



ThirdLynx QuickSync TKX Installation

Step-by-Step Instructions for Installing the QuickSync TKX Motor Assembly to your Takahashi MEF Micro-Edge Focuser.

The QuickSync TKX motor assembly fits directly in place of the coarse and fine focus knobs on the right side of the Takahashi MEF dual-speed manual focuser. The gold knob on the QuickSync TKX will attach to the smaller diameter shaft of the pinion assembly and allow fine manual focus when the motor is disengaged. Coarse manual focus can usually be accomplished by disengaging the motor and adjusting the coarse silver focus knob on the opposite side of the focuser.



QuickSync TKX motors include the integrated ThirdLynx control circuit dispensing with the need for an external control hub. A digital temperature sensor is integrated into the ThirdLynx control circuit for temperature compensated focusing. Connection to the observatory or telescope control computer can be made using any standard USB A-B cable. A separate 12VDC power connection provides sufficient power to vertically lift cameras or instrument packages exceeding 5 kg. Optec's new ASCOM Alpaca driver and field-proven FocusLynx Commander software round out the package for complete remote telescope focusing solution.

Note: The QuickSync TKX model is compatible with the Takahashi MEF focusers with the black fine focus knob which are made in Japan. If you have the older, U.S. made version with a silver fine focus knob contact Optec Sales and Support.



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QuickSync TKX Package Contents

Confirm the contents of your QuickSync TKX motor package. The package should contain the following items:

- QuickSync TKX motor assembly with integrated ThirdLynx control circuit,
- 1/16" Allen hex key,
- 7/64" Allen hex key,
- 1.5mm metric hex key,
- Short and Long USB A-B cables,
- 12VDC power supply with 2.5 x 5.5mm power plug and IEC power cord.



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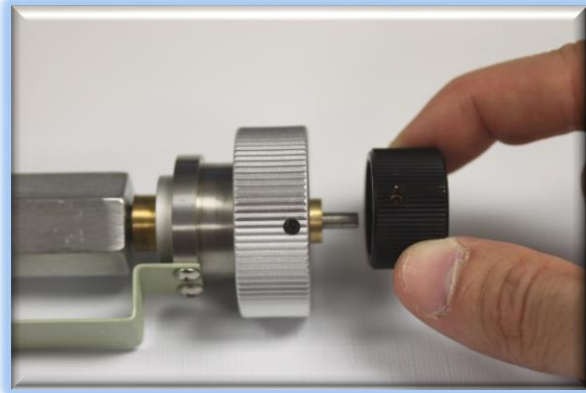
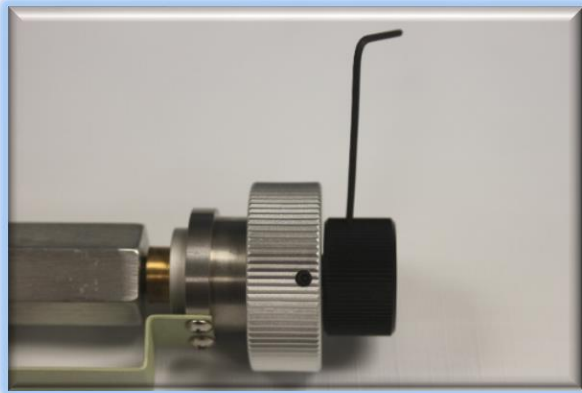


