UNIBLITZ®
Shutter Systems
1.800.828.6972

User Manual

VDM1000B Shutter Driver

14-0036
Version 1.00
2013

For information regarding applicable intellectual property, please visit www.uniblitz.com/patents.

Information in this publication supersedes that in all previously published material. Due to our ongoing development program, Vincent Associates reserves the right to discontinue or change specifications or designs, at any time, without incurring any obligation.

Version 1.00

2013

Vincent Associates, a Division of VA, Inc.
803 Linden Ave.
Rochester, NY 14625

Tel: 585-385-5930
Fax: 585-385-6004

UNIBLITZ®, N-CAS® and **VINCENT ASSOCIATES®** are registered trademarks of VA, Inc.

Printed in the U.S.A.

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.

TABLE OF CONTENTS

WARRANTY **2**

TABLE OF CONTENTS **3**

GENERAL SAFETY SUMMARY **5**
- **Injury Precautions** **5**
- **Product Damage Precautions** **6**
- **Safety Terms and Symbols** **7**

PREFACE **8**

GETTING STARTED **9**
- **Features of the VDM1000B** **9**
- **Options** **10**
- **Introduction** **11**
- **Start Up** **12**
- **Initial Operation and Testing** **13**

OPERATOR CONTROLS **15**
- **VDM1000B Front Operator Controls** **15**
- **VDM1000B Rear Operator Controls** **17**
- **VDM1000B Right Side Operator Controls** **19**

OPERATING BASICS **24**
- **Function Switches** **24**
- **RS-232C Operation** **25**
- **Daisy-Chain Configuration** **25**
  - RS-232C Test Program 27
- **Trigger Cautions and Trouble Shooting Tips** **29**
- **Dimensions** **30**
- **Maintenance** **31**
- **General Care** **31**
- **Inspection** **31**
  - Cleaning Procedure 31

SPECIFICATIONS **32**
- **System Characteristics** **32**
- **External Input Characteristics** **33**
- **External Output Characteristics** **34**
- **General Characteristics** **35**

INDEX **39**

List of Tables

Table 1: 5-Pin SwitchCraft Female Receptacle Pin-Out 17
Table 2: VDM1000B Octal Switch Pulse Duration Settings 19
Table 3: FUNCTION DIP Switch Settings 20
Table 4: Function & Octal Switch Settings for All Available Shutter Series 21
Table 5: VDM1000B RS-232C Pin-Outs 25

List of Figures

Figure 1: VDM1000B Front Operator Controls 16
Figure 2: VDM1000B Rear Operator Controls and I/O 18
Figure 3: VDM1000B Right Side Operator Controls 22
Figure 4: VDM1000B Shutter Driver Daisy-Chain Cable Configuration 26
Figure 5: Overall VDM1000B Dimensions 30

General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it. To avoid potential hazards, use the product only as specified.

Only qualified personnel should perform service procedures.

Injury Precautions

- **Use Proper Supply Power and Proper Power Cord (Not Included) –** To avoid fire hazard, use only correct power and cable as specified elsewhere in this manual. Model **PS36** Power supply and line cord are not provided but are available as an option.
- **Avoid Electric Overload –** To avoid electrical shock or fire hazard, do not apply a voltage to a terminal that is outside the range specified for that terminal.
- **Avoid Electric Shock –** To avoid injury or loss of life, do not connect or disconnect line cord (of power supply) while it is connected to the line voltage.
- **Ground the Product** – This product is grounded through the **VDM1000B** DC input. Before making connections to the input or output terminals of the product, ensure that the product is properly grounded. **DO NOT DEFEAT THE GROUND CONNECTION.**
- **Access to On/Off Switch** – Due to the position of the unit's power switch at the rear, **do not** position the unit such that it is difficult to operate the on/off switch.
- **Use Proper Fuse** – To avoid fire hazard, use only the fuse type and rating specified for this product.
- **Do Not operate in Wet/Damp Conditions** – To avoid electric shock, do not operate this product in wet or damp conditions.
- **Do Not Operate in an Explosive Atmosphere** – To avoid injury or fire hazard, do not operate this product in an explosive atmosphere.

Product Damage Precautions

- **Use Proper Power Source** – Do not operate this product from a power source that applies more than the voltage specified. It is recommended to use the **PS36** (optional) or equivalent DC Power Supply.
- **Provide Proper Ventilation –** To prevent product overheating, provide proper ventilation.
- **Do Not Operate with Suspected Failures –** If you suspect there is damage to this product, have it inspected by qualified service personnel.

Safety Terms and Symbols

These terms appear in this manual

WARNING	*Warning statements identify conditions or practices that could result in injury or loss of life.*
CAUTION	*Caution statements identify conditions or practices that could result in damage to this product or other property.*

Preface

This manual provides information for the **VDM1000B Shutter Drive**r. The manual contains the following chapters:

- *Getting Started* contains a brief product description, information needed to power on the driver and a brief procedure to verify that it functions.
- *Operator Controls* provide an outline of the control functions at the front and rear of the Printed Circuit Board (PCB). This also includes the location and function of the input/output signals.
- *Operating Basics* gives further details to the operational features of the driver.
- *Specifications* are described for all input/output levels including other pertinent details and information required for the RS-232C interface.
- *Index* contains a full index.

*What follows is the complete operator's manual for the UNIBLITZ® N-CAS® **VDM1000B Shutter Driver**. Please read this manual completely before operating the unit. Due to the construction of this unit, Vincent Associates recommends that the unit be returned to the manufacturer for repair. There are no user-serviceable parts inside.*

Getting Started

Features of the VDM1000B

- Open-frame printed circuit board suitable for OEM applications.
- 3U Euro-Card PCB outline
- Microprocessor controlled
- RoHS Compliant
- Operates **N-CAS®** shutters purchased in a bi-stable or uni-stable configuration.
- 5-pin Female SwitchCraft locking shutter interface connector.
- Operates existing *UNIBLITZ* shutters such as CS, LS, VS and XRS series. The optional **710A** interconnect cable is required when connecting these shutter types. This cable is not included and can be purchased separately.
- Normally-open or normally-closed shutter operation in uni-stable mode.
- Indicators for power, driver, and SYNC status.
- Exposure determined by external pulse (BNC, TTL) or switch contact closure to the PULSE INPUT BNC.
- SYNC OUTPUT BNC can be selected for either active-low or active-high operation.
- PULSE INPUT BNC can be selected for either active-low or active-high operation.
- RS-232C input and output connection accessible via dual RJ45 jack.
- Input and output commands controllable via RS-232C interface.
- RS-232C input addressable via 8 selectable addresses.
- Up to 8 units can be controlled independently from one computer serial port.
- Units can be easily daisy-chained together with optional RJ45 cable, Model **810RJ** (not included).
- Status of electronic synchronization available from SYNC OUTPUT BNC (TTL).
- Synchronization system can be disabled via user-selectable FUNCTION switch.
- Selectable pulse energy for operation of 35 mm and larger aperture shutter devices.
- Selectable pulse high current duration for specific shutters via 8-position octal switch.
- Internal fuse protection for all DC output voltages (including shutter).
- Operates on +36 VDC at 1.83A, fuse protected.
- Power input to driver via 2.0 mm DC jack.
- Size (HWD): 1.30 x 3.94 x 7.23 in. (32.9 x 100 x 183.6 mm)
- Weight: 6.40 oz. (0.18 kg)

Options

- **PS36** +36 VDC, 1.83A Power Supply (100 – 240 VAC, 50/60 Hz)
- **510A** Shutter cable for the NS Series (5-pin male SWC to 5-pin female SWC)
- **701A-S5** Shutter Adapter Cable (7-pin female WPI to 5-pin male SWC)
- **710A** Shutter cable (7-pin female WPI to 5-pin male SWC)
- **710R** Remote hand-held trigger cable (used with active-low BNC)
- **710R/F** Remote foot-switch trigger cable (used with active-low BNC)
- **810RJ** RS-232C interconnect serial cable (RJ45 connections)
- **910RJF** Female DB9 to RJ45 adapter (used with **810RJ** and PC)
- **910RJM** Male DB9 to RJ45 adapter (used with **810RJ** & VMM driver)

Introduction

The **VDM1000B** is the optimal driver for the new *UNIBLITZ* N-CAS, NS series shutters. The driver has user-selectable FUNCTION switches allowing it to handle a variety of shutter configurations. It will operate an N-CAS shutter configured as uni-stable (normally open or normally closed), or bi-stable where no power is required to hold the shutter open or closed. In addition to this capability, the N-CAS drive circuit can be disabled, allowing the **VDM1000B** to operate standard CS, LS, VS and XRS series shutters.

