



# Uniblitz® FS35

## 35mm Uni-Stable Optical Shutter

### Overview

The Uniblitz FS series shutters are designed and optimized to operate directly from +5VDC and do not require a separate driver. Removing the +5VDC (0VDC) closes these shutters. A simple control circuit can be used to operate these shutter devices from a TTL trigger pulse. This control can be also accomplished with our new [VLM1 TTL control interface module](#), which is now available.

This low-cost innovation provides the reliability of Uniblitz shutters (typical lifetime >300K cycles) at a single operating voltage.

### Key Features

- 35mm aperture
- Default closed operation
- **RoHS Compliant**
- Transfer time on opening:  
20.0 milliseconds
- Transfer time on closing:  
18.0 milliseconds

### Specifications

#### Electrical Specifications

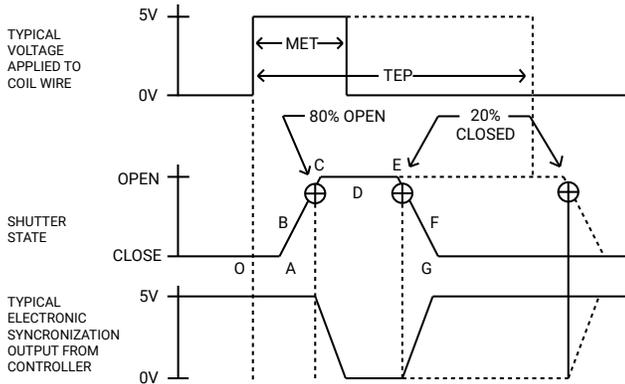
Coil resistance	12 OHMS
Voltage to Open	+5 VDC at 425 mA
Hold Voltage	+5 VDC

#### Mechanical Specifications

Weight Unhoused	48.5 g
Weight Half-Housed	116.0 g
Weight Housed	183.5 g
Operating Temp.	-40 - +65 C
Max. Opening Bounce	15%
Max. Closing Bounce	5%
Max. Freq. of Operation <sup>1</sup>	12 Hz
Number of Shutter Blades	5

<sup>1</sup> (Continuous/Burst) Continuous frequency rating specified at shutter's minimum exposure time (MET).

## Shutter Timing Data



### FS35 (w/ 5VDC and C-PET blades) <sup>1</sup>

### Time (msec.)

Parameter	Description	Time (msec.)
O - A	Delay time on opening after current applied	12.0
A - C	Transfer time on opening	20.0
O - C	Total opening time	32.0
C - E	Min. dwell time with min. input pulse	14.0
B - F	Min. equivalent exp. time	33.0
E - G	Transfer time on closing	18.0
A - G	Total window time	52.0
MET	Min. exposure time	40.0
TEP	Typical exposure pulse	>40.0

<sup>1</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

FS35 **2 3 4 5 6 - 7**

Ex: FS35S2C0L-EC

### 1 Shutter Series:

**FS35:** Normally Closed

**FSR35:** Normally Open

### 2 Voltage:

**S:** Standard 5 VDC

### 3 Housing:<sup>2</sup>

**1:** Un-Housed

**2:** Half-Housed

**3:** Fully-Housed

### 4 Blades:<sup>3</sup>

**C:** Carbon impregnated plastic (C-PET)

**T:** Low Energy (Teflon®)

**ZM:** High Energy (AlMgF2)<sup>4</sup>

### 5 Electronic Sync:

**0:** Omitted

**1:** Included

### 6 Connector:

**L:** 18" Flying Leads

### 7 Encapsulated Coil:

**EC:** Included<sup>5</sup>

*Leave blank if not required*

<sup>2</sup> Various mounting methods available depending on housing option.