Installation Procedure: Step-by-Step

Note: The installation photos use a sample focus knob assembly

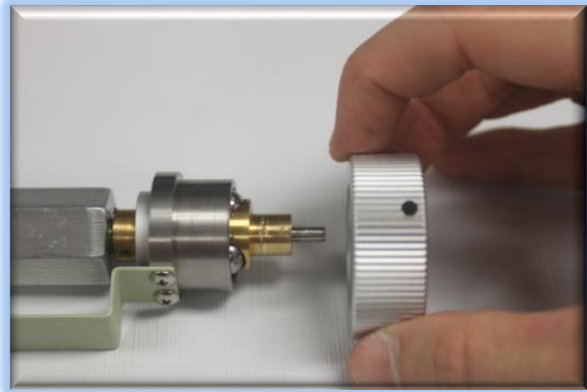
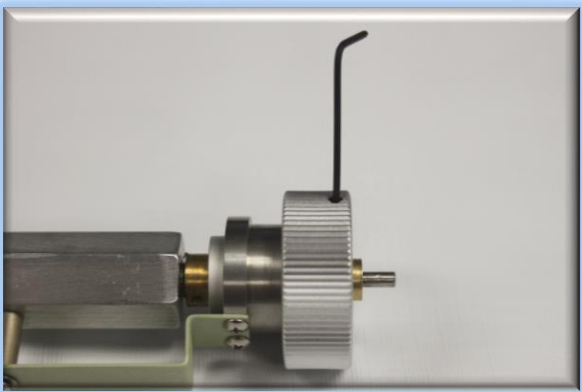
Step 1 – Remove Fine Focus Knob

Remove the stock black fine focus knob using the 1.5mm hex key.



Step 2 – Remove Coarse Focus Knob

Remove the larger stock silver coarse focus knob using the 1.5mm hex key.



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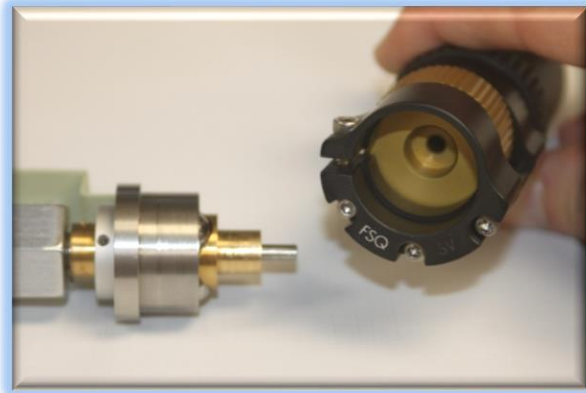


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Step 3 – Attach QuickSync TKX

Slide the QuickSync TKX motor assembly onto the pinion assembly. Use care to locate the gold focus knob onto the small shaft. Loosen the setscrew in the gold knob if needed. The fit will likely be snug. Use a gentle back and forth motion to slide the motor assembly on the shaft and then locate the clamp onto the stainless housing.



Step 4 – Orient Clamp

Rotate the motor assembly so that the knob will be easily accessible for your thumb during operation. Ensure the clamp is pushed firmly onto the stainless housing before tightening. Use the 7/64" hex key to tighten the clamp onto the stainless housing. Ensure the knob can move freely.



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Step 5 – Tighten and Adjust

Center the gold fine focus knob in the slot and use the 1/16" hex key to tighten the setscrew against the small shaft. Rotate the coarse focus knob on the other side to test and confirm the fine gold knob moves freely.



Step 6 – Test Clutch Mechanism

Roll the motor cover up to engage the clutch of the motor assembly. Ensure the engagement is tight for best performance.



Your QuickSync TKX motor is now ready for configuration for use with the FocusLynx Commander software and ASCOM drivers.



