



# Uniblitz® CS90H

## 90mm Uni-Stable Optical Shutter

### Overview

The Uniblitz CS90H has been designed to provide accurate, repeatable exposures for a wide variety of applications such as telescopy and aerospace. The slim form-factor provides a very large 90mm aperture that can be inserted into a 7.00 inch diameter housing. The CS90H is available in a housed or an un-housed configuration for OEM applications.

Uni-stable shutter devices, like the CS90H, require power to hold the blades in the open state.

### Key Features

- Large 90mm aperture
- Configured for the [VCM-D1 Shutter Driver](#)
- **RoHS Compliant**
- Transfer time on opening:  
50.0 milliseconds
- Total opening time:  
71.5 milliseconds

### Specifications

#### Primary Acuator Electrical Specifications <sup>1</sup>

Coil resistance	24 OHMS
Voltage to Open	+70 VDC <sup>2</sup>
Hold Voltage (Nominal) <sup>3</sup>	+7 VDC / +5 VDC <sup>4</sup>

#### Secondary Acuator Electrical Specifications <sup>1</sup>

Coil resistance	24 OHMS
Voltage to Open	+70 VDC <sup>2</sup>
Hold Voltage (Nominal) <sup>3</sup>	+7 VDC / +5 VDC <sup>4</sup>

#### Mechanical Specifications

Weight Unhoused	320.0 g
Weight Housed	680.0 g
Operating Temp.	0 - 80 °C
Max. Opening Bounce	15%
Max. Closing Bounce	5%
Max. Freq. of Operation <sup>5</sup>	1 Hz / 3 Hz
Number of Shutter Blades	6

<sup>1</sup> Actuators wired in parallel. Combined DCR is 12  $\Omega$  nominal.

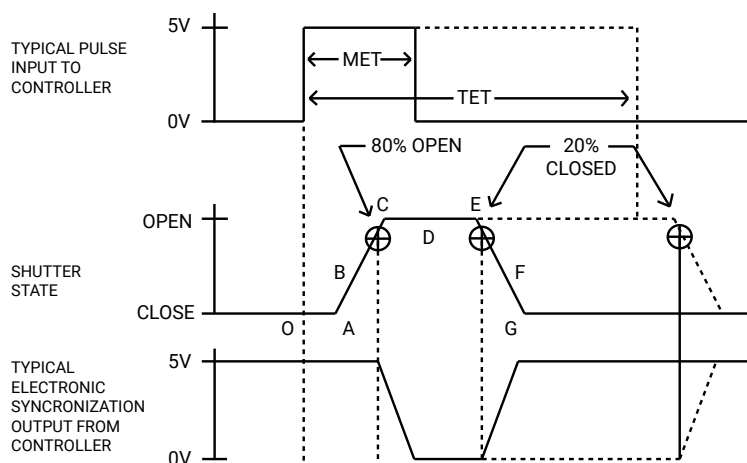
<sup>2</sup> VCM-D1 High Energy Mode provides this voltage level (Capacitor value increases to 550 $\mu$ f).

<sup>3</sup> Voltage level required across actuator coil when held in open position.

<sup>4</sup> Dual hold voltage system required and included in VCM-D1 when High Energy Mode selected.

<sup>5</sup> (Continuous/Burst) Continuous frequency rating specified at shutter's minimum exposure pulse. Burst frequency rating specified for four (4) seconds maximum with one (1) minute minimum between bursts.

## Shutter Timing Data



### MET<sup>1</sup> and TET<sup>2</sup> for CS90H

- **Minimum Exposure Time (MET):**  
80.0 msec.<sup>3</sup>
- **Typical Exposure Time (TET):**  
120.0 msec.<sup>3</sup>

CS90H <sup>4</sup> (w/ VCM-D1 and "T" blades) <sup>5</sup>		Min. Exp. Time (80.0 msec.)		Typ. Exp. Time (120.0 msec.)	
Graph	Description	Typical	Max	Typical	Max
O - A	Delay time on opening after current is applied	21.5	23.0	21.5	23.0
A - C	Transfer time on opening	50.0	52.5	50.0	52.5
O - C	Total opening time	71.5	75.5	71.5	75.5
B - F	Minimum equivalent exposure time	71.0	79.3	126.0	133.5
C - E	Minimum dwell time (based on exposure pulse)	13.0	14.0	60.5	63.0
D - E	Delay time on closing after current is removed	4.5	9.5	12.0	18.5
E - G	Transfer time on closing	66.0	78.0	81.0	88.5
A - G	Total window time	129.0	144.5	191.5	204.0

<sup>1</sup> The minimum timing required to allow the shutter to fully open and then fully close.

<sup>2</sup> The exposure time provided to the driver where, as you increase the exposure pulse in one msec increments, the shutter output (or the A-G time) will change in one msec increments.

<sup>3</sup> Due to non-linearity caused by damp and blade adjustment, exposure pulse selection between 80msec and 120msec may have some indeterminate typical and max values.

<sup>4</sup> Individual timing segments may vary.

<sup>5</sup> Under no circumstances should any type of lubricant be applied to the shutter blade area. Lubricating the shutter blades will likely slow the shutter down and may eventually render it inoperable.

