

Varizoom
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TOC F1

Operations Manual



General Description

The TOC F1 is a single channel wireless lens control system. The system can be used on most broadcast or cinema lenses. The TOC F1 includes a hand held controller/transmitter, rechargeable battery, lens drive motor, single channel receiver, universal gear set, and battery charger

Major Components



1. Setup

The TOC is provided with various gears to fit almost any broadcast or cinema lens. Select the proper gear pitch for the proper lens ring. The gears can also be switched to either side of the motor if needed.

Warning: If you are using the TOC with a servo powered lens, make absolutely sure that the lens servo for the function you're trying to control is always deactivated, otherwise the lens servos can end up fighting the TOC motors resulting in severe damage to either the lens or the TOC system. Please be aware that some "full auto" modes may override the lens servo switches. Check with the lens or camera manufacturer's user manual to ensure that this won't interfere.

POWERING THE RECEIVER: Only use a VariZoom-supplied cable to power the TOC receiver. It is very important that you power the receiver with a maximum of 24VDC regulated (actual measured voltage – some nominal unregulated 24VDC sources can actually go as high as 34VDC). The acceptable range for voltage is 12-24 VDC – if you go higher, the unit will be damaged severely.

Also note that the voltage will affect the maximum motor speed. If you are operating the receiver off a 12V battery the maximum motor rotation speed will be about 96 RPM, whereas running the receiver off 24V the maximum motor rotation speed will be around 150 RPM. This usually isn't noticeable unless you're using a lens with a fairly large focus ring.

Before connecting power, mount the TOC motors onto 15mm or 19mm mattebox rods. The motors can be mounted either vertically or horizontally.



Side view of TOC motor mounted vertically



Front view of TOC motor mounted horizontally



Dovetail clamp position example 1



Dovetail clamp position example 2

After the motor has been mounted on the rod, secure the gear against the proper lens ring and tighten the dovetail clamp. Mount your TOC receiver and attach the antenna.

First plug the lens motor into TOC receiver (yellow to yellow)

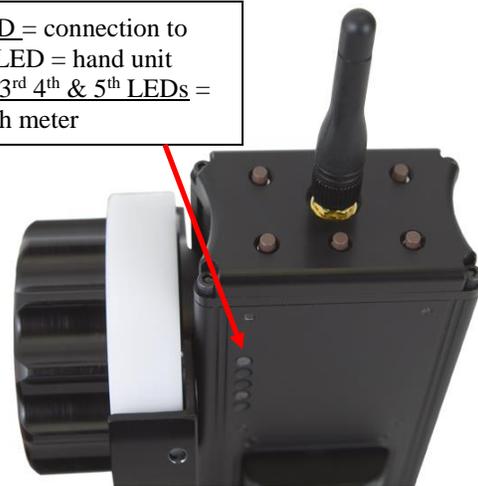
Then plug power from camera into TOC receiver (red to red). Do not plug lens motor into receiver while it is already powered up – this is called ‘hot swapping’ and it can lead to minor malfunctions – always plug power into receiver LAST.

Now put the battery in the hand unit, attach the antenna and turn on the power by holding down the power button for at least two seconds. All five LED lights on both the receiver and the hand unit should now be solid orange.

1st & 2nd LED = connection to hand unit; 3rd 4th & 5th LEDs = signal strength meter



LEDs: 1st LED = connection to receiver; 2nd LED = hand unit transmitting; 3rd 4th & 5th LEDs = signal strength meter



Assuming your lens has mechanical end stops (like most broadcast or cine lenses), the TOC motors will calibrate most accurately in “Auto” mode. **Note: If using a lens that doesn’t have end stops (e.g., DSLR lenses), you must manually calibrate the lens motors. This will be addressed in chapter 3.** To execute auto calibration from the hand unit, select “Calibrate” from the home menu, then select “Automatic”. The motor will start moving automatically, and will also automatically stop once resistance is met. **Do not touch the lens motor during calibration.** Also note that the power required to move the lens rings properly may vary depending on the lens used. The system defaults to 50% power and can be adjusted. (see page 8 for more details)

