

# User Manual



## **ED12DSS Shutter Driver**

**14-0045**  
**Version 1.00**  
**2010**

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## WARRANTY

**LIMITED PRODUCT WARRANTY:** All Products manufactured by VINCENT ASSOCIATES® (MANUFACTURER) are warranted to meet published specifications and to be free of defects in materials and workmanship as defined in the specifications for 365 days - one year – (WARRANTY PERIOD) from the date of original shipment of the product. DSS series shutters are additionally warranted to achieve two million cycles within the WARRANTY PERIOD (as defined in the CYCLE WARRANTY CRITERION). MANUFACTURER will, at its own option within the WARRANTY PERIOD, repair or replace without charge any listed item discovered to be defective excepting transportation charges. Burned out or otherwise damaged actuator coils are not covered under this warranty. Any defective product returned to the MANUFACTURER must follow the RETURN MATERIAL AUTHORIZATION PROCEDURE as defined below. This warranty does not extend to cover damage resulting from alteration, misuse, negligence, abuse, normal wear and tear, or accident. The MANUFACTURER will consider the return of unused equipment if returned within 30 days from the original date of shipment, subject to a 20% restocking charge. This offer does not apply to used or damaged equipment. This warranty extends only to the original purchase and is not available to any third party, including any purchaser assemblies or other Products of which the goods may become component equipment.

**CYCLE WARRANTY CRITERION:** One “cycle” is considered one open and one closure of the shutter. DSS Shutter must be operated with the ED12DSS driver or equivalent H-Bridge type shutter driver circuit at +10.7VDC across the actuator coil for the specified duration. DSS Shutter must be operated within the defined environmental, electrical and mechanical specifications as listed on the device’s data sheet. After one year (WARRANTY PERIOD), the cycle warranty is null and void. If returned, the device must be accompanied by a written statement indicating the approximate number of cycles contained on the device, include all parameters to which the shutter was operated and follow the RETURN MATERIAL AUTHORIZATION PROCEDURE as defined below.

**RETURN MATERIAL AUTHORIZATION PROCEDURE:** MANUFACTURER will only accept returned Products from customers that have obtained an RMA (Return Material Authorization) number from the MANUFACTURER. The customer must also include an itemized statement of defect(s). The Product will then be evaluated per the MANUFACTURER’S standard repair guidelines. Any Product which has been returned to the MANUFACTURER but which is found to meet the applicable specifications and not defective in materials and workmanship shall be subject to the MANUFACTURER’S standard evaluation charge. The MANUFACTURER assumes no liability for customer returned material.

**LIMIT OF LIABILITY:** The buyer's exclusive remedy and the limit of MANUFACTURER'S liability for any loss whatsoever shall not exceed the purchase price paid by the buyer for the goods to which a claim is made. MANUFACTURER does not give any implied warranties of merchantability, fitness for a particular purpose, or of any other nature in connection with the sale of any Products.

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## INTRODUCTION

The **ED12DSS** is the optimal driver for the new UNIBLITZ® N-CAS® DSS Shutter Series. This device will operate a single DSS shutter or a single NS series bi-stable shutter from a +12 to 24VDC power supply. (Bi-stable mode only requires power when switching the shutter's state.) Once the input and output connector harnesses are connected, the user selects the open and close pulse duration - via the on-board 4-position piano switch - and connects a user supplied power supply. Once the shutter and the TTL input signal are connected together, the shutter's exposure can be controlled via a TTL square pulse input. (Pulse duration determined exposure time.)

The **ED12DSS** can be easily integrated into OEM applications where a +12 to 24VDC power supply is available.