## Product Options

CS90H ② ③ ④ ⑤ ⑥ - ⑦ - ⑧

Ex: CS90HS3T0-EC-103

<b>① Shutter Series:</b>  <b>CS90H</b>	<b>② Voltage:</b>  <b>S:</b> Use with VCM-D1  <b>E:</b> Use with V880, VED24, or D880C	<b>③ Housing:</b>  <b>1:</b> Un-Housed  <b>3:</b> #3 Housing	<b>④ Blades:</b> <sup>1</sup>  <b>T:</b> Low Energy (Teflon®)
<b>⑤ Electronic Sync:</b>  <b>0:</b> Omitted  <b>1:</b> Included	<b>⑥ Connector:</b>  <b>L:</b> 18" Flying Leads  <i>Leave blank for 5-pin Switchcraft connector</i>	<b>⑦ Encapsulated Coil:</b> <sup>2</sup>  <b>EC:</b> Included  <i>Leave blank if not required</i>	<b>⑧ Mount:</b> <sup>3</sup>  <b>103:</b> Mounting Ring  <i>Leave blank if not required</i>

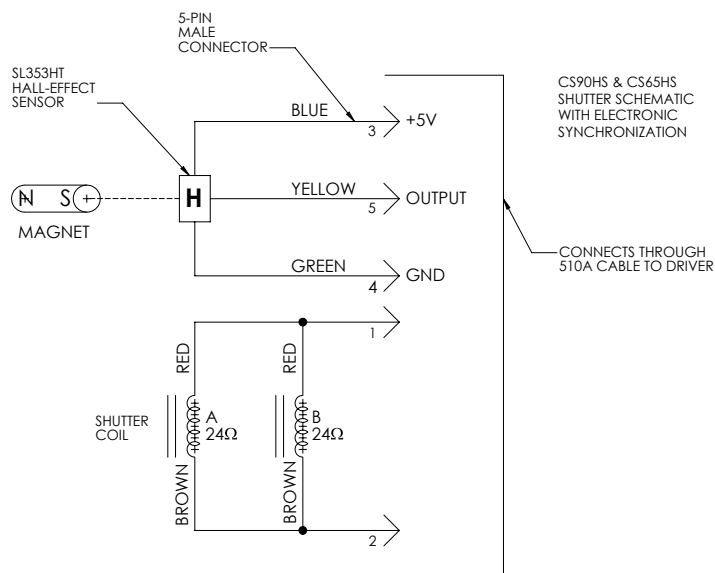
<sup>1</sup> Other blade coating options may be available by special order.

<sup>2</sup> Input side only; Teflon® coating is on opposite side to protect shutter blade surface. Light source must be input to the reflective side only.

<sup>3</sup> Mounts are only compatible if #3 housing is optioned as well.

## Electronic Sync.

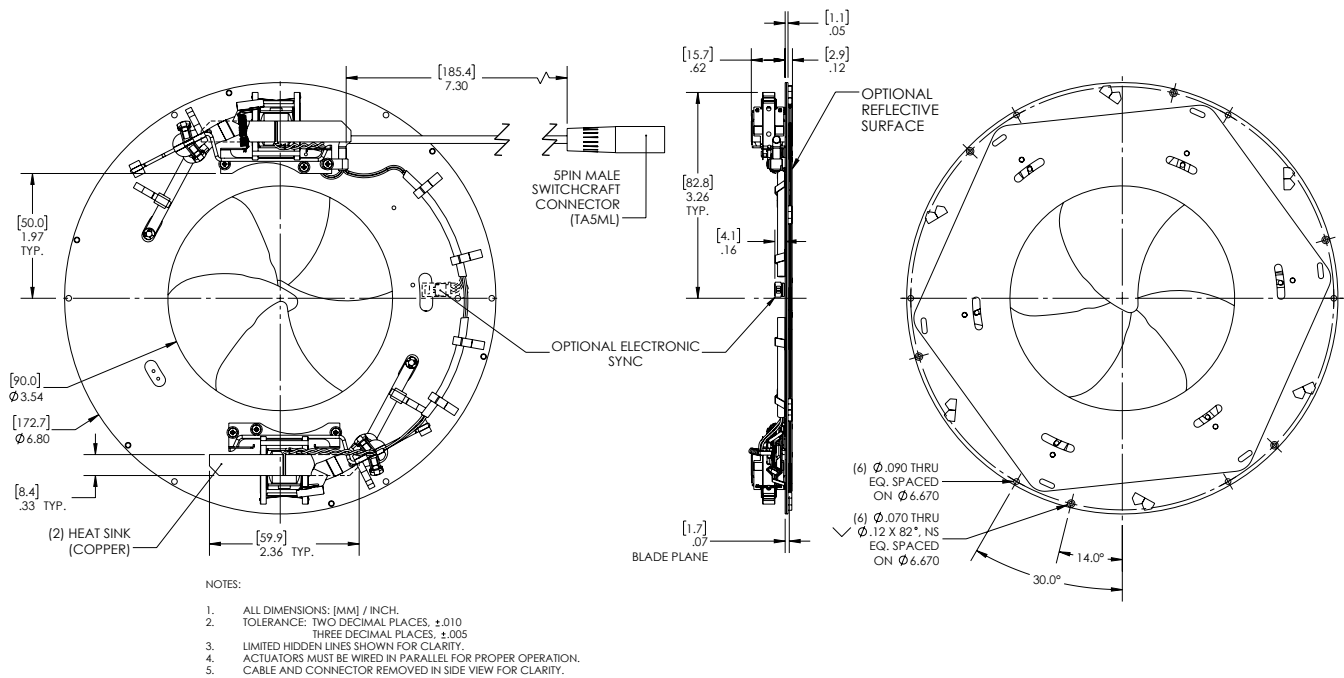
The synchronization system for CS90H shutter devices incorporates a small magnet mounted to the driving mechanism and a Hall effect sensor. When the device achieves approximately 80% of full open, the magnet causes the Hall effect sensor to change state, producing a signal to indicate that the shutter has switched to the active state. Shown to the right is the CS90H series shutter schematic which incorporates this electronic synchronization system. There is no connection to the designated synchronization pins when an electronic sync. is omitted.





## Uniblitz® CS90H Technical Drawings

### Un-Housed



### Housed / Connector Layout