Simple and straightforward controls on the front of the unit allow the **VDM1000B** to be easy to use and configure. LED indicators indicate shutter status at a glance. A toggle switch allows easy selection of normally-open or normally-closed operation. Addressable RS-232C control is also available via the dual 8-pin RJ45 jack. Daisy-chain multiple **VDM1000B** units together by connecting the RJ45 output of one driver to the RJ45 input of the next driver in the chain (using an optional **810RJ** cable). The unit's specific address in the chain is selected via the ADDRESS rotary octal switch allowing up to eight units to be individually controlled via one computer serial port.

The rear of the unit contains BNC connectors for PULSE INPUT as well as an output for the electronic synchronization, SYNC OUTPUT. The BNC connectors allow for quick termination of TTL command signals. Power is supplied to the **VDM1000B** via a 2.0 mm DC jack. The Shutter output is a female 5-pin push-lock SwitchCraft connector. A bank of user-selectable FUNCTION switches is accessible on the right side of the unit's PCB. These switches will set the **VDM1000B** in a number of configurations to allow a number of shutter types to be driven. The right-side octal switch establishes pulse duration, and the FUNCTION switches control and pre-set the unit for the specific shutter used.

An optional 3-meter, 5-pin female to 5-pin male SwitchCraft push-lock shutter interconnect cable, Model **510A**, is available.

Start Up

After unpacking your unit inspect for any defects. If upon inspection a problem is found, or a part (or parts) is missing, notify Vincent Associates immediately.

After the initial inspection the unit is ready to use. To properly install and power on the **VDM1000B,** perform this procedure:

1. Verify that the **VDM1000B** power rocker switch is selected to the "OFF" (lower) position.
2. Connect the 2 mm power plug of the user-provided power supply to the DC power input jack of the **VDM1000B**.
3. Power unit ON by rocking the power switch to the "ON" (upper) position. Power LED (lower green) indicator will illuminate.
4. Due to the position of the unit's power switch at the rear of the **VDM1000B**, **do not** position the unit such that it is difficult to operate the On/Off switch.

Initial Operation and Testing

The **VDM1000B** will operate from a user-supplied +36 VDC power supply such as the optional **PS36**.

CAUTION

*Be sure power switch of the **VDM1000B** is in the "OFF" position before connecting the power supply's AC plug to the line. Attach line cord to the unit first before plugging into the AC power source.*

See **Start Up** section for connection to power source. Insert the 5-pin male SwitchCraft connector of the optional **510A** shutter interconnect cable into 5-pin female SwitchCraft receptacle at rear of unit. Connect the 5-pin female connector of the Model **510A** shutter interconnect cable to 5-pin male connector on shutter to be driven.

Place POWER switch to the ON (upper) position, the green POWER LED will illuminate. Place the N.O./N.C. switch to the N.O. (upper) position. The shutter will open and remain open until the switch is returned to the N.C.(lower) position. The green DRIVER LED will illuminate when this switch is in the N.O. position. The operation of the shutter described assumes that the FUNCTION switches are configured for the proper shutter used; uni-stable, bi-stable or CS, LS, VS or XRS types. Please see **FUNCTION Select** under GENERAL CHARACTERISTICS.

All *UNIBLITZ* drivers provide the circuitry necessary to support shutters equipped with the solid state synchronization option. Simply plug the shutter-interconnect cable into the driver. If your shutter is equipped with this option, the yellow SYNC LED will illuminate when the shutter is in the open position. In addition, the SYNC OUTPUT BNC will change to the active state when the shutter is open. The absence of the solid state synchronization option will only inhibit the operation of the SYNC output and SYNC LED. The remainder of the **VDM1000B** systems will not be affected. In addition, the synchronization system can be disabled by sliding FUNCTION switch **E** to the upper position.

See SPECIFICATIONS and OPERATOR CONTROLS for additional operational information concerning other systems of the **VDM1000B**.

Should the shutter and/or driver not respond as described previously, be sure the DC power plug from the power supply (user provided) is properly seated into the DC power input jack and connections to the shutter are made properly to the rear of the driver.

CAUTION

*Turn off the unit and remove the plug from the AC source before removing the DC power plug from the **VDM1000B**.*

Be advised, all fuses are local to the unit. It is recommended that if a fuse blows, to return the unit for fuse replacement. Also, particular shutter units respond to different minimum pulse widths. For example, a standard NS25S uni-stable shutter has a minimum exposure pulse of 13 ms. If the trigger signal applied to the PULSE INPUT BNC is set for an exposure pulse width

less than 13 ms, the shutter may not open fully. If the unit still does not operate properly, please notify Vincent Associates immediately.

Operator Controls

VDM1000B Front Operator Controls

Please Refer to Figure 1.

1. **RS-232C** Dual RJ45 female jack.

   Provides access to the **VDM1000B** RS-232C interface allowing the user to control functions via commands sent from a computer serial COM port. The INPUT jack accepts commands directly from a computer's serial port or from another **VDM1000B** in the daisy-chain. The OUTPUT jack allows the controller to send commands to the next controller in the daisy-chain. Synchronization read back is only available when a single unit (talk/listen) is being controlled through the RS-232C input. If multiple units are daisy-chained, only commands sent will operate the chained devices (listen only).

2. **DRIVER** LED indicator.

   A green LED indicating when the internal shutter driver circuit input has an active signal present.

3. **SYNC** LED indicator.

   Indicates status of Solid State Synchronization output. This yellow LED is illuminated when shutter's electronic sync sensor is activated. Functions only if the shutter used is equipped with the Solid State Synchronization system.

4. **POWER** LED indicator.

   A green LED indicating that DC power is being provided to the unit.

5. **N.O./N.C**. Toggle switch.

   The N.O./N.C. switch acts to invert the shutter operation. The position of this switch determines shutter status BEFORE a trigger signal is received by **VDM1000B**. In the N.C. (lower) position the shutter will be triggered open by an input pulse signal. In the N.O. (upper) position the shutter will be triggered closed.

6. **ADDRESS** Select switch.

   Rotation of the 8-position octal rotary switch selects the active RS-232C address of the unit. See **ADDRESS Select** under GENERAL CHARACTERISTICS.

