Datasheet

Uniblitz® FS6

6 mm Uni-Stable Laser Shutter



Overview

Uniblitz® FS series shutters are designed and optimized to run directly from +5 VDC, with no separate driver. Removing the +5 VDC (0 VDC) closes them. A simple control circuit lets them run from a TTL trigger pulse, or the VLM1 TTL control interface module can do it for you.

This low-cost design brings the reliability of Uniblitz shutters (typical lifetime >1 million cycles) at a single operating voltage.

Key features

- ✓ 6 mm aperture
- ✓ Default closed operation
- ✓ Transfer time: 3.3 ms opening, 6.0 ms closing
- ✓ RoHS compliant

Specifications

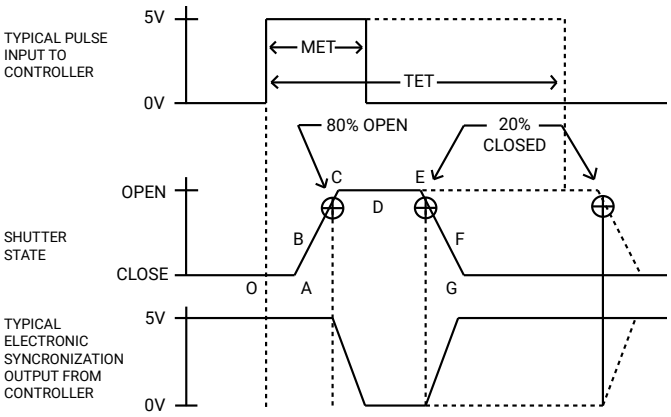
Electrical	
Coil resistance	12 Ω
Voltage to open	+5 VDC at 425 mA
Hold voltage	+5 VDC

Mechanical	
Weight, un-housed	25.7 g
Weight, half-housed	59.5 g
Weight, housed	94.5 g
Operating temperature	−40 to +65 °C
Max. opening bounce	15%
Max. closing bounce	5%
Max. frequency[1]	50 Hz
Number of shutter blades	1

1 Continuous, at the shutter's minimum exposure time (MET).

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Shutter timing data[5]



Exposure times[4]	
Minimum (MET)[1]	10.0 ms[3]
Typical (TET)[2]	20.0 ms[3]

4 Measured with the VLM1 (+5 VDC) and Teflon® blades.
5 Never lubricate the blade area. It slows the shutter and can make it inoperable.

Segment	Description	MET mean	MET max	TET mean	TET max
O–A	Delay time on opening after current is applied	4.5	5.5	4.5	5.5
A–C	Transfer time on opening	3.5	4.5	3.5	4.5
O–C	Total opening time	8.0	10.0	8.0	10.0
B–F	Min. equivalent exposure time	7.7	9.5	19.3	21.0
C–E	Min. dwell time (based on exposure pulse)	4.0	4.5	15.5	16.0
D–E	Delay time on closing after current is removed	2.0	4.5	3.5	6.0
E–G	Transfer time on closing	3.8	5.5	4.0	5.5
A–G	Total window time	11.3	14.5	23.0	26.0

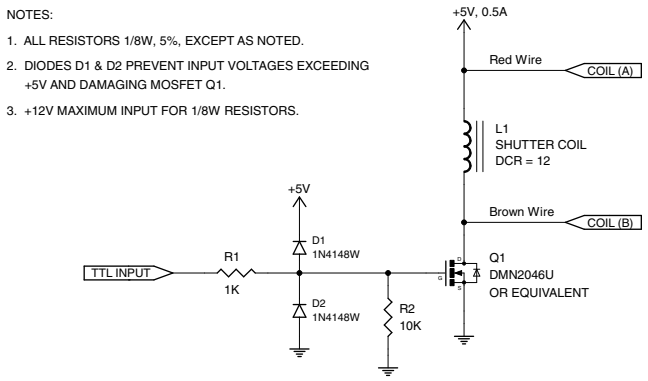
All times in ms. Individual timing segments may vary.

1 MET: the shortest exposure pulse that fully opens and closes the shutter.
2 TET: beyond this pulse, A–G time changes one-for-one with the pulse (e.g. +1.0 ms of pulse beyond 20.0 ms gives +1.0 ms of A–G time).
3 Between 10.0 and 20.0 ms, pulses open and close the shutter fully, but timing from input to output may not be linear. This comes from the shutter's design, construction and adjustment.

Typical control circuit

This simple control circuit runs the shutter from a TTL trigger pulse.[1] The VLM1 interface module can do the same.