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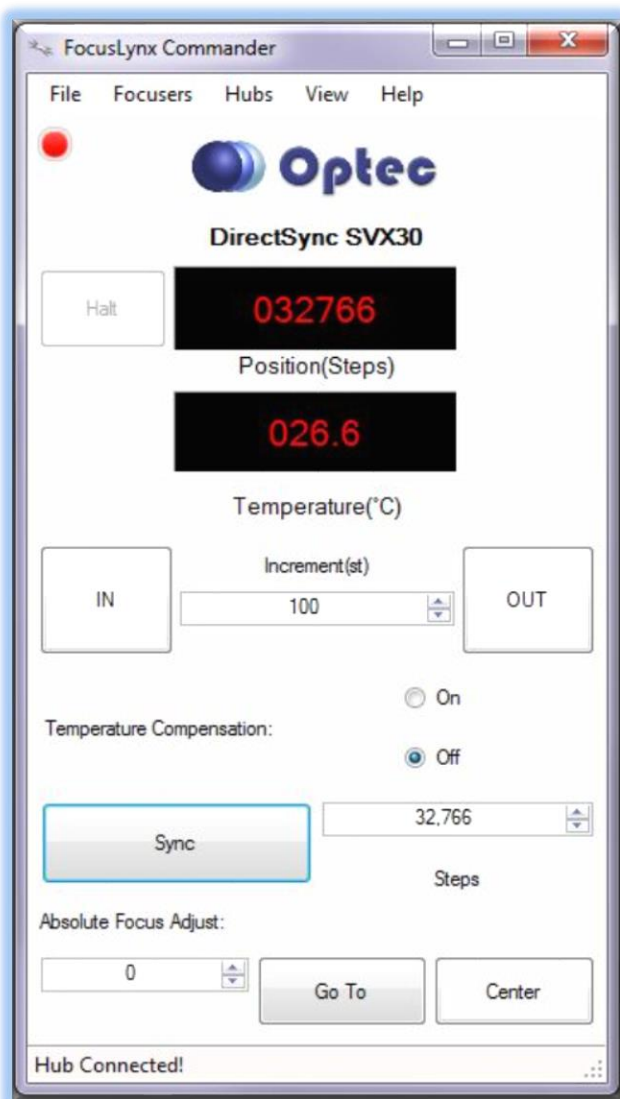


Download FocusLynx Commander Software

Visit Optec's download page to obtain the latest version of the FocusLynx Commander ASCOM driver and software package. FocusLynx Commander runs on any Windows 7 or higher operating system. Be sure to download version 3.1 or higher to operate the ThirdLynx control circuit. Separate installer packages for Mac and Linux will be available soon.



<http://www.optecinc.com/astrometry/downloads/focuslynx.htm>



The ThirdLynx controller is an iFocuser3 type device. Because FocusLynx Commander is an ASCOM client, you will need ASCOM Platform 6.4 to configure the focuser. Visit the ASCOM webpages for the latest version.

<https://ascom-standards.org/>

On non-Windows computers, there is no need to install the ASCOM platform. Optec's driver includes a built-in Alpaca standard server that will provide the required interface for any client –level software displaying the Alpaca logo.



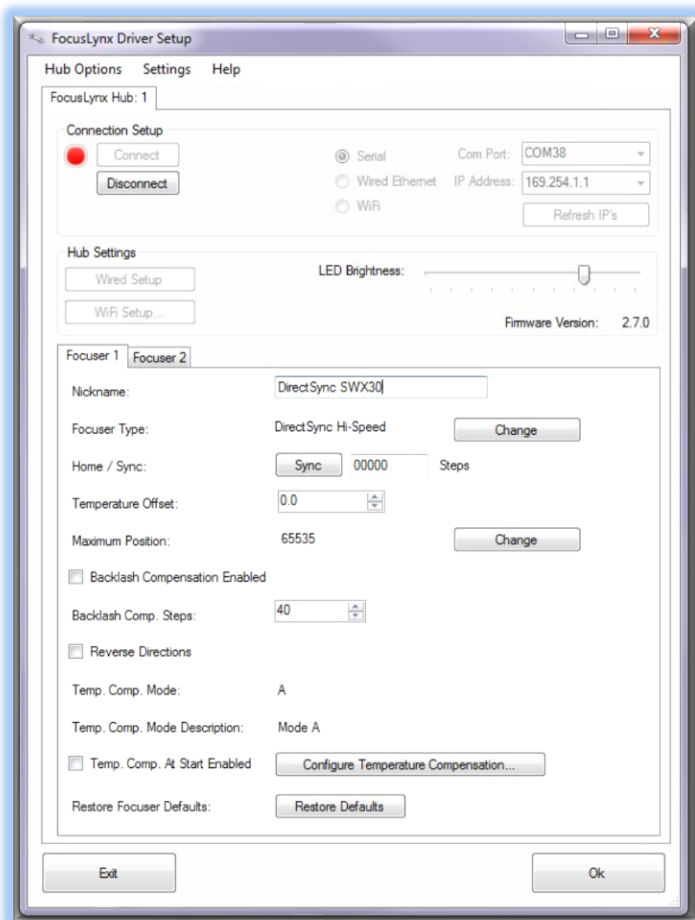
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Windows Software Setup