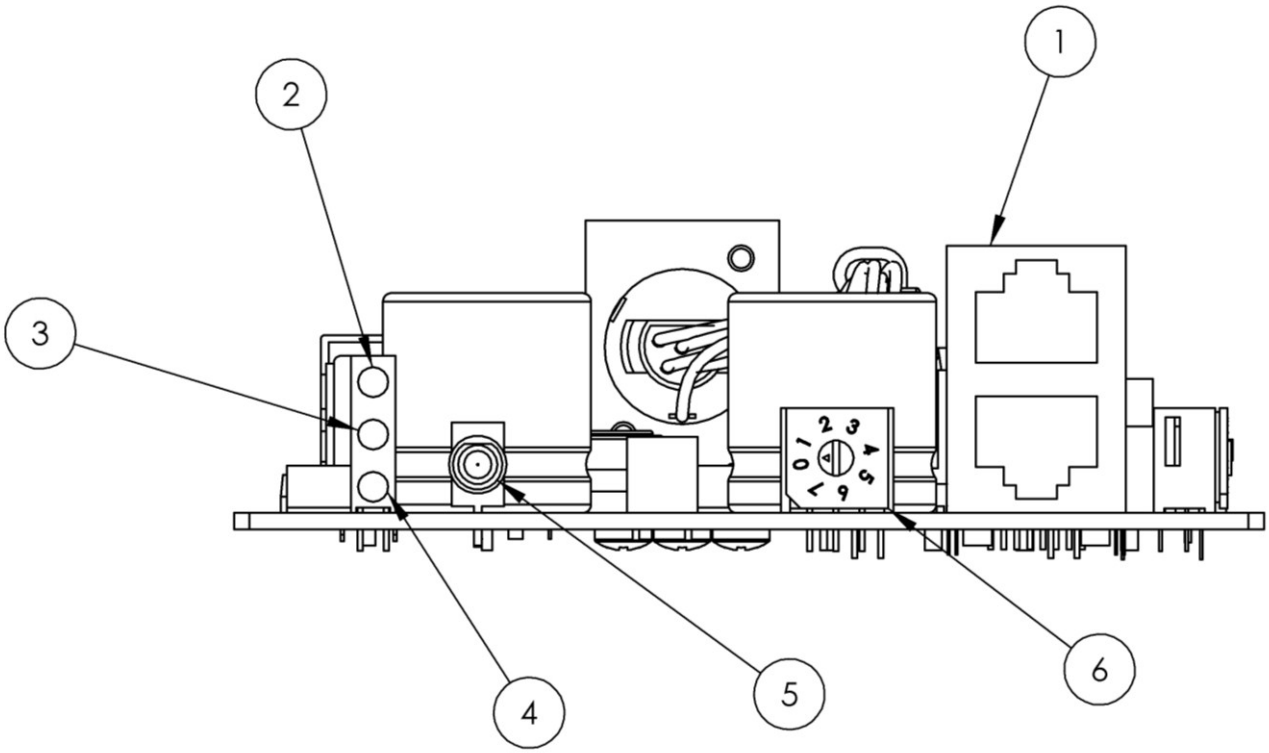

Figure 1: VDM1000B Front Operator Controls

VDM1000B Rear Operator Controls

Please Refer to Figure 2:

1. **PULSE INPUT** BNC.

   Allows control of the shutter exposure and frequency from a TTL signal source. The pulse duration determines the shutter exposure interval. The frequency of the signal presented to this input determines the frequency of shutter exposures. This input can be set active-high or active-low by FUNCTION switch **A**. See **FUNCTION Select** under GENERAL CHARACTERISTICS.

2. **SYNC OUTPUT** BNC.

   This output is for shutters equipped with the Electronic Synchronization (SYNC) System option. The shutter's internal sync circuit sets the BNC output to an active state when the sync sensor becomes energized. The output goes active when the shutter reaches 80% of full open, and goes to the inactive state when the shutter reaches 20% closed. The front side SYNC LED (yellow) illuminates when the shutter's electronic sync is active. This output can be disabled with FUNCTION switch **E**. The SYNC output BNC can be set active-high or active-low by FUNCTION switch **B**. See **FUNCTION Select** under GENERAL CHARACTERISTICS.

3. **ON/OFF** Power Switch.

   Power switch – lower position is "OFF", upper position is "ON"

4. **DC POWER** Connector.

   2 mm jack for DC power input. Center terminal is PLUS (+).

5. **SHUTTER** Output.

   A 5-pin SwitchCraft female push-lock type connector. Pin-out as follows, wire colors indicate **510A** (optional) cable and shutter wiring layout, respectively:

Connector	Description	Shutter	510A
Pin 1	Shutter Actuator Drive Output	Red	Red
Pin 2	Shutter Actuator Drive Output	Brown	Black
Pin 3	+5.0VDC Power Supply Output	Blue	White
Pin 4	SYNC Ground	Green	Green
Pin 5	SYNC Detector Transistor Input	Yellow	Orange
Shell	Shutter Ground	Black	Drain

Table 1: 5-Pin SwitchCraft Female Receptacle Pin-Out

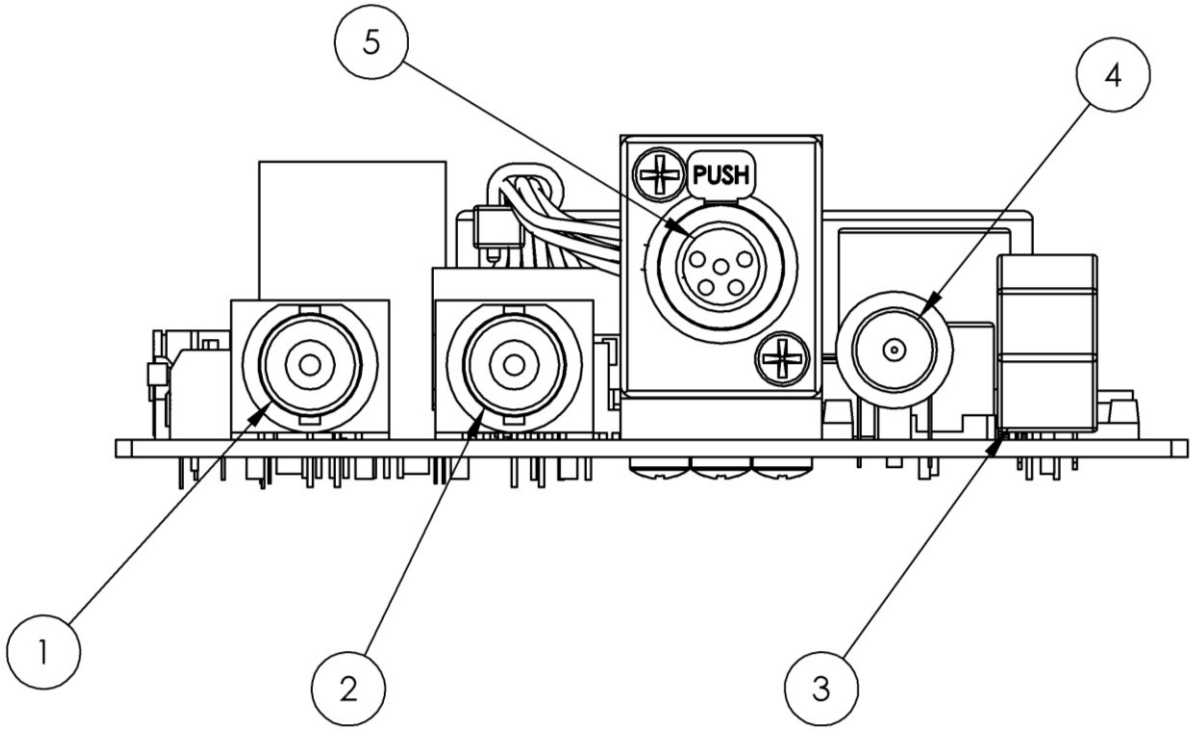

Figure 2: VDM1000B Rear Operator Controls and I/O

VDM1000B Right Side Operator Controls

Please refer to Figure 3.

1. **PULSE DURATION:** An 8-position octal switch that allows the selection of different pulse voltage durations in units of milliseconds (ms). See **PULSE DURATION Select** under GENERAL CHARACTERISTICS.