1 The shutter won't run directly from a TTL signal.



Product options

FS6 2 3 4 5 6 – 7

Example: **FS6S2Z0L-EC**

1	**Shutter series**
FS6	Normally closed
FSR6	Normally open
2	**Voltage**
S	Standard 5 VDC
3	**Housing**[1]
1	Un-housed
2	Half-housed
3	Fully housed

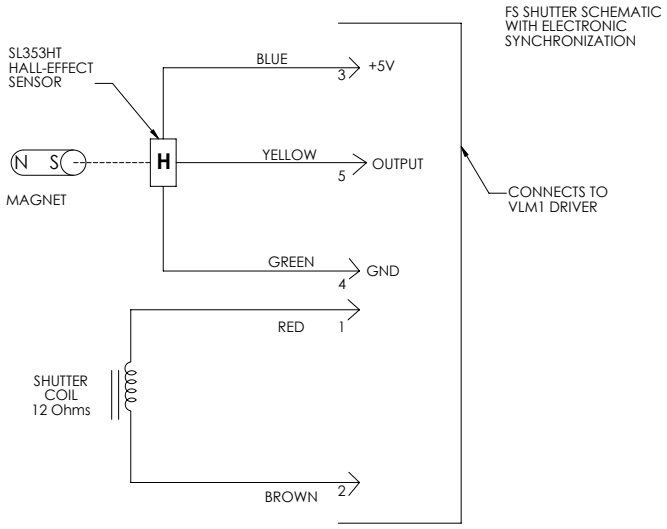
4	**Blades**[2]
T	Low energy (Teflon®)
ZM	Laser energy ($AlMgF_2$)[3]
Z	Laser energy (AlSiO)[3]
5	**Electronic sync**
0	Omitted
1	Included
6	**Connector**
L	18 in (457 mm) flying leads
—	Leave blank if not required
7	**Encapsulated coil**
EC	Included[4]

1 Mounting methods vary with the housing option.
2 Other blade coatings may be available by special order.
3 Input side only; the Teflon® coating on the opposite side protects the blade surface. Light must enter on the reflective side.
4 Vacuum compatible up to 10E-10 Torr.

Electronic sync

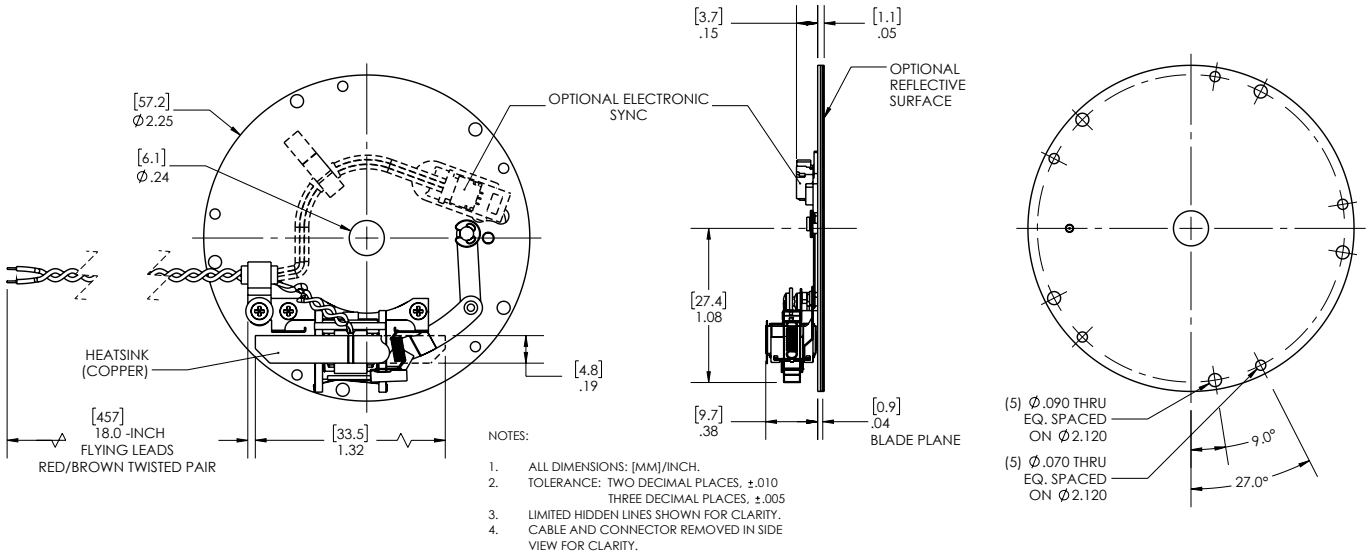
The FS6's electronic sync uses a small magnet on the drive mechanism and a Hall Effect sensor. At about 80% open, the sensor changes state and signals that the shutter is open.

With the sync omitted, the sync pins are not connected.