## FEATURES

- Open frame printed circuit card suitable for OEM applications, see Figure #2
- RoHS Compliant
- Operates DSS series or NS series bi-stable shutter devices.
- 2-Pin JST shutter interface connector
- **203D** Shutter interconnect cable included – JST 2-pin to JST 2-pin 3ft in length
- Exposure determined by external pulse (BNC,TTL active high) or switch contact closure (when switching internal +5VDC into shutter input)
- In-line PULSE INPUT BNC active high 5V TTL
- Selectable pulse high current duration for specific DSS/NS series shutters via 4-position piano switch
- Internal fuse protection for SHUTTER OUTPUT
- Operates on +12 to 24VDC at 1.5A
- Power input to controller via 2-wire input harness
- **ED-IOP** Input cable harness included for power input, 5V TTL signal input (BNC) and +5VDC output (to enable driver from external switch or transistor contact). Input / output interface cable, red / black bare leads for power – 18 inches, BNC trigger input – 6 inches both terminate to Tyco / Amp 5-pin polarized connector for connection to ED12DSS.
- +12 to 24VDC External power supply (user supplied) for operation, PS12 not included

# SPECIFICATIONS

<b>EXTERNAL INPUT CHARACTERISTICS</b>	
Name	Description
TRIGGER INPUT (Pin #4 P1 5-pin square post header - BNC – female on input harness ED-IOP) Return (GND) Pin #3 P1 5-pin square post)	Input impedance 10K ohms; active-high input; minimum pulse width required to ensure triggering is the minimum S1 setting; TTL compatible: minimum high-level +2.0 VDC, maximum low-level +0.8 VDC.
POWER REQUIREMENTS (Pin #1 P1 5-pin square post header, Return (GND) Pin #2 5-pin square post)	+12VDC to +24VDC at 1.5A for operating shutter to its maximum rated exposure and frequency.
<b>EXTERNAL OUTPUT CHARACTERISTICS</b>	
Name	Description
+5V (Pin #5 P1 5-pin square post header)	+5VDC, 50 mA max regulated output provided for use in remote switching and/or control circuits; internal fuse protected.
SHUTTER OUTPUT (Pin #1 (A) and Pin #2 (B) P2. JST 2-pin connector.	Shutter drive signal H Switch output. Factory adjusted to 10.7VDC. This circuit provides a pulse to open and pulse to close at the output. These pulse durations are set by 4-position piano switch, S1. See PULSE SELECTION chart for open/close pulses.
<b>GENERAL CHARACTERISTICS</b>	
Name	Description
Repeat Exposure	Minimum time between exposures is determined by shutter used and open close pulse duration.
Size (HWD)	0.50 x 2.25 x 2.25 inches (12.7 x 57.2 x 57.2 mm)
Weight	0.730 oz (0.021 kg)

<b>GENERAL CHARACTERISTICS (cont.)</b>						
Name	Description					
S1 (OPEN/CLOSE) PULSE WIDTHS	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>TIME SELECT</i>	
	0	0	0	N/A	5msec	
	1	0	0	N/A	10msec	
	1 = ON POSITION (DOWN)	0	1	0	N/A	15msec
	0 = OFF POSITION (UP)	1	1	0	N/A	20msec
		0	0	1	N/A	25msec
		1	0	1	N/A	30msec
		0	1	1	N/A	35msec
		1	1	1	N/A	40msec
Recommended Pulse Width Settings (See S1 Chart)	DSS10B	10msec				
	DSS20B	25msec				
	DSS25B	35msec				
	NS15B	10msec				
	NS25B	15msec				
	NS45B	30msec				
Fuse Requirements	F1 is a 0.25A Fast Acting SMT fuse – non-replaceable (+5VDC – pin #5 output protection)					
	F2 is a 0.75A Time Delay SMT fuse – replaceable (Shutter Fuse)					
Accessories (supplied)	203D Shutter interconnect cable					
	ED-IOP Power/Trigger Input cable					
Accessories (optional)	PS12 - +12VDC, 1.5A Regulated Power Supply AC Adapter					

# OPERATING INSTRUCTIONS

## OPERATION

**\*\*\*Please observe anti-static unpacking procedure when removing the ED12DSS from the static shielding bag. Improper handling can result in destruction of the integrated circuits located on the board surface.\*\*\***

The **ED12DSS** provides the circuitry necessary to efficiently drive DSS shutter units. By providing the unit with the necessary initiating control signal, the shutter can be made to open and close on command. The on-board microprocessor accepts a pulse width determined exposure time and produces the bi-stable open and close pulse whose duration is selected by the on-board piano switch, S1.

