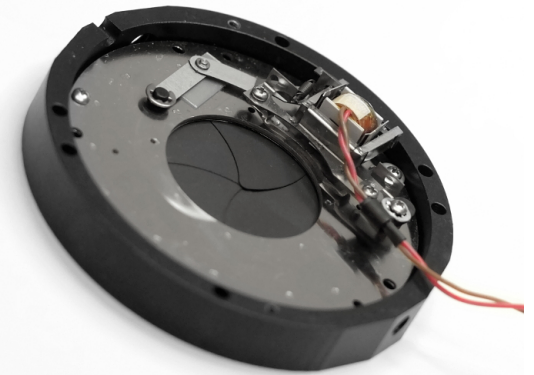# Uniblitz® FS25

25mm 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 (available soon).

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

Need Support? Please <u>visit our website</u> or email us at <u>info@uniblitz.com</u>.

Key Features

- 25mm aperture
- Default closed operation, +5VDC opens the shutter, 0VDC closes the shutter
- **RoHS Compliant**
- Transfer time on opening:
  9.0 milliseconds
- Total opening time:
  16.0 milliseconds

Product Options

FS25 ❷ ❸ ❹ ❺ ❻ - ❼

Ex: FS25S2C0L-EC

❶ Shutter Series:
- **FS25:** Normally Closed
- **FSR25:** Normally Open

❷ Voltage:
- **S:** Standard 5VDC

❸ Housing:
- **1:** Un-Housed
- **2:** Half-Housed
- **3:** Fully-Housed

❹ Blades: [1]
- **C:** Black carbon impregnated plastic (C-PET)
- **T:** Low Energy (Teflon®)
- **ZM:** High Energy (AlMgF2) [2]

❺ Electronic Sync:
- **0:** Omitted
- **1:** Included

❻ Connector:
- **L:** 18" flying leads

❼ Encapsulated Coil:
- **EC:** Included [3]
- Leave blank if not required

[1] *Various mounting methods are available depending on housing option – see Key Features on website*

[2] *Other blade coating options may be available by special order.*

[3] *Input side only; Teflon® coating is on opposite side to protect shutter blade surface. Light source must be input to the reflective side only.*

[4] *Vacuum compatibility up to 10E-10 Torr*

Shutter Timing
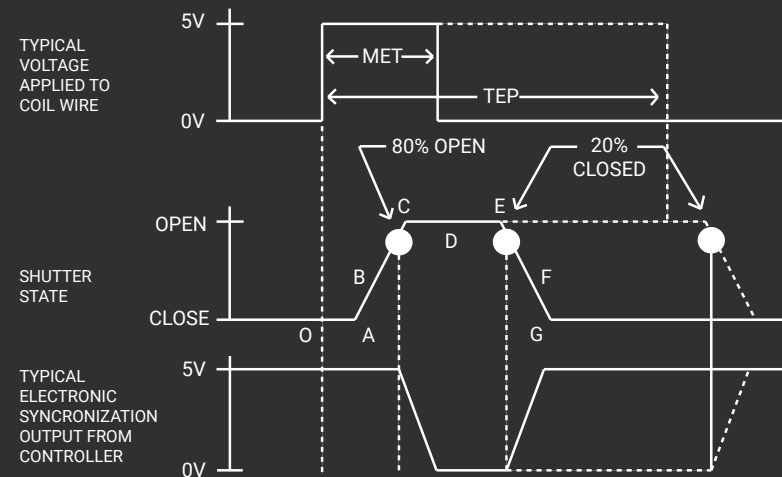
FS25 (w/ 5VDC and C-PET blades)		Time (msec.)
O - A	Delay time on opening after current applied	7.0
A - C	Transfer time on opening	9.0
O - C	Total opening time	16.0
C - E	Min. dwell time with min. input pulse	15.0
B - F	Min. equivalent exp. time	30.5
E - G	Transfer time on closing	22.0
A - G	Total window time	53.0
MET	Min. exposure time	30.0
TEP	Typical exposure pulse	>30.0

