Depress focus limit button (focus and iris LIMIT buttons blink alternately).
- Release the Focus Limit button to determine the current channel..

The iris limit LED indicates the Tens.

The focus limit LED indicates the Ones.

9.2 To change the channel

- Make sure devices are connected via a cable.
- Power on THC while holding focus limit button
- Press the corresponding button the number of times that corresponds with your desired channel:
- For channel 24: press iris button 2x, and focus button 4x.
- When you stop pressing, the hand controller will blink the current channel.
 - Iris LED will blink twice;
 - Focus LED will blink 4 times.
- * Press and release battery button to re-check channel.
- When you complete the process, cycle the power and return the THC to its normal operating mode.
- When wireless, blue LED next to the antenna will illuminate, indicating the system is ready to operate.

24=

2x = 20

4x = 4



10. Sensor Calibration for THC

10.1 When to perform a sensor calibration

Perform a sensor calibration when you would like to change the physical range of each sensor or you notice erratic or unexpected direction change.

10.2 Sensor Calibration Instructions

- Power off THC.
- Can be performed with battery power, independent of other devices.
- Power on device while pressing Initialize button.
- THC LEDs should blink for two seconds (five times).
- Move the desired control to zero.
 - slider = iris limit.
 - focus wheel = focus limit.
 - battery button = zoom limit.
- Press and Hold limit button.
- Move the control to its maximum position.
- Release the chosen limit button.
- Power off THC to lock in Sensor calibration reset.

limit buttons >



Figure 10.2a 1) Initialize button, 2) Battery/Cable switch, 3) Profile button



11. Updating Firmware

11.1 What you will need for Firmware Update

- Technica Hand Controller or 6 axis lens control box.
- MicroSD Card.

NOTE: Not all MicroSD cards work. We recommend that you use Kensington Micro SD cards. And while we have not tested all brands, we know SanDisk cards do not work;

- Power source.
- Current firmware from the 3alityTechnica Activation Portal.

11.2 Firmware Update Process

- Access the firmware through the activation portal (<http://activation.3alitytechnica.com>)
- Format the microSD card FAT 32 ONLY.
- Copy firmware onto root directory of microSD card, DO NOT COPY INTO A FOLDER.
- Power off Technica Hand Controller or 6 Axis Lens Control Box.
- Insert microSD card into the microSD card holder located.

THC: Battery Bay.

6 Axis Lens Control Box: Below the CAN cable port.

- Updating Technica Hand Controller:

Power the hand controller using cable or battery.

For hand controller, slide battery over microSD card; update will proceed.

The battery LED will flash rapidly for about 15 seconds.

Installation is complete when flashing stops.

Power off and remove card.

- Updating 6-Axis Lens Control Box

Power 6-axis lens control box

Power LED will flash rapidly for about 15 seconds

Installation is complete when flashing stops.

Power off and remove card.



Figure 11.2a 1) 6 Axis Lens Control box, 2) Technica Hand Control



12. Specifications

12.1 Power Input

Wired port: The CAN bus provides communication and power to the Technica Hand Control when

Communication Range is up to 1200 ft

Cabled Power range is up to 500 ft.

Use a battery for power beyond 500 feet.

AUX port provides RS232 connectivity

Wireless: 2.4 GHz FHSS wireless.

Communication ranges from 1400ft to one mile, though real-world results may vary.

12.2 Power Consumption

12 volts.

12.3 Connectors and Interfaces

CAN cable available in multiple lengths ranging from 5 to 1250 feet

T3D-C-THC-Cxx where xx is the length we offer: 100, 1000, 5, 1500, 1250, 50, feet

6p-to-10p serial cable

6 pin on THC to 10pin on the rig/lens/ksb/io boxes

T3D-C-232-610-C18i

available in multiple lengths

<http://elementtechnica.mybigcommerce.com/232-6-pin-to-10-pin-command-cable-18/>

ARRI start/stop cable

T3D-C-6XALSS-C4

<http://elementtechnica.mybigcommerce.com/arri-start-stop-cable-4/>

Stand-alone RED Epic start stop (i.e. not for EPIC IO + KSB)

T3D-C-RESS-4BNC-C2

<http://elementtechnica.mybigcommerce.com/epic-start-stop-cable/>