Prior to the connection of input/output signals to the **ED12DSS** be sure the 5-pin connector of the ED-IOP (power/trigger input connector) is disconnected from the 5-pin post connector, P1 and that your power supply is in the off position. Set S1 to the pulse duration required for the shutter you will be using. See SPECIFICATIONS and/or Figure #2 for required settings.

Connect the Red wire of the ED-IOP harness to the (+) side of a +12VDC to +24VDC 1.5A power supply and the Black wire of the harness to the (-) return side of the power supply. Connect the 5-pin Female connector of the ED-IOP onto P1. (The connector is polarized and should only be able to connect in one direction.)

Then connect the 203D shutter interconnect cable between the 2-pin P2 connector on the **ED12DSS** to the 2-pin connector on the shutter's flex interconnect. You can now turn on your power supply. Connect your input signal, active high TTL to the input BNC. Once the **ED12DSS** receives an input signal the shutter should open at rising edge of the input pulse and close at the falling edge of the input pulse. See Figure #1.

If you need to operate the shutter from a switch contact closure, you will need to connect a wire to pin #5 of the ED-IOP harness. This is the +5VDC output. If you then switch the +5VDC into the BNC input, the shutter will open and remain open for as long as the switch contact is depressed. Once the +5VDC is removed from the input, the shutter will return to the close position. See Figure #1.

Reference drawings #16-0622 (Figure #1) for input signal types and #16-0618 (Figure #2) for proper input/output connections to the **ED12DSS**.

**\*\*\*CAUTION, failure to connect the power supply properly will result in extensive damage to the drive unit and/or power supply.\*\*\***

## FUSE REPLACEMENT

F1 is a 0.25A fast acting SMT fuse that is soldered to the ED12DSS. This fuse is non-replaceable. F2 is an SMT replaceable fuse. This fuse can be removed and replaced in the field. Follow standard anti-static procedures when replacing this device. Fuses can be procured from the manufacturer.

## MISCELLANEOUS

The repeat exposure specification of the **ED12DSS** listed in this manual is limited by the type of shutter used and the open/close pulse duration selected by S1. (See SPECIFICATIONS, GENERAL CHARACTERISTICS S1 Settings Chart.) At higher frequencies heat could begin to rise in the shutter coil especially if the shutter is enclosed in an area of limited air flow. This heat in the shutter coil could cause premature failure. Please contact the factory for specific information concerning shutter modifications and/or drive modifications that may be necessary for operating shutters at their maximum frequency. Please also note that the shutter output is fuse protected.

**\*\*\*Under certain circumstances multiple ED12DSS drive units can be operated from one power supply. If your requirements do not necessitate shutters to open at the same instance, two drivers may be operated from one supply. It would be advisable to discuss your particular application with one of our customer service representatives.\*\*\***