	Pulse Duration Octal Switch Locations								
Mode of Operation	0	1	2	3	4	5	6	7	
Uni-stable, low energy	3/3	6/6	10/6	15/8	20/10	25/12	30/15	35/18	(drive/return)
Uni-stable, high energy	20/10	30/15	40/20	50/25	60/30	70/40	80/50	90/60	(drive/return)
Bi-stable, low energy	3/3	6/6	10/10	15/15	20/20	25/25	30/30	35/35	(drive/return)
Bi-stable, high energy	20/20	30/30	40/40	50/50	60/60	70/70	80/80	90/90	(drive/return)
Return Disable, low energy	3	6	8	10	12	15	20	25	(drive only)
Return Disable, high energy	20	25	30	35	50	70	90	120	(drive only)

Table 2: VDM1000B Octal Switch Pulse Duration Settings

2. **FUNCTION** Switches: Six edge actuated piano-DIP slide switches.
   a. Switch **A (1)** is used to select the active state of the PULSE INPUT BNC connector.
   b. Switch **B (2)** is used to select the active state of the SYNC OUTPUT BNC connector. See **FUNCTION Select** under GENERAL CHARACTERISTICS.
   c. Switch **C (3)** allows the user to select between uni-stable and bi-stable modes for the NS series shutters. In the upper position switch **C** selects the bi-stable mode.
   d. Switch **D (4)** allows the user to disable the Return Driver circuit. CS, LS, VS, and XRS series shutters do not require the Return Driver circuit, so when driving these types be sure to disable the return circuit. In the upper position switch **D** disables the return driver while the lower position enables the drive circuit for NS series shutters.
   e. Switch **E (5)** allows the user to disable the electronic synchronization circuit. In the upper position it disables the electronic sync, which then shuts off the infrared emitter internal to the shutter, which in turn disables the SYNC OUTPUT.
   f. Switch **F (6)** is used to select the proper pulse energy for the shutter being driven. Unless otherwise instructed by the actual shutter type used, switch to the HIGH (up) position for 35mm aperture and larger types, switch to the LOW (down) position for all other shutter types. See chart below and in **FUNCTION Select** section of GENERAL CHARACTERISTICS.

   A summary of the DIP Switch FUNCTION settings is provided below.

	Position		
Function	**DIP Switch**	**Lower**	**Upper**
PULSE INPUT	A	active-low	active-high
SYNC OUTPUT	B	active-low	active-high
Bi-stable Mode	C	disabled	enabled
Return Driver	D	enabled	disabled
SYNC Sensor	E	enabled	disabled
Pulse Energy	F	25 mm & under	35 mm & over

Table 3: FUNCTION DIP Switch Settings

Please see the table below for recommended Function & octal switch settings for all available shutter series.

Shutter Series	Function Switch[1]						Octal Switch Pulse Duration
	A[2]	B[2]	C	D	E	F	
CS25	N/A	N/A	Down	Up	Down	Down	5 (15 msec)
CS35	N/A	N/A	Down	Up	Down	Up	0 (20 msec)
CS45	N/A	N/A	Down	Up	Down	Up	1 (25 msec)
CS65	N/A	N/A	Down	Up	Down	Up	4 (50 msec)
CS90	N/A	N/A	Down	Up	Down	Up	7 (120 msec)
DSS10	N/A	N/A	Up	Down	Down	Down	2 (10/10 msec)[3]
DSS20	N/A	N/A	Up	Down	Down	Down	5 (25/25 msec)[3]
DSS25	N/A	N/A	Up	Down	Down	Down	7 (35/35 msec)[3]
LS2	N/A[2]	N/A	Down	Up	Down	Down	0 (3 msec)
LS3	N/A	N/A	Down	Up	Down	Down	0 (3 msec)
LS6	N/A	N/A	Down	Up	Down	Down	0 (3 msec)
NS15B	N/A	N/A	Up	Down	Down	Down	1 (6/6 msec)[3]
NS25B	N/A	N/A	Up	Down	Down	Down	3 (15/15 msec)[3]
NS25S	N/A	N/A	Down	Down	Down	Down	3 (15/8 msec)[3]
NS35B	N/A	N/A	Up	Down	Down	Up	0 (20/20 msec)[3]
NS45B	N/A	N/A	Up	Down	Down	Up	1 (30/30 msec)[3]
NS65B	N/A	N/A	Up	Down	Down	Up	2 (40/40 msec)[3]
TS2S	N/A	N/A	Down	Down	Down	Down	0 (3 msec)
TS6B	N/A	N/A	Up	Down	Down	Down	0 (3/3 msec)[3]
VS14	N/A	N/A	Down	Up	Down	Down	1 (6 msec)
VS25	N/A	N/A	Down	Up	Down	Down	2 (8 msec)
VS35	N/A	N/A	Down	Up	Down	Up	0 (20 msec)
XRS1	N/A	N/A	Down	Up	Down	Down	0 (3 msec)
XRS6	N/A	N/A	Down	Up	Down	Down	1 (6 msec)
XRS14	N/A	N/A	Down	Up	Down	Down	7 (25 msec)

Table 4: Function & Octal Switch Settings for All Available Shutter Series

[1] Switches A, B and E do NOT affect shutter performance

[2] N/A denotes Not Applicable

[3] Open/Close pulse duration

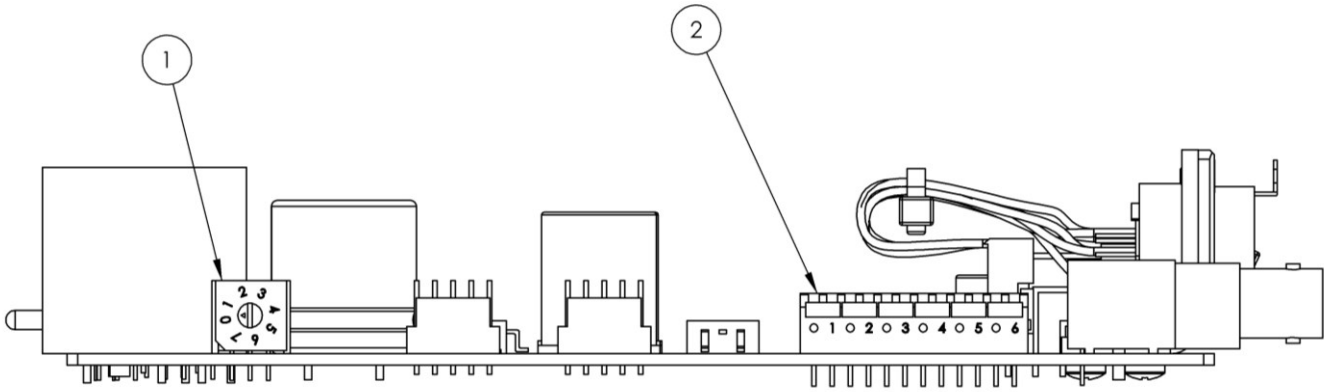

Figure 3: VDM1000B Right Side Operator Controls

Notes

Operating Basics

Refer to the section describing the **Initial Operation and Testing** for initial preparation to put the **VDM1000B** into operation.

Function Switches

There are six piano-DIP slide switches located at the PCB's right side.

For specific functions see **FUNCTION Select** under GENERAL CHARACTERISTICS.

The switch actuators can be moved to the up or down position with a small non metallic tool.

Be sure the power is off and disconnected from the unit before attempting to change the FUNCTION switch settings.

1. Switches **A** and **B** allow the user to select the active state of the BNC input and the BNC output, respectively. Switch A must be in lower (active-low) position to activate the BNC input from a remote activate cable such as the optional **710R** (handheld) or the **710R/F** (foot activated).

CAUTION	***Do not connect a 710R or 710R/F to the SYNC OUTPUT BNC. This will damage the SYNC OUTPUT.***

2. Switch **C** is used to select either uni-stable or bi-stable mode for NS Series shutters.
3. Switch **D** is used to enable or disable the RETURN DRIVER circuit.
4. Switch **E** will allow the user to disable the electronic synchronization circuit. Slide switch to the up position to disable the electronic synchronization circuit. This shuts off the infrared emitter internal to the shutter, which in turn disables the SYNC OUTPUT BNC.
5. Switch **F** selects HIGH/LOW pulse energy. HIGH energy is required to operate the 35mm and larger aperture shutters. In the down (lower) position the pulse energy is selected LOW. When the switch actuator is in the up (upper) position, the pulse energy is selected HIGH.

CAUTION	***The HIGH energy setting must be used for only the 35mm and larger aperture shutters. Use the LOW position for all other UNIBLITZ shutters. Use of the HIGH position for shutter apertures smaller than 35mm will damage the shutter used and will void the limited warranty.***

RS-232C Operation

The **VDM1000B** inputs can be controlled via an RS-232C computer serial signal (COM port). From a computer's RS-232C serial port, connect a cable such as the **810RJ** (not supplied) or a user-constructed cable with connections as enumerated in the INPUT SPECIFICATIONS to the unit's RS-232C interface. The RS-232 input is configured in the ***null modem configuration***.

