

## Chapter 3 Description

The SHB05 and SHB05T are one-half-inch-aperture, high-speed, bladed shutters, driven by the included shutter controller. The shutter connects to the controller through a shielded four-conductor cable using a four-pin, mini-DIN connector. The included controller provides the drive levels required for optimal performance and monitors the state of the shutter. The controller has a BNC connector for external modulation, and an interlock output jack for safety. A switching power supply is included.

The SHB05(T) can be controlled directly from the buttons on the controller or via an external modulation source. There are two buttons on top of the controller unit, one to turn the power on and off and the other, labeled as ENABLE, to open or close the shutter. When the unit is first powered on, it is in the mode it was last, either Manual or External Modulation Mode expecting input from the external modulation port. Manually depressing the ENABLE button will open and close the shutter. To use the modulation input, press and hold the ENABLE button for 3 seconds.

The external modulation port can drive the shutter up to a maximum frequency of 25 Hz. In normal operation, when the logic of the external modulation pulse is high, the shutter will open. When it is low, the shutter will be closed. In normal operation, the shutter will shut down if it is run at its max frequency for too long to prevent overheating. In Unprotected Mode, this safety feature is disabled and the unit may be damaged if run too long without thermal control.

The SHB05(T) have many safety features. The controller detects the state of the shutter using an internal optical sensor inside the shutter package. The optical sensor detects the shutter blade's position, confirming if the shutter is open or closed. This feature, when used with the interlock connector, makes this shutter ideal for applications where a laser safety lockout is required. In the event of a failure such as a blade jam, the SHB05(T) will shut down. This changes the state of the interlock and LED light will turn red. The SHB05(T) can detect when the blades are not operating at the set frequency and will shut down to prevent damage to the SHB05(T).

The SHB05(T) come with the shutter head, controller, external switching supply, AC cord, and this manual.