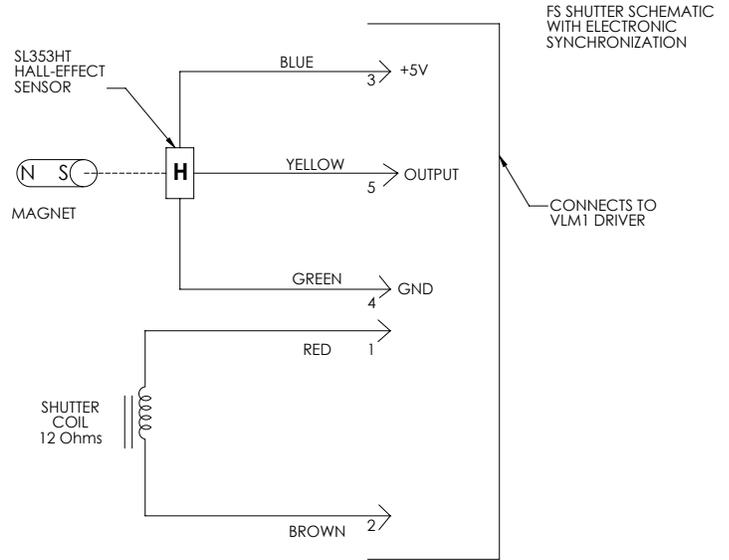
<sup>3</sup> Other blade coating options may be available by special order.

<sup>4</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>5</sup> Vacuum compatibility up to 10E-10 Torr.

## Electronic Sync.

The synchronization system for FS 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 left is the FS series shutter schematic which incorporates the electronic synchronization system. There is no connection to the designated synchronization pins when an electronic sync. is not selected.



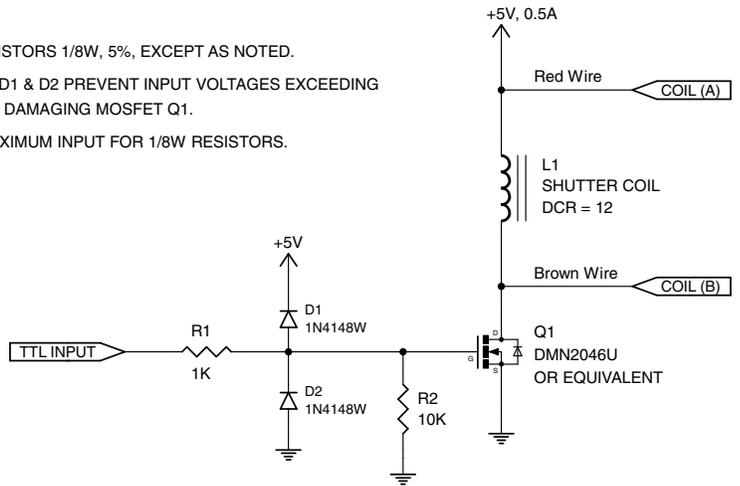
## Typical Control Circuit

This simple control circuit to the right can be used to operate the shutter device from a TTL trigger pulse.<sup>1</sup> This control can also be accomplished with the [VLM1 interface module](#).

<sup>1</sup> Note that the shutter will not operate directly from a TTL signal.