Connect the Tx (transmit) from the host to the Rx (receive) on the **VDM1000B** control unit. All other lines are not used except for the Ground connection.

When using the optional **810RJ** cable, the **910RJF** adapter is required to connect the **VDM1000B** to the host computer. The **910RJF** adapter is included as part of the **810RJ** cable assembly.

If the host contains a 25-Pin D-sub or an 8-Pin Mini-DIN, check the computer's user manual to find the proper corresponding pin-outs. A cable will need to be constructed or a proper adapter purchased to connect the **810RJ** to the host. In most cases the corresponding 25-Pin D-Sub pin out and MAC 8-Pin Mini-DIN are as follows:

Function	Name	RJ45 Input	RJ45 Output	IBM DB-9M	IBM DB-25M	MAC Mini-DIN-8F
Rx	Receive Data	5	5	2	3	5
Tx	Transmit Data	6	6	3	2	3
GND	Signal Ground	4	4	5	7	4

Table 5: VDM1000B RS-232C Pin-Outs

All other pins are not used. Be sure to connect the Tx pin (Pin 3) from the IBM 9-Pin D-Sub or Pin 2 from the 25-Pin D-Sub male connector to the Rx pin (Pin 5) of the **VDM1000B** RJ45 INPUT jack for proper operation. Connect all other functions as indicated above.

By sending the proper commands, the unit will respond by activating the proper function. The **RS-232C Test Program** listed below will allow operation of the **VDM1000B** from the computer keyboard.

Daisy-Chain Configuration

Up to eight **VDM1000B** units can be daisy-chained together through the same serial port using a Model **810RJ** cable (not supplied) for each driver in the chain. Figure 4 illustrates connecting two driver units from a single serial port. Once connected, each unit will require a unique address in the chain. This is accomplished by adjusting the octal switch next to the Dual RJ45 connector on the front side to the desired address. See **ADDRESS Select** under GENERAL CHARACTERISTICS in the SPECIFICATIONS section for a complete listing of the command range for each octal switch position. The specific *local* command range set will decode commands sent via the serial port. A set of *global* commands is also available to control all units connected to the serial port.

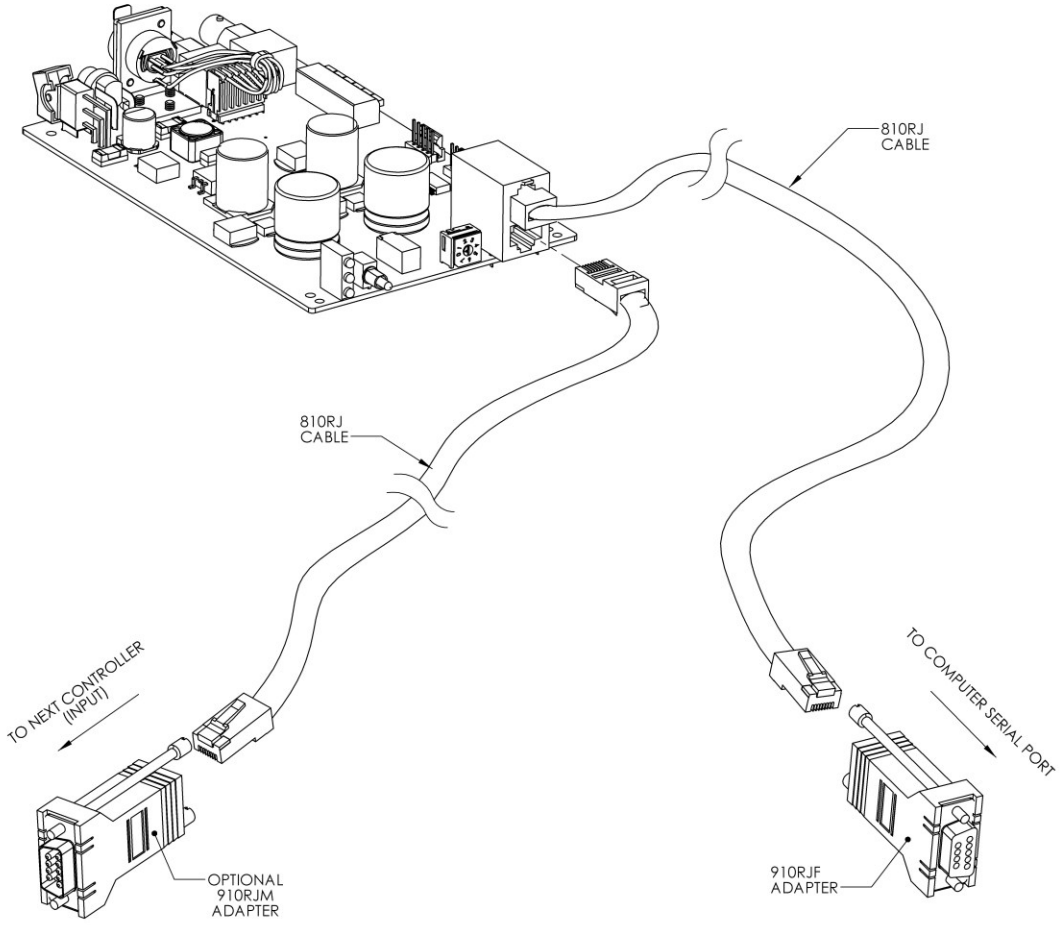

Figure 4: VDM1000B Shutter Driver Daisy-Chain Cable Configuration

The following is a test program written to test the input commands to the RS-232C interface of the **VDM1000B** driver. This program and a LabView program (not listed) are available by downloading from the **RESOURCES** section of our web site (www.*uniblitz*.com), request via e-mail (vincentassociates@*uniblitz*.com), or calling (800) 828-6972. Other programs may be available, please contact technical support for further information.

RS-232C Test Program

```
REM PROGRAM TO SEND DECIMAL COMMANDS TO RS232 SERIAL INTERFACE.
REM WRITTEN BY RICHARD ST.LOUIS, VINCENT ASSOCIATES.
REM 1ST VERSION 3/26/2008


CLS 0
K = -1
WHILE K
        OPEN "COM1:9600,N,8,1,CS0,DS0" FOR RANDOM AS #1
        J = 64
        C$ = "X"

MENU:        PRINT
             PRINT
             PRINT
             PRINT "WAITING FOR KEYSTROKE COMMAND  "
             PRINT "TYPE:"
             PRINT "          VDM1000B           "
             PRINT "         ---------           "
             PRINT "     O - OPEN Shutter         "
             PRINT "     C - CLOSE Shutter        "
             PRINT "     Y - SYNC State Check     "
             PRINT
             PRINT "     S - SET Octal Switch Address "
             PRINT "        (Current Decimal Range:"; J - 1; "-"; J + 1; ")"
             PRINT "        (Current Octal Address Value = "; C$; ")"
             PRINT
             PRINT "     Q - QUIT Program         "
             PRINT
             PRINT

START: A$ = INKEY$
             IF A$ = "O" OR A$ = "o" THEN
                    PRINT #1, CHR$(J);
                    PRINT "SHUTTER OPEN COMMAND SENT"
                    GOSUB TIMEOUT
                    GOTO MENU
             ELSEIF A$ = "C" OR A$ = "c" THEN
                    PRINT #1, CHR$(J + 1);
                    PRINT "SHUTTER CLOSE COMMAND SENT"
                    GOSUB TIMEOUT
                    GOTO MENU
```

```
            ELSEIF A$ = "Y" OR A$ = "y" THEN
                PRINT #1, CHR$(J - 1);
                PRINT "SYNC State Check COMMAND SENT"
                GOSUB TIMEOUT
                GOTO MENU
            ELSEIF A$ = "Q" OR A$ = "q" THEN
                K = 0
                PRINT "PROGRAM TERMINATED"
            ELSEIF A$ = "S" OR A$ = "s" THEN
                INPUT "ENTER OCTAL ADDRESS 0 - 7 or X: ", B$
                GOSUB ADDRESS
                GOTO MENU
            ELSE GOTO START
            END IF
WEND
END

TIMEOUT:    FOR I = 1 TO 100000: NEXT I
                CLS 0
                RETURN

ADDRESS:    IF B$ = "X" OR B$ = "x" THEN
                                J = 64
                                C$ = "X"
                                ELSEIF B$ = "0" THEN
                                J = 128
                                C$ = "0"
                                ELSEIF B$ = "1" THEN
                                J = 144
                                C$ = "1"
                                ELSEIF B$ = "2" THEN
                                J = 160
                                C$ = "2"
                                ELSEIF B$ = "3" THEN
                                J = 176
                                C$ = "3"
                                ELSEIF B$ = "4" THEN
                                J = 192
                                C$ = "4"
                                ELSEIF B$ = "5" THEN
                                J = 208
                                C$ = "5"
                                ELSEIF B$ = "6" THEN
                                J = 224
                                C$ = "6"
                                ELSEIF B$ = "7" THEN
```

```
                    J = 240
                    C$ = "7"
                    ELSE J = 64
                          C$ = "X"
END IF
PRINT "STARTING DECIMAL # =", J - 1
GOSUB TIMEOUT
CLS 0
RETURN
```