Consult the **FocusLynx Quick Start Guide** to install FocusLynx Commander for Windows. Once installed, you will need to configure FocusLynx Commander for your new DirectSync motor. Configuration within FocusLynx Commander will also configure the ASCOM driver so that the same settings will apply when using auto-focusing software such as Maxim D/L, FocusMax, Sequence Generator Pro, or TheSky X for Windows. Control of FocusLynx or ThirdLynx focusers within TheSky X Windows version can be accomplished through either the ASCOM chooser or with the native X2 drivers for FocusLynx.

Focuser Type Selection

In FocusLynx Commander, click **Focusers – Setup** to open the FocusLynx Driver Setup dialog. The ThirdLynx USB-CDC controller will be automatically assigned a virtual COM port by Windows. *Note: the Wired Ethernet and WiFi connection types will be greyed out.* Select the assigned COM port

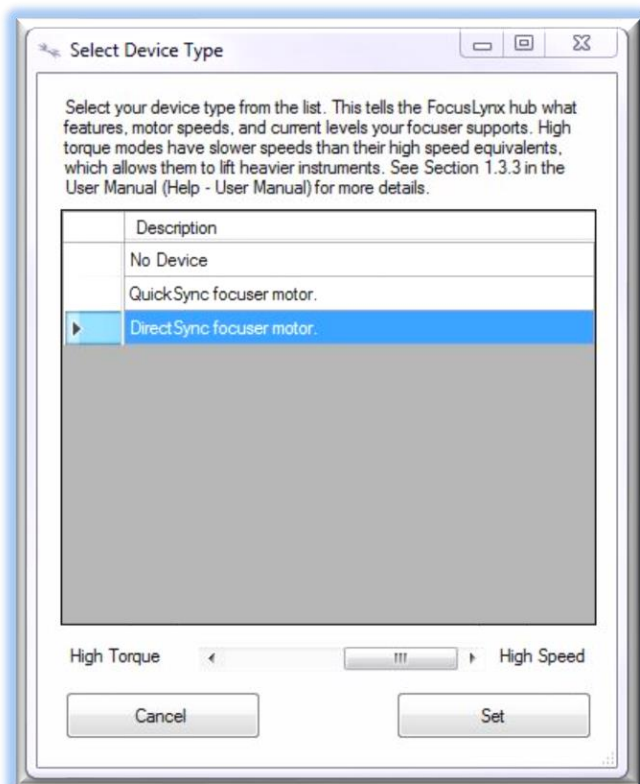
and click Connect. In the Focuser 1 section below, type in a Nickname for your telescope and click Change for the Focuser Type. Choose the **QuickSync** option and select either the Hi-Torque or Hi-Speed option using the slide bar near the bottom. With stepper motors speed and torque typically work inversely. That is, higher speeds will usually result in lower torque. The DirectSync Hi-Speed Focuser Type option coupled with the **QuickSync TKX** motor assembly can reliably handle payloads of 5kg (11 lbs.) or more.



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Click OK to exit the setup form and return to the main FocusLynx window. Click Focusers – **Connect**. Test the focuser movement by engaging the motor (roll the endcap clockwise as viewed from the cable end). Test both IN and OUT functionality with 1000 step increments. You should see the coarse and fine focus knobs move on the opposite side of the pinion block. All movements should be smooth. Disengage the motor to return to manual focus.

Contact Optec support (support@optecinc.com) if your focus motor cannot be adjusted without slippage or stalling. Some focusers present unique challenges with internal slipping.