Technical Specifications

Coil Resistance	Voltage to Open	Hold Voltage
12 Ω	+5 VDC at 425mA	+5 VDC

[1] *(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.*

Series	Weight (Unhoused/Half/Housed)	Operating Temp.	Max. Opening Bounce	Max. Closing Bounce	Max. Freq. of Operation [1]	Number of Shutter Blades
FS25	22.0 g / 57.0 g / 92.5 g	-40 - +65 °C	15%	15%	5 Hz / 10 Hz	5

SL353HT HALL-EFFECT SENSOR

N S

MAGNET

H

SHUTTER COIL 12 Ohms

FS SHUTTER SCHEMATIC WITH ELECTRONIC SYNCHRONIZATION

BLUE 3 +5V

YELLOW 5 OUTPUT

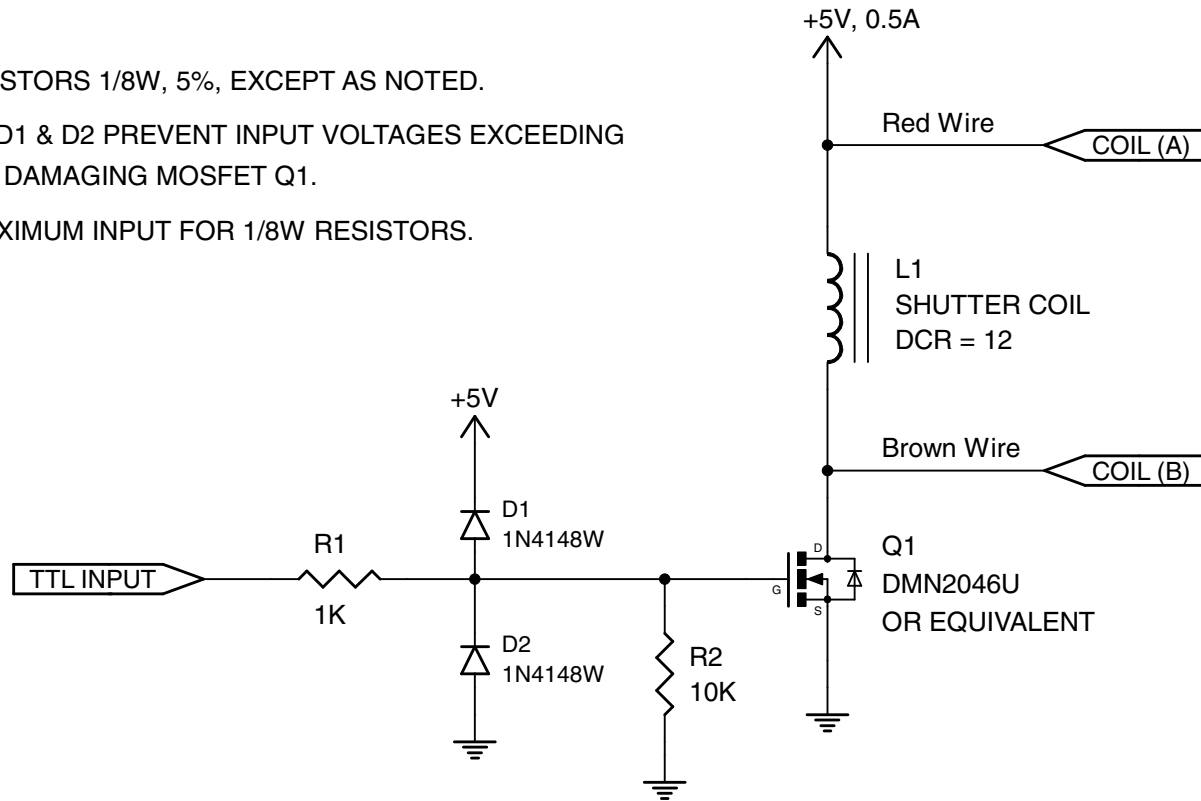CONNECTS TO VLM1 DRIVER

GREEN 4 GND

RED 1

BROWN 2
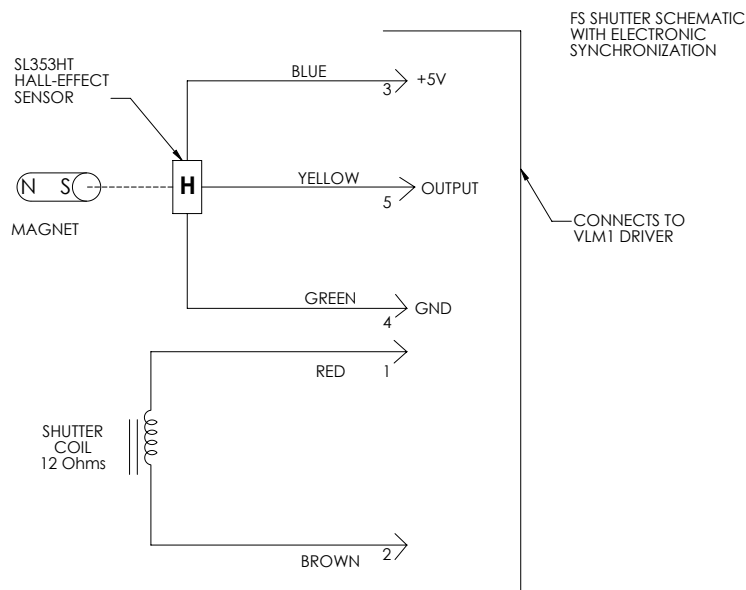
The synchronization system for FS shutter devices incorporates a small magnet mounted to the driving mechanism and a Hall effect sensor. When the device achieves approximately 80% of full open, the magnet causes the Hall effect sensor to change state, producing a signal to indicate that the shutter has 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

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.

+5V, 0.5A

Red Wire — COIL (A)

L1
SHUTTER COIL
DCR = 12

Brown Wire — COIL (B)