Trigger Cautions and Trouble Shooting Tips

1. The **VDM1000B** system's capability can be greatly enhanced by external control as described previously, however, extreme care must be taken to ensure that high voltages (see SPECIFICATIONS) are not inadvertently switched into external control inputs. Also, note that large negative voltages can cause irreparable damage to the unit's internal circuitry. Exercise extreme caution.
2. As noted previously, a visual inspection of a fuse is usually NOT an adequate test to determine if a fuse failure has occurred. Use a DMM (Digital Multi-Meter) or equivalent test device to determine fuse continuity.
3. Particular shutter units respond to different minimum pulse widths. For example, a standard VS25 shutter (equipped with Teflon blades) has a minimum exposure pulse of 6 msec. If the exposure or pulse width presented to the **VDM1000B**'s PULSE INPUT is less than 6 msec, the shutter may not open fully. If the unit still does not operate properly, when using the proper pulse width, please notify Vincent Associates immediately.
4. When operating shutters with a larger aperture than 25mm (35 mm or larger), please be sure that FUNCTION slide switch **F** is positioned to the *upper* position. Failure to make this change will result in the shutter not opening fully when triggered or opening fully and immediately returning to the closed position thereby risking failure or loss of capture.
5. When operating shutters with a 25mm aperture or smaller, please be sure that FUNCTION slide switch **F** is in the *lower* position. Use of the *upper* position for 25 mm and smaller aperture devices could cause irreparable damage to the shutter used and WILL void the shutter's limited warranty.

Dimensions

The overall dimensions of the **VDM1000B** Shutter Driver are shown below in Figure 5.

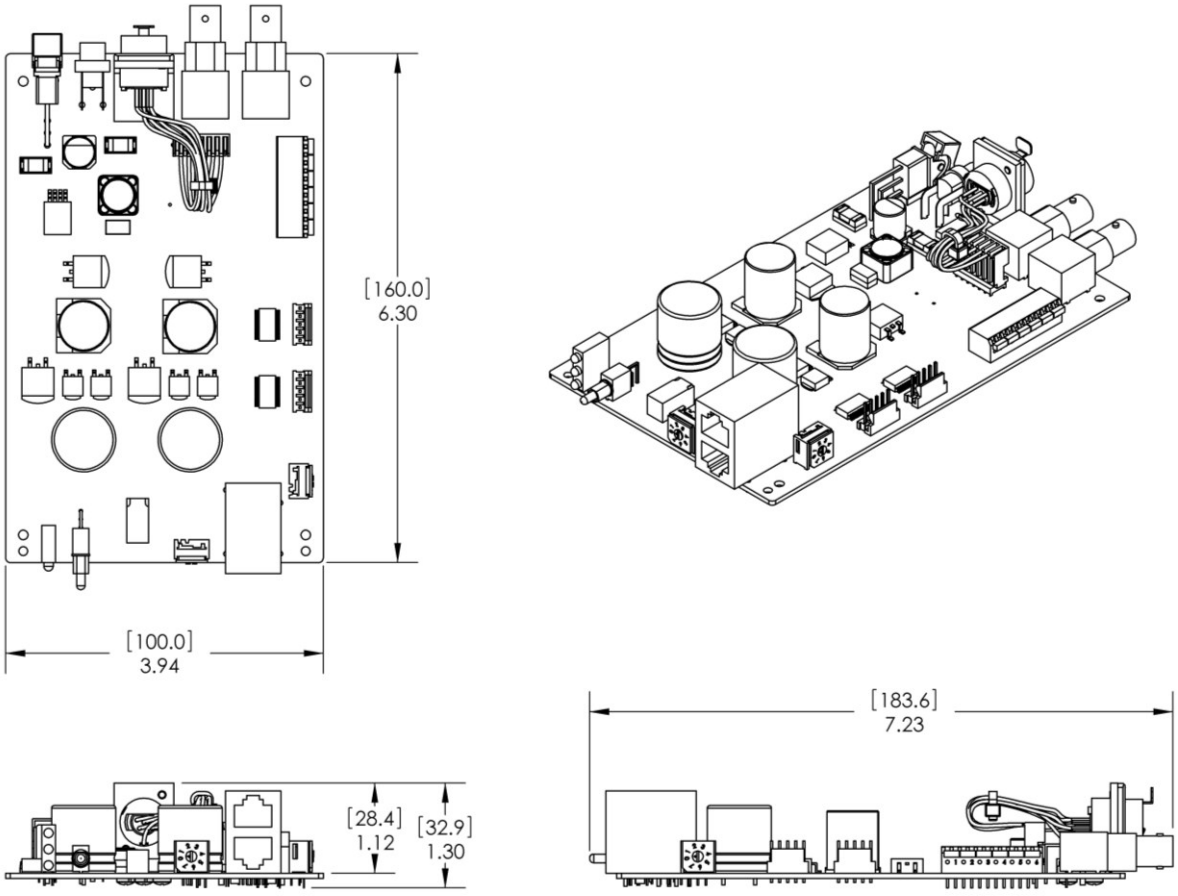

Figure 5: Overall VDM1000B Dimensions

Maintenance

Proper care and maintenance of the unit should be taken as with any electronic instrument.

With the exception of DC power and shutter fuse replacement, there are no user-serviceable parts on the **VDM1000B**.

There is no service to be performed by the user other than inspection for visible damage.

Although the stability of the timing and drive voltage is assured and calibrated prior to shipment, it may become necessary to make some minor adjustments to the operating systems of the **VDM1000B** over time.

WARNING

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

General Care

Perform routine inspection of the **VDM1000B** on a regular basis.

Inspect the unit for any signs of visible damage.

Follow the procedures below.

Inspection

Inspect the **VDM1000B** for damage, wear, and missing parts. A device that appears to have been dropped or shows other signs of exterior damage should be checked thoroughly to verify correct operation and performance. If damage is suspected, please return the unit to the factory for repair – there are no user-serviceable parts.

Cleaning Procedure

CAUTION

Do not use any liquid to attempt to remove dust from the unit.

Remove loose dust on the **VDM1000B** with a low pressure stream of compressed (canned) air.

Specifications

System Characteristics

Name	Description
Repeat Exposure	• 10 ms minimum between exposures for 25 mm (aperture diameter) and smaller shutters • 20 ms minimum for 35 mm aperture and larger shutters
Shutter Drive	• Continuously variable frequency of exposures from DC to the shutter's maximum rate • Maximum peak pulse power: 91 W • Pulse voltage: +33 VDC • Pulse current: 2.75 A (test conditions: standard 5 Volt, 12 Ω coil cycled with 20 ms exposure at 5 Hz)
Power Requirements	• User supplied. • Optional PS36 is available from the manufacturer. • Recommended Power Supply Output: +36 VDC, 1.83A, 66W • Required AC Input: 100-240 VAC, 50/60 Hz, 1.5A • Input Plug: 2 mm DC plug, Center is positive

External Input Characteristics

Name	Description
PULSE INPUT (BNC) Rear Side	• Active-low or active-high selectable with FUNCTION switch **A** • Input impedance: 4.7K ohms • Maximum source current: 100 µA • Maximum sink current: 1µA • Minimum pulse width determined by applicable shutter • Maximum pulse width unlimited • TTL compatible: – Minimum high-level: +2.0 VDC – Maximum low-level +0.8 VDC
RS-232C INPUT (Upper RJ45 Jack) Front Side	• Baud rate 9600 • 8 Data bits • 1 Stop bit • No Parity • No flow control • "Null-modem" type input • 3 input commands recognized • 2 output read-backs available (requires SYNC sensor of applicable shutter to be present) • 1 global, 8 local address locations for commands (see **ADDRESS Select** specification for octal-switch settings of local address locations) • Command transmission time: 0.94 ms.