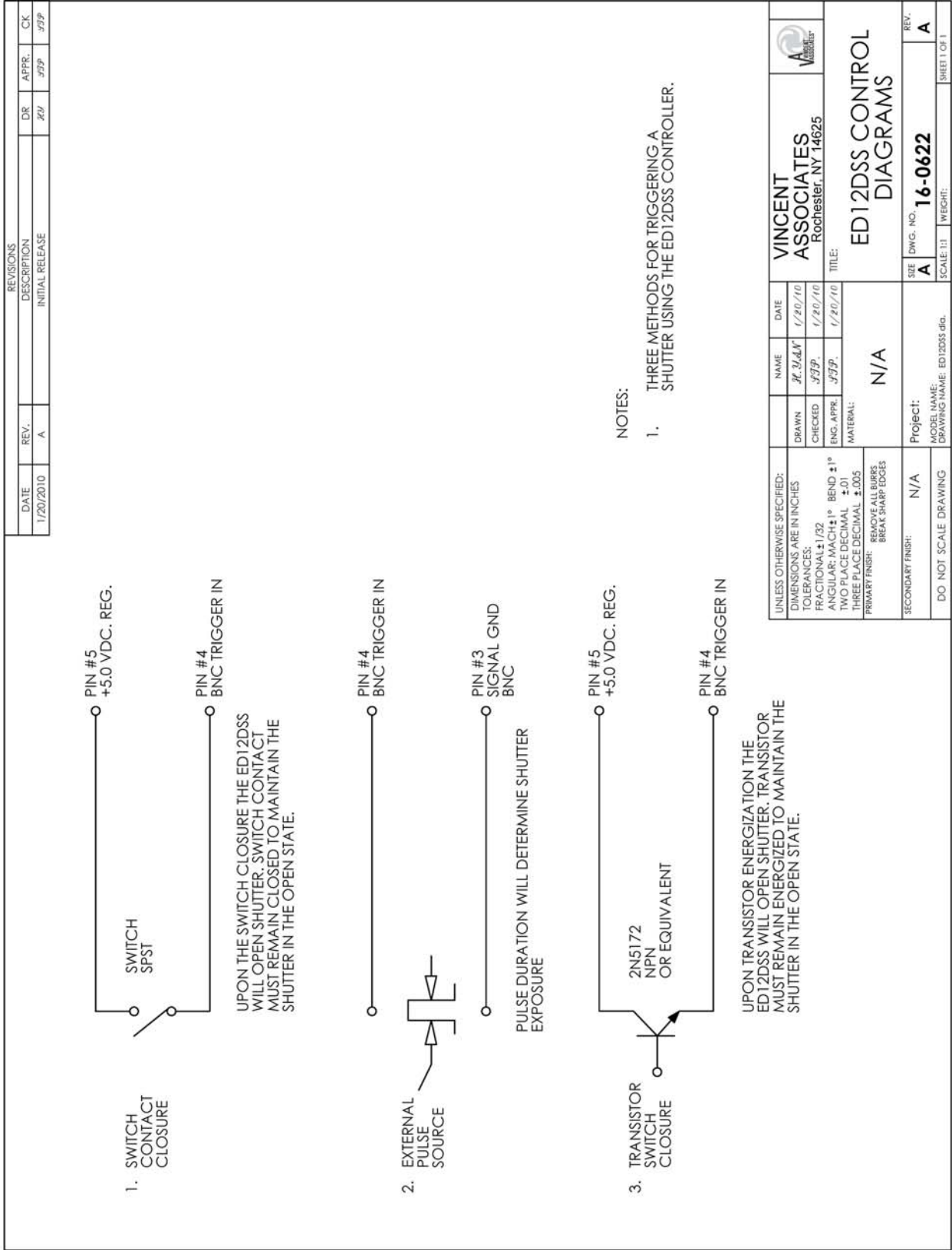
## MAINTENANCE

Although the stability of the drive voltage and timing of the on board microprocessor is assured and calibrated prior to shipment, it may become necessary to make some minor adjustments to the circuit of the **ED12DSS** over time.