+5V

TTL INPUT

R1
1K

D1
1N4148W

D2
1N4148W
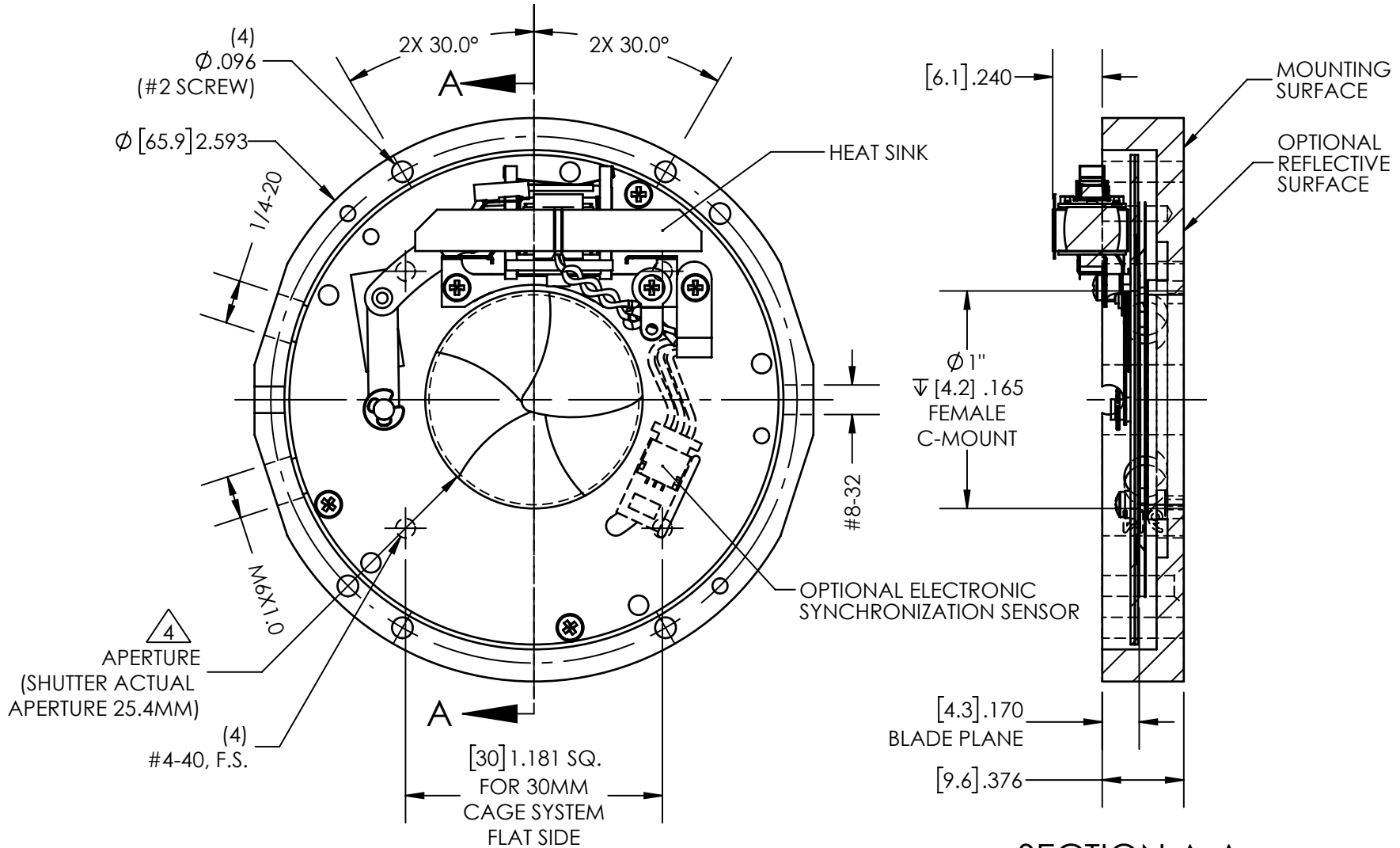
R2
10K

Q1
DMN2046U
OR EQUIVALENT

This simple control circuit can be used to operate the shutter device from a TTL trigger pulse.