RS-232 Global Address Code Locations

Commands	Decimal	HEX	Octal	Binary	ASCII	
Check-Sync	63	3F	077	00111111	?	(receive data)
Open	64	40	100	01000000	@	(receive data)
Close	65	41	101	01000001	A	(receive data)
Indicates SYNC On	74	4A	112	01001010	J	(transmit data)
Indicates SYNC Off	75	4B	113	01001011	K	(transmit data)

External Output Characteristics

Name	Description
SYNC OUTPUT (BNC) Rear Side	• Active-low or active-high selectable with FUNCTION switch **B** • Source impedance: 1K ohms • Maximum source current: 6.8 mA • Maximum sink current: 25 mA • Maximum low-level: +0.5 VDC • Minimum high-level: +4.5 VDC. This output becomes active when applicable shutter is equipped with electronic synchronization sensor.
RS-232C OUTPUT (Lower RJ45 Jack) Front Side	• Baud rate 9600 • 8 Data bits • 1 Stop bit • No Parity • No flow control • DTE type output • This output provided for daisy-chain application of up to 8 VDM1000B (or VCM/VRM series) drivers.

General Characteristics

Name	Description
POWER Indicator Front Side	• Green 3mm LED indicates when DC power is present.
DRIVER Indicator Front Side	• Green 3mm LED indicates when the shutter driver circuit is active. • This LED will illuminate with or without the load of a shutter's actuator coil.
SYNC Indicator Front Side	• Yellow 3mm LED indicates when a shutter's electronic synchronization sensor is active. • SYNC OUTPUT (BNC) will be active only when this LED is illuminated. • Shutter used must have the electronic synchronization option installed.
ADDRESS Select (Octal rotary-DIP switch) Front Side	• 8-position octal switch allows selection of individual (local) address locations for input commands sent by a computer's serial port. • Output commands do not apply for local selections 0 to 8 • Used for daisy-chain application from one computer (host) serial port.

RS232C Commands	ADDRESS Switch Decimal Locations (x = don't care)									
	X	0	1	2	3	4	5	6	7	
Check-Sync	63	127	143	159	175	191	207	223	239	(Decimal)
Open	64	128	144	160	176	192	208	224	240	(Decimal)
Close	65	129	145	161	177	193	209	225	241	(Decimal)
Indicates SYNC On	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	(Decimal)
Indicates SYNC Off	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	(Decimal)

General Characteristics (cont'd)

<table>
<tr><th>Name</th><th>Description</th></tr>
<tr><td>FUNCTION Select
(6-position piano DIP switch)
Right Side</td><td>• A 6-position DIP switch used for configuration of different operating modes.
• Switch A allows selection of active-low or active-high state for the Pulse Input BNC.
• Switch B allows selection of active-low or active-high state for the SYNC Output BNC.
• Switch C enables the driver circuits for bi-stable operation, default is uni-stable operation.
• Switch D disables the return driver circuit (applies to CS/LS/VS/XRS series shutters).
• Switch E disables the synchronization sensor of a shutter.
• Switch F allows the selection of additional pulse energy for the 35 mm and larger shutters.</td></tr>
<tr><td></td><td>DIP Switch Position
<table>
<tr><th>Function</th><th>DIP Switch</th><th>Lower</th><th>Upper</th></tr>
<tr><td>PULSE INPUT</td><td>A (1)</td><td>active-low</td><td>active-high</td></tr>
<tr><td>SYNC OUTPUT</td><td>B (2)</td><td>active-low</td><td>active-high</td></tr>
<tr><td>Bi-stable Mode</td><td>C (3)</td><td>disabled</td><td>enabled</td></tr>
<tr><td>Return Driver</td><td>D (4)</td><td>enabled</td><td>disabled</td></tr>
<tr><td>SYNC Sensor</td><td>E (5)</td><td>enabled</td><td>disabled</td></tr>
<tr><td>Pulse Energy</td><td>F (6)</td><td>25 mm & under</td><td>35 mm & over</td></tr>
</table></td></tr>
<tr><td></td><td></td></tr>
<tr><td>PULSE DURATION Select
(Octal Rotary Switch)
Right Side</td><td>• 8-position octal switch allows selection of different pulse voltage durations in units of msec.
• Applies to Uni-stable, Bi-stable, and Return Disable modes of operation.
• Return driver durations do not apply to Return Disable mode.</td></tr>
<tr><td></td><td>PULSE DURATION Switch Locations (values in msec)</td></tr>
<tr><td>
<table>
<tr><th>Mode of Operation</th></tr>
<tr><td>Uni-stable, low energy</td></tr>
<tr><td>Uni-stable, high energy</td></tr>
<tr><td>Bi-stable, low energy</td></tr>
<tr><td>Bi-stable, high energy</td></tr>
<tr><td>Return Disable, low energy</td></tr>
<tr><td>Return Disable, high energy</td></tr>
</table></td><td>
<table>
<tr><th>0</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th></tr>
<tr><td>3/3</td><td>6/6</td><td>10/6</td><td>15/8</td><td>20/10</td><td>25/12</td><td>30/15</td><td>35/18 (drive/return)</td></tr>
<tr><td>20/10</td><td>30/15</td><td>40/20</td><td>50/25</td><td>60/30</td><td>70/40</td><td>80/50</td><td>90/60 (drive/return)</td></tr>
<tr><td>3/3</td><td>6/6</td><td>10/10</td><td>15/15</td><td>20/20</td><td>25/25</td><td>30/30</td><td>35/35 (drive/return)</td></tr>
<tr><td>20/20</td><td>30/30</td><td>40/40</td><td>50/50</td><td>60/60</td><td>70/70</td><td>80/80</td><td>90/90 (drive/return)</td></tr>
<tr><td>3</td><td>6</td><td>8</td><td>10</td><td>12</td><td>15</td><td>20</td><td>25 (drive only)</td></tr>
<tr><td>20</td><td>25</td><td>30</td><td>35</td><td>50</td><td>70</td><td>90</td><td>120 (drive only)</td></tr>
</table></td></tr>
</table>

General Characteristics (cont'd)

Name	Description
Fuse Requirements (Fuses are local to unit)	one 2 Amp "T" Slo-Blo (Nano SMT) for +36 VDC one 0.75 Amp "T" Slo-Blo (Nano SMT) for Shutter coil one 0.25 Amp "F" fast-acting (1206 SMT) for +5V Sync
Operating Temperature	5° C to 40° C (41° F to 104° F)
Storage Temperature	-20° C to 55° C (-4° F to 131° F)
Relative Humidity	80% maximum
Altitude	up to 2000 m (6562 ft), Indoor use
Pollution	Degree 2
Over-voltage	Category II
Size (HWD)	1.30 x 3.94 x 7.23 in. (32.9 x 100 x 183.6 mm)
Weight	6.40 oz. (0.18 kg)
Supplied Accessories with VDM1000B	• User's Manual (Disk) or USB Flash Drive • Checklist

General Characteristics (cont'd)