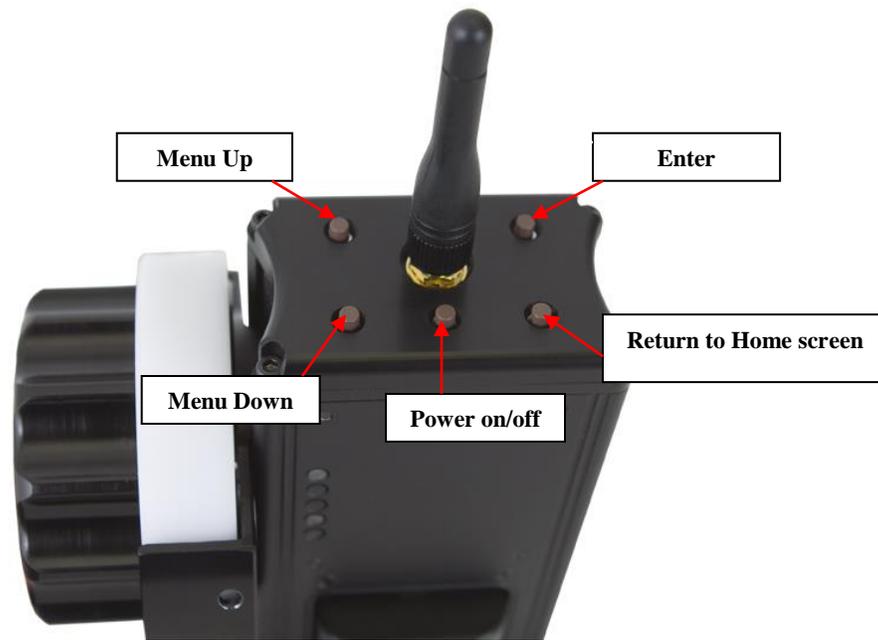
The lens motor will then move to the position at which the knob is set. The lens motor is now ready for use, and will move according to the position of the knob on the hand controller. **Note: If you turn off power to the receiver, it will store the calibration set in the last use. As long as you don't move the motor or lens, the calibration will be valid. If you have to move the motor and lens from their last position, recalibrate.**

Basic Operation

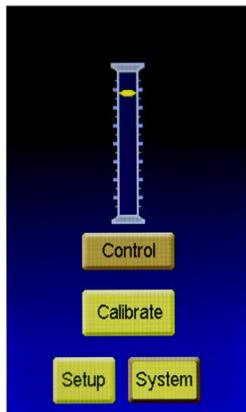
The TOC has a touch screen that will allow for easy menu navigation. Most operation will be done from this screen.

To reset the TOC parameters to their defaults, select “System” from the home menu. Then select “Reset All”. It will then ask you to confirm. Select “OK”, and then all parameters will be set to default. This only applies to lens/motor limits, and motor speed/smoothing settings. Lens calibration is not affected by the system reset.

The touch screen allows for easy adjustments and menu navigation. In the rare event that the touch screen becomes unusable, there are five buttons on the top of the controller next to the antenna (see below) that can be used as backup for navigation.

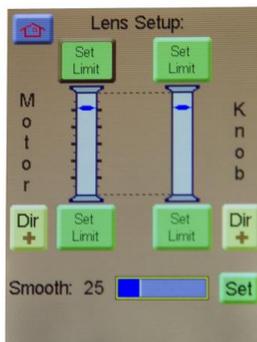


1. Home Screen



From the Home Screen, you can monitor the current lens position as well as enter the Control, Calibrate, Setup, and System menu screens.