[1] This control can be also accomplished with our new VLM1 TTL control interface, which will be available soon.

[1] *The shutter will not operate directly from a TTL signal.*

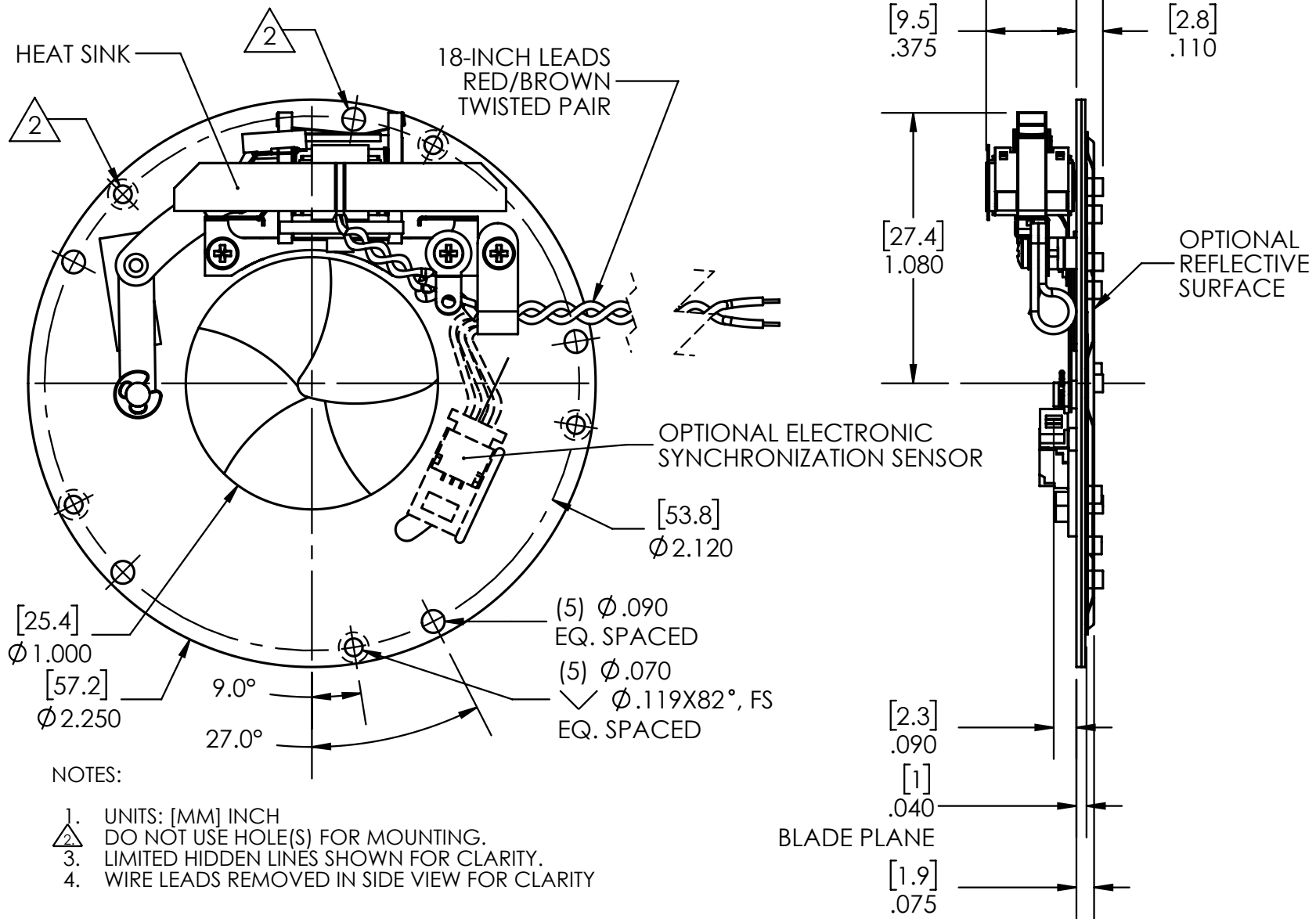# Technical Drawings - FS25 (Half-Housed - FS25S2C0L)

