11/10/2018 **Optical Shutter** Search Search (0) \$ Dollar V ENGLISH V Create an Account | Log In Products Home Rapid Order Services The Company Contact Us My Thorlabs A Products Home / Optomechanical Devices / Optical Shutter **Optical Shutter** Related Items **Diaphragm Shutters** Ø1/2" and Ø1" Beam Shutters Two Controller Options Available Interlock Mode Incorporated into Control Logic SM1-Threaded Manual Shutter SH1 10' Cable Included Beam Blocks SC10 Benchtop Shutter Controller KSC101 K-Cube Compact Shutter Controller SH05 HeNe Lase 10' Cable Included Ø1/2" Optical Beam Shutter Overview Specs Pin Diagrams Laser Safety Smart Pack Feedback Default Position: Closed Shutter Selection Guide Close Activation Time: 4.08 ms Diaphragm Single-Blade Passive Closure Mechanism Ideal for Laser Safety Applications Ø0.29" Manual SM05-Threaded (0.535"-40) Aperture for SM05 Lens Tube Compatibility Ø1/4", Ø1/2", and Ø1" One 8-32 (M4) Tap on Four Sides for Ø1/2" Post Mounting Ø1/2" and Ø1" Motorized Motorized Includes 10-Foot-Long Cable for Connection to Controller (Additional Cables Available Below) Controller Not Included (Sold Below) SH05 The SH05 Optical Beam Shutter utilizes a rotary, electro-mechanical actuator to provide millisecond shutter operation. During operation, the shutter remains in a closed position and then opens when a pulse control signal is applied. As long as the control voltage to the optical shutter remains high, the shutter stays open, but as soon as the voltage goes low, the shutter closes, providing inherent "fail-safe" operation. The frequency at which the device is opened and closed can be E Zoom controlled. An optical sensor, which detects the shutter blade position in the housing, provides information that confirms the state of the optical shutter position. This makes it ideal in applications where a laser safety lockout is required. In order to ensure that your optical beam shutter has a long lifetime, the aperture should not be located near the focus of a laser beam. Please note that the solenoid's performance is not guaranteed if the case temperature exceeds 50 °C. Significant heat buildup will occur if the aperture is closed for a long time while a high-power laser is incident on the shutter Both sides of the aperture of the SH05(/M) are internally SM05 (0.535"-40) threaded to easily interface with all of our SM05 lens tubes. For post mounting, the SH05 has three 8-32 tapped holes, while the SH05/M has three M4 tapped holes This shutter features a single blade that slides across the aperture. Additionally, Thorlabs offers a <u>Ø1/2" diaphragm shutter and controller</u>, which has five stainless steel blades that open from the center. **Controller Options** Thorlabs offers two compatible controllers for the SH05: the SC10 and KSC101. Both include an "interlock mode" that is incorporated into the controller's logic; a physical key lock; and manual, triggered, or softare controlled operation modes. The SC10 is a benchtop controller with an RS-232 computer connection that allows the controller to be operated using the included standalone software GUI. The KSC101 is a compact K-Cube controller with a USB 3.0 (2.0 Compliant) computer connection that allows the controller to be controlled using Thorlabs' Kinesis® or legacy APT[™] software packages. See the Specs tab for a comparison table of the two controller options A 10-foot-long cable with 6-way HRS connector is included for connecting the shutter to either the SC10 or KSC101 Shutter Controller. The SH1 can also be used with a third-party controller. For information on the control requirements, please see the Specs tab. Based on your currency / country selection, your order will ship from Newton, New Jersey +1 Qty Docs Part Number - Imperial Price Available / Ships Today +1 🖂 **SH05** Optical Beam Shutter with 10' Long Cable, Ø1/2" Aperture, 8-32 Taps \$470.22 J +1 Qty Docs Part Number - Metric Price Available / Ships Optical Beam Shutter with 10' Long Cable, \emptyset 1/2" Aperture, M4 Taps Today +1 🖂 **SH05/M** \$470.22 Add To Cart

Ø1" Optical Beam Shutter

Overview Specs Pin Diagrams Laser Safety Feedback

Beam Shutte	r Specifications
General	
Aperture	Ø1.0" (25.4 mm)
Blade Material	6061-T6 Aluminum
Blade Thickness	0.06" (1.6 mm)
Solenoid Coil Resistance	31.84 Ω
Initial State	Closed
Operation	
Actuation Pulse	10 V to 75 V (Time Dependent)
Holding Voltage	8 V to 15 V
Maximum Recommended Applied Solenoid Voltage ^a	15 VDC (Holding) 75 VDC (Pulse)
Maximum Pulse Rate	12.5 Hz Steady, 16.6 Hz Burst
Duty Cycle ^a	Optimum @ 8 Hz = 50%
Lifetime	1,000,000 Cycles (Typical)
Max Solenoid Power (20°C)	
Steady State	9 W @ Continuous
50% Duty Cycle	18 W @ 100 s
25% Duty Cycle	36 W @ 36 s
5% Duty Cycle	180 W @ 2.8 s
Timing Sp	ecifications ^c
ті	10 ms
то	10 ms
TD/R	20 ms
TC	20 ms
MOP	40 ms
MSOP	40 ms
 a. To protect the unit from heat, 1 actuation pulse followed by a h a long period of time, the holdi actuation voltage that is below other timing specs cannot be g b. Measured when the SH05 was 	horlabs recommends applying an holding voltage. To keep the unit on for ng voltage must be ≤ 12 V. Applying an 8 V may open the shutter; however juaranteed.