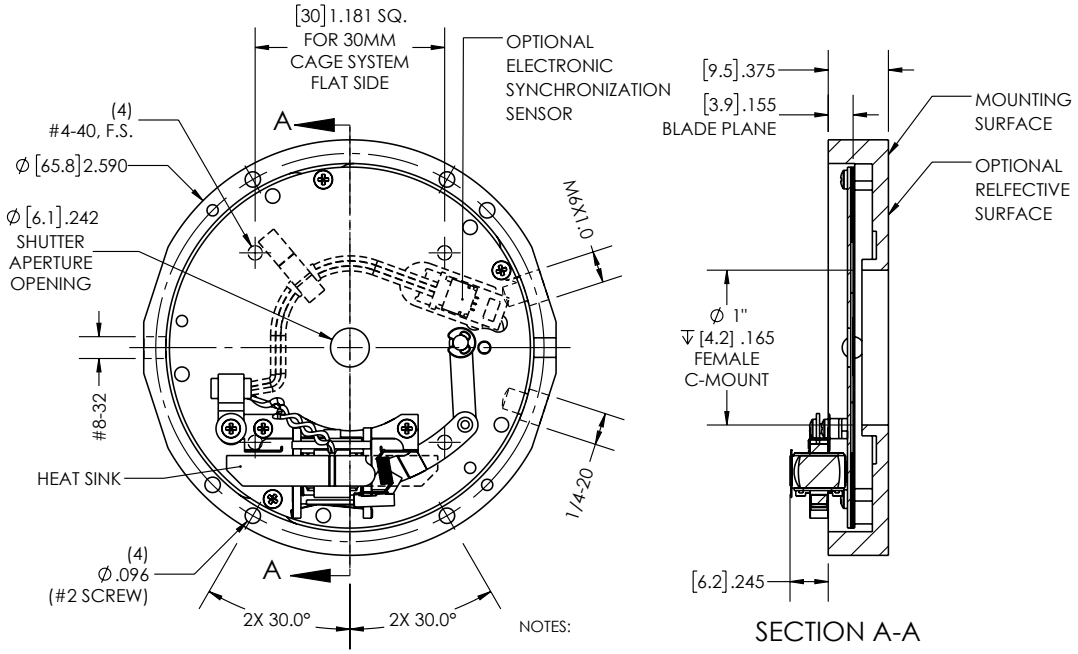


Technical drawings

FS6, un-housed (FS6S1T0L)



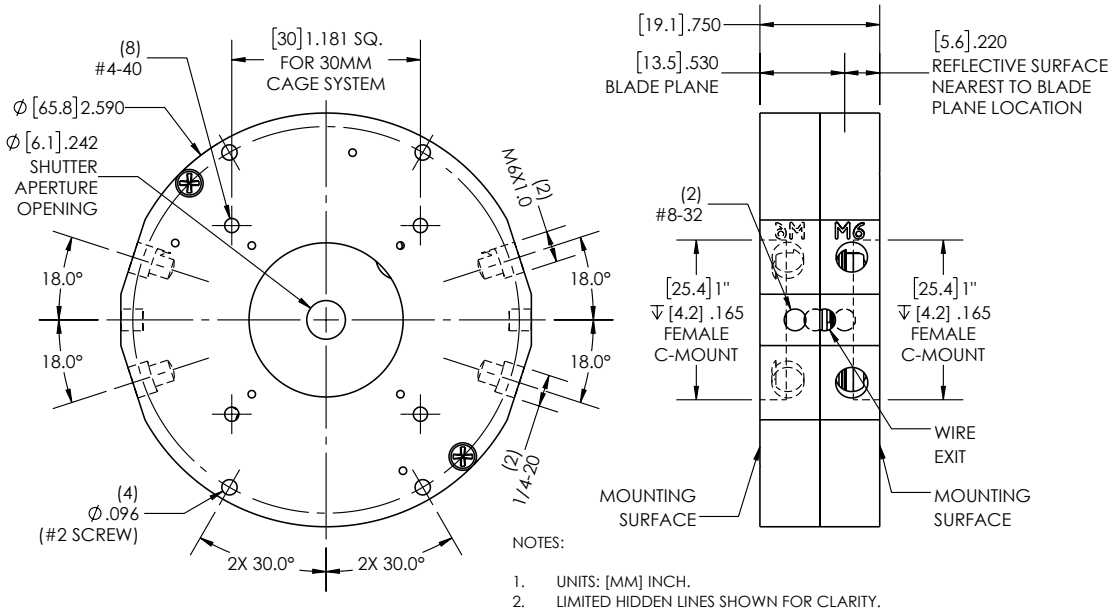
FS6, half-housed (FS6S2T0L)



NOTES:

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

FS6, fully housed (FS6S3T0L)



NOTES:

1. UNITS: [MM] INCH.
2. LIMITED HIDDEN LINES SHOWN FOR CLARITY.
3. OPTIONAL REFLECTIVE SURFACE OPPOSITE ACTUATOR COIL SIDE.