Optional Setup Steps

Set the Position Units

The iFocuserV3 standard for ASCOM absolute focusers relates all focuser movements to actual step counts with the higher level client responsible for making the conversions to real-world measurements. FocusLynx Commander acts as a client and extends the property to easily convert the units to mm and microns. In the main form of the FocusLynx Commander window, you may left-click directly on the red Position digital read-out to toggle units between Steps, Microns, and Millimeters. Note that only the step count is passed through to the ASCOM driver.

Step Size and Focuser Range

The Takahashi focuser drawtubes have a wide variety of travel ranges. The QuickSync TKX stepper motor has a step-size of approximately 1.1 microns so the default maximum position of 65,535 steps would allow for about 72mm. If your focuser has a longer drawtube travel, you may wish to increase the Maximum Position value in the FocusLynx/ThirdLynx Driver Setup screen.



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However, some focusers may have a smaller step size and greater travel. To take advantage of the full focuser travel, you may wish to change the Maximum Position value in setup to allow more steps for full travel. Click File- **Step Size Wizard** in FocusLynx Commander to calculate the exact step size and set the MaxStep values for your focuser and motor.

Recommended Sync Procedure

For most auto-focus routines, the required range of movement for the focuser is quite small compared to the total range of travel. The default 16-bit digital range of 65,535 steps is always more than adequate to allow successful auto-focusing. For best results, we recommend the focuser be manually moved to a rough focus and the position be synced to the center position of 32,767. The FocusLynx Hand Control offers an easy push-button method of accomplishing this “sync to center” operation. To “sync to center” with FocusLynx Commander, enter 32,767 (or simply round to 33,000) in the box immediately right of the Sync button. Press **Sync** and wait a few seconds. Test the IN and OUT button movements to ensure proper operation and function.

Alternatively, you can manually move the focuser drawtube all the way IN and Sync to 0. Then, use the hand control or FocusLynx Commander interface to move the drawtube outward to the end of travel. Note the step position and enter this value in the Maximum Position within setup. Subsequent connection to the focuser will automatically calculate the new center position (half of MaxPos) and display it as the new default Sync position on the main form and in the hand control “sync to center” feature.

Temperature Compensation

The DirectSync motor includes a built-in temperature sensor for temperature compensation. Within FocusLynx Commander click File – **Temp Comp Wizard** to let the software step you through the process and automatically calculate the “TC” or Temperature Coefficient for your particular telescope configuration. After completing the wizard, save the new TC value in any of the five available TC modes. Click the adjacent radio button next to Mode A through E to select that TempComp Mode for the current session.

Mode	Description	Coefficient		Intercept
<input checked="" type="radio"/> Mode A	Celestron C14 @ f/10	163	steps/°C	3500
<input type="radio"/> Mode B	Celestron C14 @ f/5.5	124	steps/°C	3500
<input type="radio"/> Mode C	Celestron C14 @ f/3.3	73	steps/°C	3500
<input type="radio"/> Mode D	Mode D	86	steps/°C	3500
<input type="radio"/> Mode E	Mode E	86	steps/°C	3500

Apply Changes Close



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Turn on temperature compensation by selecting “On” just above the Sync button on the main FocusLynx Commander form. The FocusLynx controller will automatically adjust the focus for changing temperatures.

Linux and Mac Software Setup

Optec is developing a Linux based Commander program to provide much of the same functionality and features available with Windows FocusLynx Commander. Check the Optec website for the latest developments.

INDI Support

A group of dedicated volunteer programmers has developed the INDI Library which is a collection of programs designed to control astronomical equipment. Full details are available at the INDI Library website: <https://www.indilib.org/>

ThirdLynx uses the same low-level commands as FocusLynx and will function with the INDI FocusLynx driver developed by Mr. Philippe Besson and Jasem Mutlaq. Complete instructions and the INDI Linux driver are available for download here: <https://www.indilib.org/devices/focusers/focuslynx.html>.