*Figure 1 Image of Product Parts in Case*

### 3.1. Overview

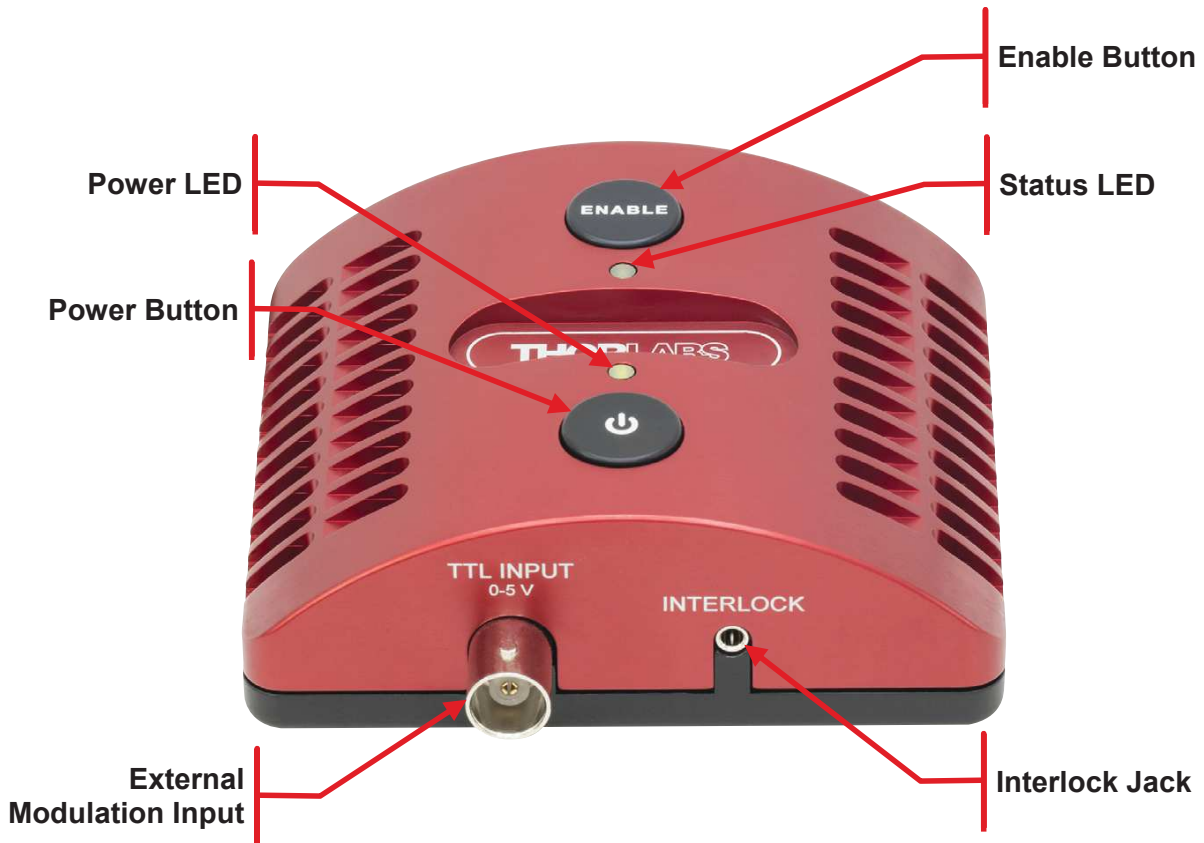


Figure 2 Controller Front View



Figure 3 Controller Rear View

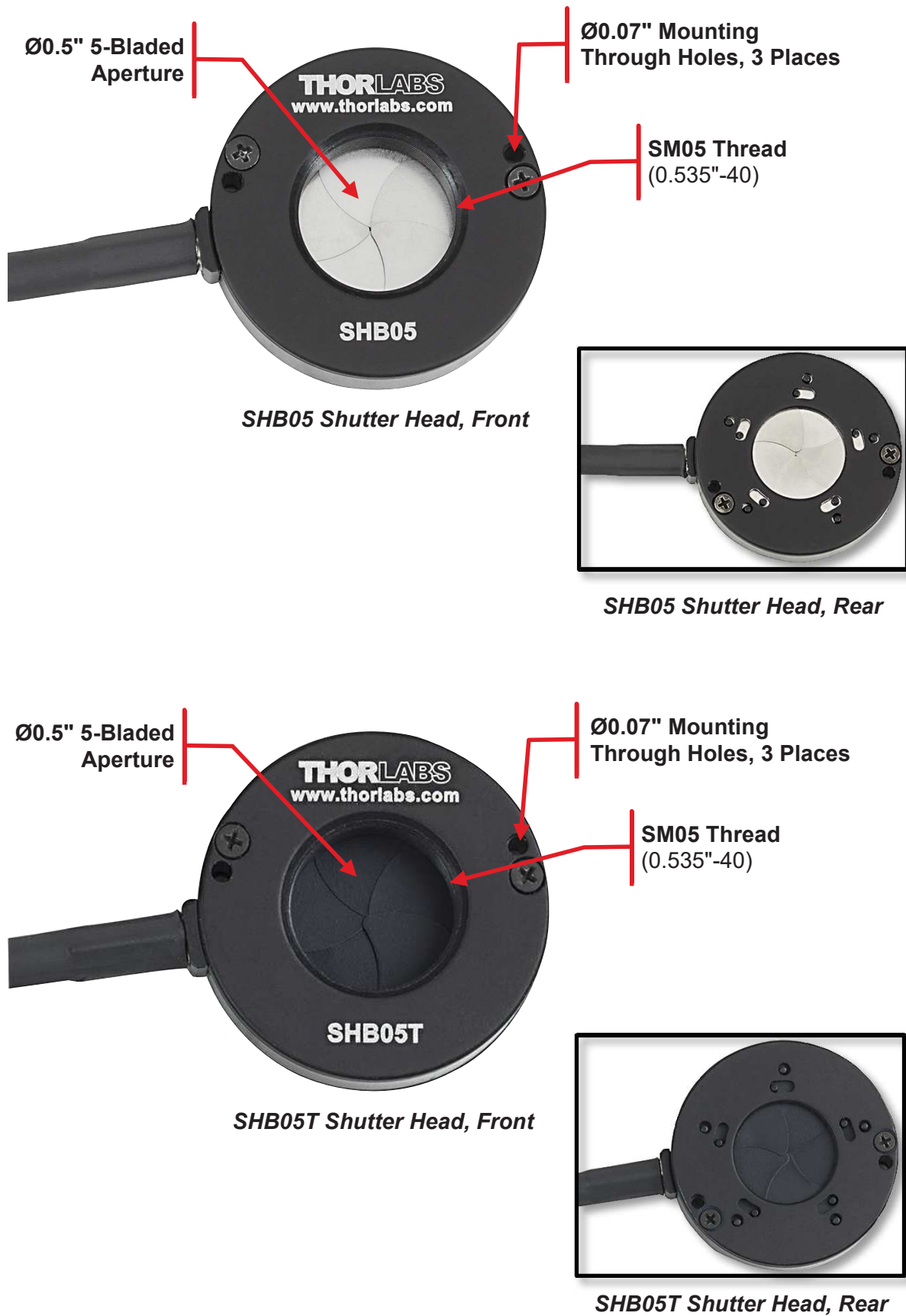


Figure 4 Shutter Head Front and Rear Views