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C.	See	the	diagram	to the	e riaht :	and the	table	below for	r definitions

Beam Shutter Controller Comparison						
Item #	SC10	KSC101				
Supply Voltage	24 V Pulse (10 V Hold)	15 VDC (7 V Average PWM Hold)				
Maximum Exposure Rate	25 Hz	20 Hz				
Minimum Exposure Time	10 ms	15 ms				
External Triggering (TTL)	One BNC Trig in and BNC Trig Out	Two Bidirectional SMA Trigger Ports				
Computer Connection	RS232	USB 3.0 Micro B (USB 2.0 Compliant)				
Sequence Control	Yes	Yes				
Manual Key Lock	Yes	Yes				
Interlock	2.5 mm Jack Plug	3.5 mm Jack Plug				
Software	SC10 Standalone Software ^a	<u>Kinesis[®] or APT™ Software</u> ^b				
Dimensions	11.5" x 5.3" x 3.0" (292 mm x 135 mm x 76 mm)	2.36" x 2.36" x 1.94" (60.0 mm x 60.0 mm x 49.2 mm)				

a. The SC10 includes LabVIEW VI's suitable for integrating into existing LabVIEW applications. A standalone executable written in LabWindows/CVI is also provided, allowing remote computer control of the SC10

executable written in Labvindows/CV1 is also provided, allowing remote computer control of the SC10 without any additional programming.
 b. The Kinesis and APT Software feature .Net and activeX controls, repectively, which can be used by 3rd party developers working in other languages, such as LabVIEW and C#, to create custom applications.See the *Kinesis Tutorials* and *APT Tutorials* tabs below for more information,



	Timing Diagram (See Figure to the Left) Definitions
ті	Transfer Initialize: the time delay between the application of the energizing voltage and the initial movement of the shutter
то	Transfer Open: the time for the shutter to move from 20% open to 80% open
TD/R	Transfer Dwell/Release: the delay between the removal of the energizing voltage and the initial closing movement of the shutter
тс	Transfer Close: the time for the shutter to move from 80% open to 20% open
MOP	Minimum Open Pulse: minimum pulse width supplied by the SC10 or KSC101 controller
MSOP	Minimum Shutter Open Time: the minimum time the shutter can be opened for using the minimum open pulse (MOP) from the SC10 or KSC101 controller

Based on your currency / country selection, your order will ship from Newton, New Jersey

+1	Qty	Docs	Part Number - Imperial			<u>Available / Ships</u>	
+1 🖂		Ē	<u>SH1</u>	Customer Inspired! Optical Beam Shutter with 10' Long Cable, Ø1" Aperture, Imperial	\$628.32	\checkmark	Today
+1	Qty	Docs	Part Nur	nber - Metric	Price	<u>Availabl</u>	<u>e / Ships</u>
+1 +1)⊒	Qty	Docs	Part Nur <u>SH1/M</u>	nber - Metric Customer Inspired! Optical Beam Shutter with 10' Long Cable, Ø1" Aperture, Metric	Price \$628.32	<u>Availabl</u> √	<u>e / Ships</u> Today

Benchtop Shutter Controller Overview Specs Pin Diagrams Software Feedback Local Operation or Remote Control via LabVIEW, LabWindows, RS-232, or BNC Programmable with Repeating Open/Close Sequences at Millisecond Intervals LCD Front Panel with Dedicated Shutter Status Indicators Safety Alarm When Coupled with SH05 and SH1 Beam Shutter Key Switch Provides Additional Safety Thorlabs' SC10 Shutter Controller provides an easy-to-use control interface for our SH05 and SH1 Beam Shutters. The shutter can be controlled by hand using the buttons on the front of the unit, and the back includes a BNC input for external triggering, a BNC output for synchronization with other equipment, and an RS-232 SC10 port for remote computer control. Dedicated lights on the front panel reveal if the shutter is enabled and if the shutter is open. It also features a keyswitch that enables opening of the shutter, helping to comply with lab laser safety requirements. In addition, it incorporates a safety interlock that overrides all system € <u>Zoom</u> commands and closes the shutter. If the interlock is tripped, the keyswitch must be cycled to resume operations.

11/10/2018



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Specs Feedback

Overview

11/10/2018 **Optical Shutter** 6-Pin, Male-to-Male Hirose Connector Cable Pin 3 Pin 4 Pin 3 Pin 4 Compatible with Several Thorlabs Products TC200 Temperature Controller SC10 Shutter Controller Pin 5 Pin 2 . Pin 2 Pin 5 KSC101 K-Cube Shutter Controller Pin 1 Pin 6 SH05 Beam Shutter, Ø1/2" Aperture SH1 Beam Shutter, Ø1" Aperture . Pin 1 Pin 6 Cut Cable to Expose Wires for Custom Applications TC200CAB10 The TC200CAB10 is a 10-foot-long, 6-pin, male-to-male Hirose
 Controller
 The recordance is a protoconduction of the intermined model.

 Image: The record of the state of the s Wire Diagram Male Hirose Connector Click to Enlarge Click to Enlarge This Hirose connector cable can also be cut to any length leaving one connectorized end and one bare end. The colored wire diagram to the right shows the relationship between the six colored wires and the pins in the connector, allowing the cut cable to be incorporated into a variety of custom applications. Based on your currency / country selection, your order will ship from Newton, New Jersey Qty Part Number - Universal +1 Docs Price Available / Ships Today +1 🔁 TC200CAB10 6-Pin, Male-Male Hirose Connector Cable, 10' Long \$90.02 1 Ë Add To Cart

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