Third-Party Software

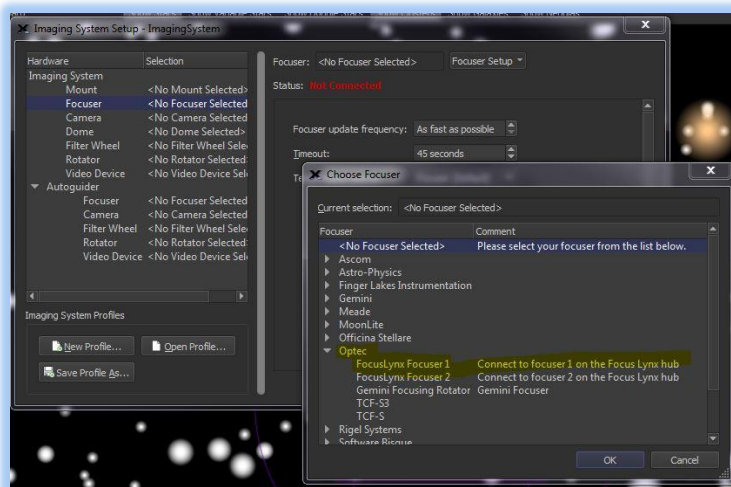
Visit the Optec website for the additional information describing FocusLynx configurations for ASCOM clients such as **FocusMax** and **Maxim D/L**, as well as non-ASCOM software such as Software Bisque’s **TheSky X** native X2 drivers for FocusLynx.

TheSky X Pro

Many users have asked for specific instructions to configure the DirectSync

ThirdLynx controllers with TheSky X native X2 drivers. Currently, you should configure ThirdLynx as FocusLynx Focuser 1.

We expect a future daily build to offer the ThirdLynx as a separate option. Under settings, look for the COM port labeled **Optec ThirdLynx USB CDC**.



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YouTube Channel

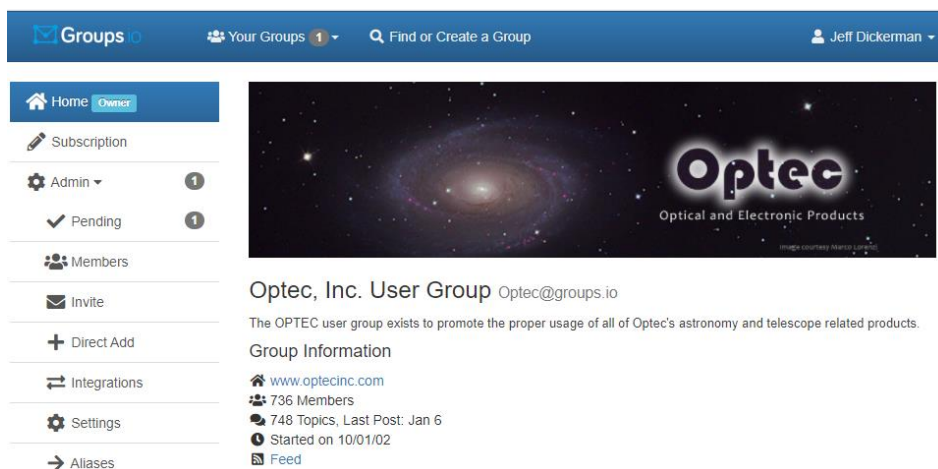
Optec is developing videos for installation and configuration of our many products for various software packages. Visit our YouTube channel by searching "Optec Inc" or clicking the link below.



<https://www.youtube.com/channel/UCL0J43G-q2SQfZfqeoLiLA>

Optec User Group

The Optec User Group is now located at Groups.io which provides a forum to communicate with other users of Optec instruments. Other end-users can often provide answers to specific configuration questions and Optec staff routinely follow and answer many questions as well. Click the banner below to subscribe.



Or visit the Groups.io Optec User Group here: <https://groups.io/g/Optec>.

FocusMax is available through CCDWare - <http://www.ccdware.com/products/focusmax/>

Maxim D/L is copyright Diffraction Limited - <http://diffractionlimited.com/product/maxim-dl/>

TheSky X is offered by Software Bisque - <http://www.bisque.com/>

Sequence Generator Pro by Main Sequence Software - <https://www.mainsequencesoftware.com/>



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