2. Control Menu



From the Control menu screen, you can set motor or knob limits, reverse motor or knob response direction, and adjust smoothing. To set a limit, simply move the knob to the where you want the limit, and tap the “set limit” button. Once a limit is set, the “Set Limit” button will then read “Clear Limit”. Tap this button to clear the limit. Motor and knob response direction is changed by selecting the “Dir+” button located under either “Motor” or “Knob”. This will change the button to be “Dir-“. Select it again to change it back. Smoothing is adjusted by selecting the “set” button next to the “smooth” indicator. Adjust the “Lens Smoothing” to the desired smoothing level, then press “OK” **Note: The more smoothing you have, the more delay will show between motor and knob/slider response.**

Press the “” button in the top left corner of the screen to return to the Home Screen.

3. Calibrate Menu

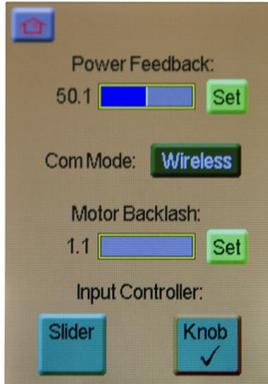


The Calibrate menu is where you will calibrate the motor to the current lens that you are using. For all lenses that have stop points (most ENG and cinema lenses), after you have mounted the motor to the lens tap the “Automatic” button, and the motor will automatically move to both ends of the lens range, and then the lens is calibrated. For lenses that don’t have stop points (most DSLR lenses), manual calibration is required.



Tap “Manual” to enter the calibrate screen (as shown to the left). Move the slider to the center position as indicated on the screen – a center mark will appear and further instructions will be shown on the screen. The slider will now be used to run the motor until the first end point of the lens is reached. The farther you move the slider, the faster the motor will go, so when you get close to the stopping point, slow the motor down by moving the slider back toward the center position – the motor stops moving when the slider is at the center position. If you move the motor too far, you can reverse it by moving the slider in the opposite direction past the center position – this will move the lens back (stop the motor by returning slider to center position). When the first end point is reached on the lens, tap the “OK” button. Now move the slider in the opposite direction to find the other end point for the lens. Stop the motor at the correct end point for the lens, and tap the “OK” button again. The lens motor is now calibrated, and you will automatically be returned to the home screen

4. Setup Menu



The setup menu is where you can adjust power feedback, Com Mode, Backlash compensation, and Controller input.

“Power Feedback” will allow you to adjust the motor output power during auto calibration. Some lenses require more force to move the lens rings than others. If the motor power is set too low, then the motor will not have enough force to push the lens gear to its limits, and result in incorrect calibration. If the motor power is set too high, the motor will exert too much force, and potentially slip off the lens ring, also resulting in incorrect calibration. The system defaults to 50.1, and this is where it will return if the “Reset All” button is pressed.

“Com Mode” will change how the hand unit will operate. Tap the button to change how the hand unit will operate. “Wireless” will allow the hand unit and receiver to communicate wirelessly. “Wired” will disable the wireless card on the hand unit, and allow the hand unit and receiver to communicate through an optional communication cable (that will also provide power to the hand unit, also allowing the hand unit to be powered without a battery). “Upgrade will also disable the wireless card, as well as all communication between the hand unit and receiver. This mode is only used when making firmware upgrades, and requires a LEMO to serial cable.

“Motor Backlash” is used to compensate for backlash in the lens rings. Not all lenses have backlash, and this is only necessary if the lens “lurches” when changing direction.

Backlash should be kept to a minimum unless necessary.

“Input Controller” simply allows you to switch between focus knob operation or iris slider operation. Tap the button for the input controller that you wish to use. Most operators will use the focus knob, but iris slider is available if you choose to use it.

5. System Menu



The system menu is where you can monitor battery output, as well as adjust screen brightness, toggle LED's on/off, or reset all parameters if needed. If screen brightness is adjust to 100, it will enter "daylight mode", which will change the color scheme to be more visible in extreme brightness.

6. Troubleshooting

A) –**Knob is not responding:**

Solution 1: Make sure the "Input Select" is set to "Knob" (page 8)

Solution 2: Disconnect power from hand unit and receiver, then reconnect

Solution 3: The knob limits and/or lens limits may have been set to "zero range" or limited in one direction. Under the "Control" menu, check to see if any of the buttons read "Clear Limit", and tap the button to clear the limits.