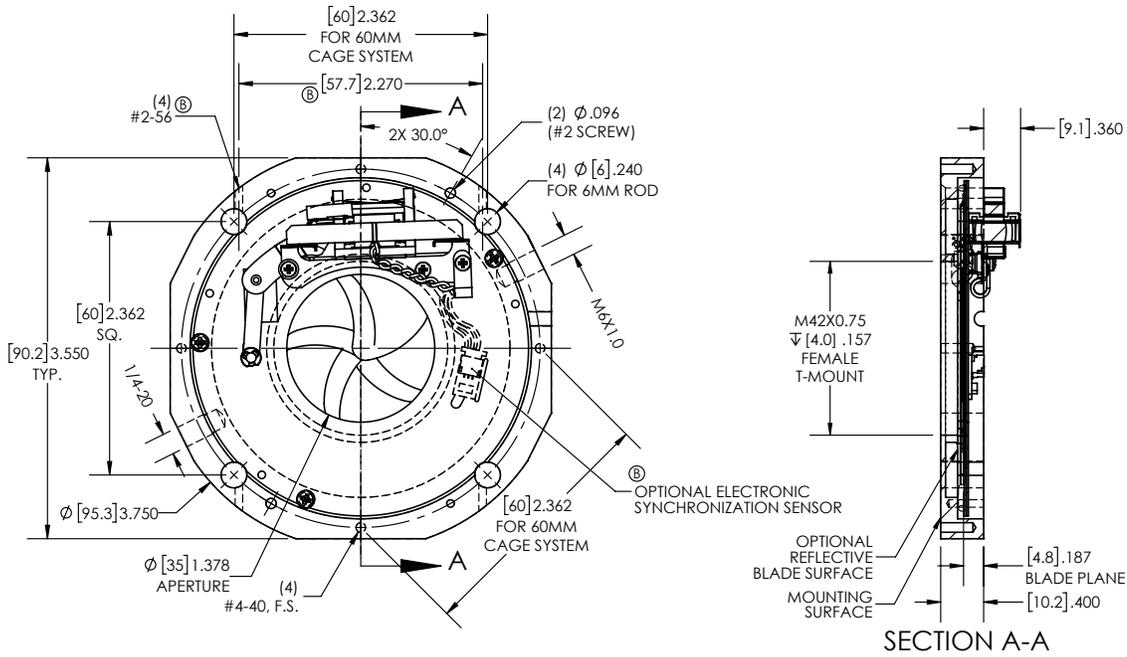
**NOTES:**

1. ALL RESISTORS 1/8W, 5%, EXCEPT AS NOTED.
2. DIODES D1 & D2 PREVENT INPUT VOLTAGES EXCEEDING +5V AND DAMAGING MOSFET Q1.
3. +12V MAXIMUM INPUT FOR 1/8W RESISTORS.



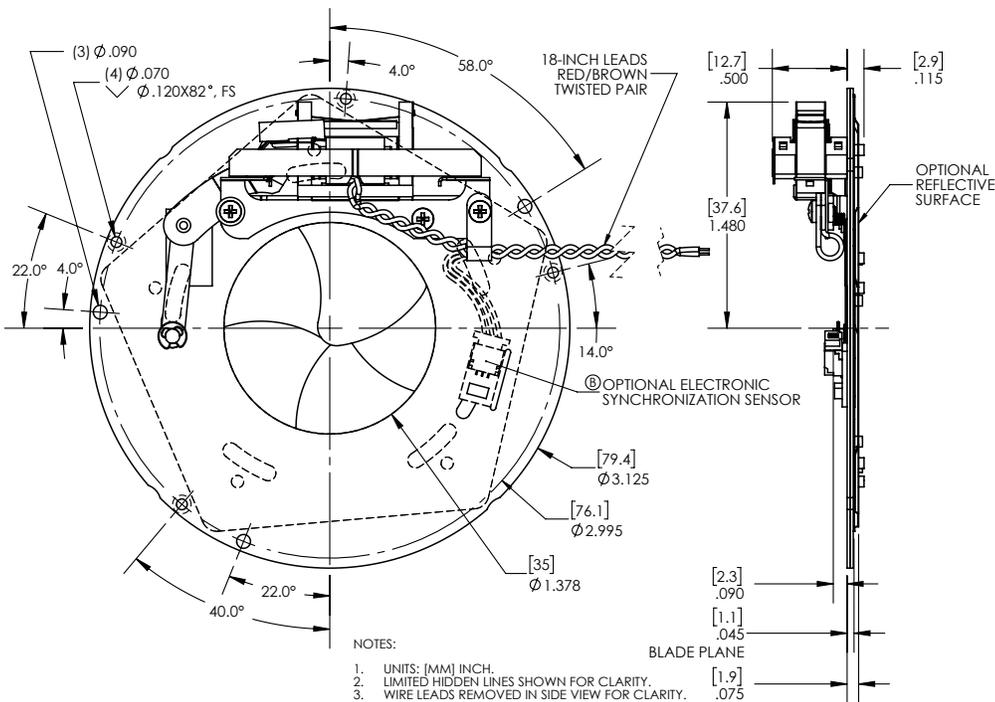
# Uniblitz® FS35 Technical Drawings

## Half-Housing - FS35S2C0L



- NOTES:
1. UNITS: [MM] INCH.
  2. LIMITED HIDDEN LINES SHOWN FOR CLARITY.
  3. LEADS WIRES REMOVED FOR CLARITY.

## Un-Housed - FS35S1C0L



- NOTES:
1. UNITS: [MM] INCH.
  2. LIMITED HIDDEN LINES SHOWN FOR CLARITY.
  3. WIRE LEADS REMOVED IN SIDE VIEW FOR CLARITY.



## Uniblitz® FS35 Technical Drawings

### Full-Housing - FS35S3C0L