NOTES:
1. UNITS: [MM] INCH.
2. LIMITED HIDDEN LINES SHOWN FOR CLARITY.
3. LEADS WIRES REMOVED FOR CLARITY.
4. SHUTTER ACTUAL APERTURE IS 25.4MM, IN MOUNT APERTURE
   IS REDUCED BY FEMALE C-MOUNT TO Ø.965 [24.5MM].

(4)
Ø .096
(#2 SCREW)

Ø [65.9] 2.593

1/4-20

2X 30.0°   A   2X 30.0°

HEAT SINK

M6X1.0

⚠ 4
APERTURE
(SHUTTER ACTUAL
APERTURE 25.4MM)

(4)
#4-40, F.S.

A

[30] 1.181 SQ.
FOR 30MM
CAGE SYSTEM
FLAT SIDE

#8-32

OPTIONAL ELECTRONIC
SYNCHRONIZATION SENSOR

[6.1] .240

MOUNTING
SURFACE

OPTIONAL
REFLECTIVE
SURFACE

Ø 1"
▽ [4.2] .165
FEMALE
C-MOUNT

[4.3] .170
BLADE PLANE

[9.6] .376

SECTION A-A

HEAT SINK

2

2

18-INCH LEADS
RED/BROWN
TWISTED PAIR

[9.5]
.375

[2.8]
.110

[27.4]
1.080

OPTIONAL
REFLECTIVE
SURFACE

OPTIONAL ELECTRONIC
SYNCHRONIZATION SENSOR

[53.8]
∅2.120

[2.3]
.090

[1]
.040

BLADE PLANE

[1.9]
.075

(5) ∅.090
EQ. SPACED

(5) ∅.070
∨ ∅.119X82°, FS
EQ. SPACED

[25.4]
∅1.000

[57.2]
∅2.250

9.0°

27.0°

NOTES:

1. UNITS: [MM] INCH
2. DO NOT USE HOLE(S) FOR MOUNTING.
3. LIMITED HIDDEN LINES SHOWN FOR CLARITY.
4. WIRE LEADS REMOVED IN SIDE VIEW FOR CLARITY

NOTES:

1. UNITS: [MM] INCH
2. LIMITED HIDDEN LINES SHOWN FOR CLARITY.
3. SHUTTER APERTURE IS 25.4MM REDUCED TO(Ø.965 [24.5MM])
    WHEN INSTALLED INTO HOUSING.
4. OPTIONAL REFLECTIVE SURFACE OPPOSITE ACTUATOR COIL SIDE.