Solution 4: Under the "System" menu, tap the "Reset All" button. This will clear all limits.

Solution4: Check to make sure the lens motor didn't get set to "zero" calibration while being manually calibrated. Check this by re-calibrating the lens motor (see Chapter 5)

B) -General Malfunctions: The most common cause of malfunctions is 'hot swapping' the motors (i.e., plugging the motor (yellow plug) into the receiver while it is already connected to its power source (red plug)) – Solution = Don't hot swap the motors – unplug and re-plug the power to the receiver (red plug) – in other words, always make sure the motor is plugged in before the power.

C) -**Auto Calibrate Mode not functioning properly:**

Solution 1 = Using an AC adapter? If so, try switching to battery power.

Solution 2 = Unplug the power cable (red) and re-plug.

Solution 3 = Use Manual Calibrate Mode (page 7)

D) – **After Calibrating, the motor does not reach all the way to end of the lens rotation (i.e., it doesn't hit ∞ or the nearest focal point):**

Problem: The focus knob is not properly calibrated

Solution: You can calibrate the knob (and the slider) by accessing the hidden knob calibrate menu. Enter the Calibrate menu and once there, depress the two right mechanical buttons on the top of the unit (near the antenna) and while holding these, press the single left mechanical button nearest the touchscreen. This should pull up the

calibrate knobs menu. Select knob for the focus knob and it will instruct you to turn the knob all the way in both directions so it can calibrate the knob's electrical range. Once you've turned the knob all the way in both directions, press "OK". You can do the same calibration sequence with the slider if necessary.

E) -Motor Moves in Wrong Direction: Solution = Reverse the Motor/Knob (page 6)

F) -The "Motor" arrow is lagging behind the "Knob" arrow on the LCD: This is not a problem - it is a feature. The higher the smoothing is set, the greater the lag will be.

G) -The Motor has stopped responding: If the red light on the side of the receiver is fully illuminated with no green light, the motor has stalled.

Solution 1 = Try disconnecting and reconnecting power to the receiver.

Solution 2 = If that doesn't work, you may need to disengage the motor from the lens ring, move the lens ring to the middle of its range and cycle the power again. Re-engage the motor to the lens ring and recalibrate – this should always solve the issue, but if this is the only solution, you may want to consider turning the motor power down a bit.

Solution 3 = Check "Com Mode" under the "Setup" menu, and make sure that it is set to "Wireless" if you're trying to use it in wireless mode, or set to "Wired" mode if you're trying to use it in wired mode. **Note: "Reset All" will default the Com Mode to be set to Wireless.**

H) - Motor Moves on its own or Unwanted Jitter in the motor movement – Turn the backlash setting down and try turning up the smoothing level.

I) - Motor doesn't seem to move fast enough to pull focus – First check to make sure that the motor is calibrated to the lens that you are using, and make sure that the smoothing is turned down. Also check the voltage that you're using to power the receiver. A lower voltage will result in a lower maximum rotation speed. See page 3 for more details on this.

J) - Motors lose calibration or move after cycling receiver power – The receiver stores the motor positions **2 seconds after the motors stop moving** (it is done this way by design). If the system is losing calibration / motors move after powering the receiver off and on, it is because power was cut or lost before the receiver had time to store the motor positions. **Solution:** Recalibrate the motors and don't cut/lose power in the middle of operating the TOC or immediately after operating (wait at least 2 seconds).

Warning: If you are using the TOC with a servo powered lens, make absolutely sure that the lens servo for the function you're trying to control is always deactivated, otherwise the lens servos can end up fighting the TOC motors resulting in severe damage to either the lens or the TOC system. Please be aware that some "full auto" modes may override the lens servo switches.

More questions? Give us a call at 512-219-7722 or visit the website for updated instruction manuals – www.varizoom.com