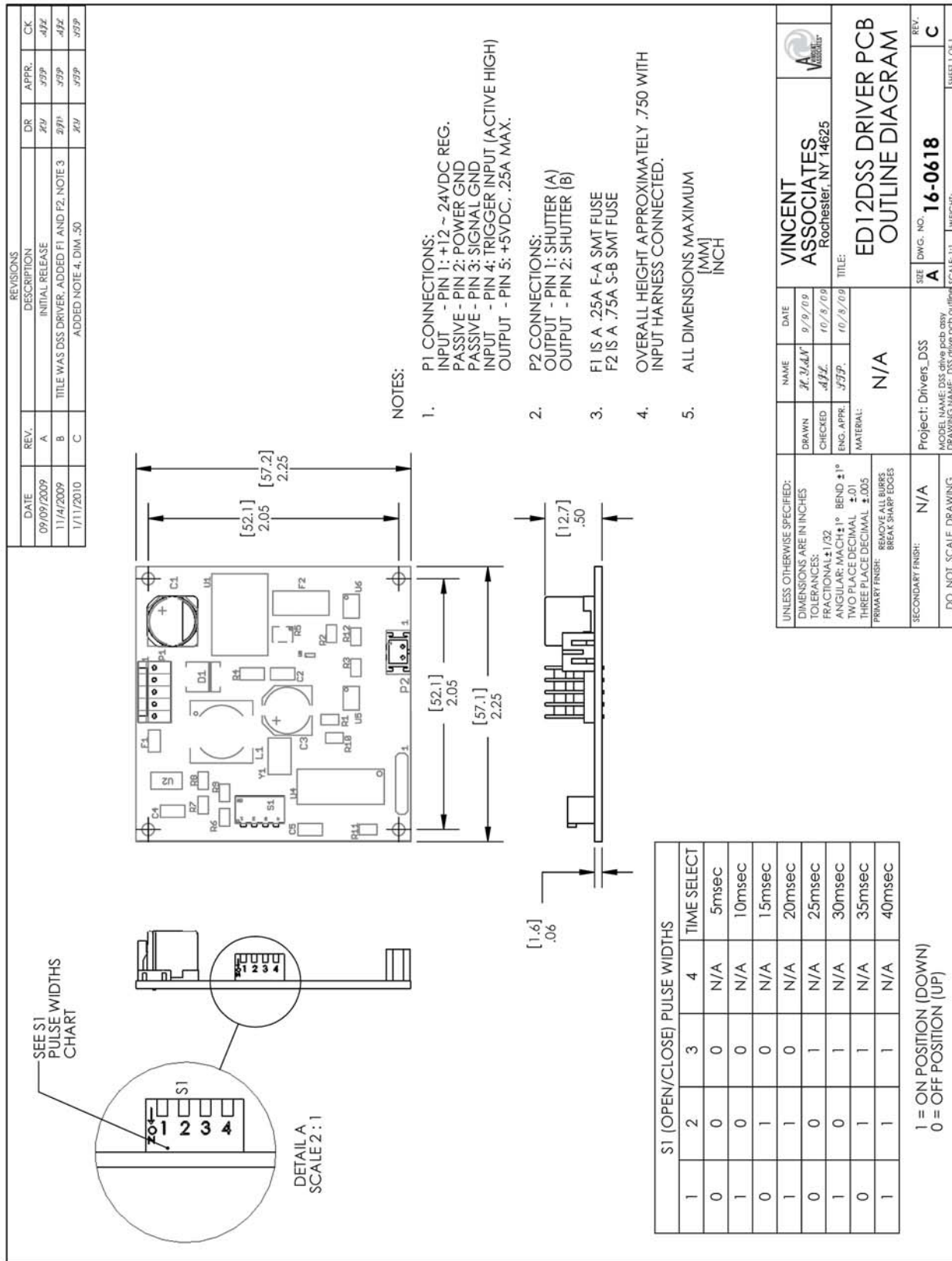
It is highly recommended that if you suspect a problem with your unit that it is returned to the factory for proper adjustments and calibration. The unit's circuitry may be damaged and/or not function as specified if adjusted improperly.

Proper care and maintenance of the unit should be taken as with any electronic instrument. This device is for indoor use only.





**Figure # 1 (Control Diagrams )**



**Figure # 2 (Connection – I/O Layout )**

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