Name	Description
Optional Accessories	• **PS36** DC Power Supply (100 – 240 VAC, 50/60 Hz) • **510A** shutter cable for the NS Series (5-pin male SwitchCraft to 5-pin female SwitchCraft, 3 meters) • **710A** shutter cable (7-pin female WPI to 5-pin male SWC) • **710R** remote hand-held trigger cable (used with active-low BNC) • **710R/F** remote foot-switch trigger cable (used with active-low BNC) • **810RJ** RS-232C interconnect serial cable (RJ45 connections) • **910RJF** female DB9 to RJ45 adapter (used with 810RJ and PC) • **910RJM** male DB9 to RJ45 adapter (used with 810RJ & VMM driver) • **701A-S5** shutter Adapter Cable (7-pin female WPI to 5-pin male SWC)

Index

+36VDC, 13

1206 SMT, 37

25-Pin D-sub, 25

35 mm, 36
36VDC, 9
3U, 9

5103C, 10, 38
510A, 10, 11, 13, 17, 38
510A shutter interconnect cable, 13
5-pin Female, 9
5-pin female SwitchCraft receptacle, 13
5-pin female to 5-pin male SwitchCraft, 11
5-pin male SwitchCraft connector, 13
5-pin SwitchCraft female, 17
5-Pin SwitchCraft Female Receptacle Pin-Out, 17

701AR-S5, 10, 38
701A-S5, 10, 38
710A, 9, 10, 38
710R, 10, 24, 38
710R/F, 10, 24, 38

810RJ, 9, 10, 11, 25, 38
8-Pin Mini-DIN, 25
8-position octal switch, 19

910RJF, 10, 25, 38
910RJM, 10, 38

active-high, 34, 36
active-low, 34, 36
ADDRESS, 11
ADDRESS Select, 25, 35
ADDRESS SELECT switch, 15
ADDRESS Switch, 35
Altitude, 37

Baud rate, 33
bi-stable, 9, 11, 19
bi-stable mode, 24, 36
bi-stable operation, 36
BNC, 9, 10, 11, 17, 19, 24, 33, 34, 35, 36, 38
BNC input, 24
BNC output, 24

calibrated, 31
Checklist, 37
Check-Sync, 33, 35
Cleaning Procedure, 31
Close, 33, 35
COM port, 25
Commands, 33
CS, 9, 11, 13, 19, 36
CYCLE WARRANTY, 2

daisy-chain, 9, 11, 15, 25, 35
Daisy-Chain Cable Configuration, 26
Daisy-Chain Configuration, 25
Damage Precautions, 6
Data bits, 33, 34
DC, 5, 9
DC POWER Connector, 17
DC Power Plug, 13
DC Power Supply, 6
defects, 12
Digital Multi-Meter, 29
Dimensions, 30
DIP slide switches, 24
DIP switch, 36
DIP Switch Position, 36
DMM, 29
DRIVER Indicator, 35
DRIVER LED, 13
DRIVER LED indicator, 15
DSS Shutter, 2
DURATION SELECT, 19

ED12DSS driver, 2
Electric Overload, 5
Electric Shock, 5
electronic sync, 15
electronic synchronization, 9
electronic synchronization circuit, 19, 24
electronic synchronization sensor, 34
electronic synchronization system, 17
Euro-Card, 9
Explosive Atmosphere, 5

external control, 29
external control inputs, 29
External Input Characteristics, 33
External Output Characteristics, 34
external power supply, 37

Features, 9
female 5-pin push-lock SwitchCraft connector, 11
female DB9 to RJ45 adapter, 38
flow control, 33, 34
front operator controls, 11, 15, 16
FUNCTION, 9, 11, 24, 29
Function & Octal Switch Settings for All Available Shutter Series, 21
FUNCTION DIP Switch Settings, 20
FUNCTION Select, 13, 17, 36
FUNCTION switch **A**, 17, 33
FUNCTION switch **B**, 17
FUNCTION switch **E**, 17
FUNCTION switches, 13, 19, 24
fuse, 9, 29
Fuse, 5
Fuse Requirements, 37
fuses, 13

General Characteristics, 35
General Care, 31
General Safety Summary, 5
Getting Started, 8, 9
global address locations, 33
Ground, 5, 25

H-Bridge type shutter driver, 2
high voltages, 29
HIGH/LOW, 24

IBM 9-Pin D-Sub, 25
Index, 39
infrared emitter, 19, 24
Initial Operation and Testing, 13, 24
Injury Precautions, 5
INPUT, 15
input commands, 33, 35
Input impedance, 33
Input Plug, 32
inspection, 31
Inspection, 31
internal sync circuit, 17
Introduction, 11

LabView, 26
LED, 11
LIMIT OF LIABILITY, 2
local address locations, 33
LS, 9, 11, 13, 19, 36

MAC 8-Pin Mini-DIN, 25
Maintenance, 31
male DB9 to RJ45 adapter, 38
Maximum low-level, 33, 34
Maximum peak pulse power, 32
Maximum pulse width, 33
Maximum sink current, 33, 34
Maximum source current, 33, 34
minimum exposure pulse, 13, 29
Minimum high-level, 33, 34
Minimum pulse width, 33
minimum pulse widths, 29

N.O./N.C. switch, 13
N.O./N.C. Toggle switch, 15
Nano SMT, 37
N-CAS, 9, 11
normally-closed, 9, 11
normally-open, 9, 11
NS series, 11
NS series shutters, 19, 24
NS25S, 13
null modem configuration, 25
null-modem, 33

Octal Rotary Switch, 36
Octal rotary-DIP switch, 35
octal switch, 9, 11, 21, 25, 35, 36
Octal Switch Pulse Duration Settings, 19
octal-switch settings, 33
OEM, 9
ON/OFF Power Switch, 17
On/Off switch, 12
On/Off Switch, 5
Open, 33, 35
Operating Basics, 8, 24
Operating Temperature, 37
Operator Controls, 8
Optional Accessories, 38
Options, 10
OUTPUT, 15
Output commands, 35
output readbacks, 33
Overall Dimensions, 30
Over-voltage, 37

Parity, 33
PCB, 8, 9, 11
Pollution, 37
POWER, 13

Power Cord, 5
POWER Indicator, 35
Power LED, 12
POWER LED, 13, 15
Power Source, 6
Power Supply, 5, 17, 32
power switch, 12
Preface, 8
printed circuit board, 9
Printed Circuit Board, 8
Proper Ventilation, 6
PS36, 6, 10, 12, 13, 32, 38
Pulse Energy, 36
Pulse current, 32
PULSE DURATION, 19
PULSE DURATION Select, 36
pulse energy, 9, 19, 24, 36
PULSE INPUT, 11, 13, 29, 33, 36
Pulse Input BNC, 36
PULSE INPUT BNC, 9, 17
Pulse voltage, 32

Rear Operator Controls, 17
Rear Operator Controls and I/O, 18
receive, 25
Recommended Power Supply Output, 32
Relative Humidity, 37
remote, 24
remote hand-held trigger cable, 10, 38
Repeat Exposure, 32
Required AC Input, 32
Return Driver, 36
RETURN DRIVER, 24
Return Driver circuit, 19
RETURN MATERIAL AUTHORIZATION, 2
Right Side Operator Controls, 19, 22
RJ45, 11, 25
RS-232 Global Address Code Locations, 33
RS-232C, 8, 9, 10, 11, 15, 25, 26, 33, 34, 38
RS-232C Dual RJ45 female jack, 15
RS-232C interconnect serial cable, 38
RS-232C Operation, 25
RS-232C OUTPUT, 34
RS-232C Pin-Outs, 25
RS-232C Test Program, 25, 27
Rx, 25

Safety Terms and Symbols, 7
serial COM port, 15
serial port, 11, 15, 25, 35
Shutter, 17
Shutter Adapter Cable, 10, 38
shutter cable, 10, 38
Shutter Drive, 32
shutter interface connector, 9
shutter output, 11
SHUTTER Output, 17
Size, 9, 37
Slo-Blo, 37
solid state synchronization, 13, 15
Source impedance, 34
Specifications, 8, 32
Start Up, 12, 13
Stop bit, 33, 34
Storage Temperature, 37
Suspected Failures, 6
Switch **A**, 19, 24, 36
Switch **B**, 19, 24, 36
Switch **C**, 19, 24, 36
Switch **D**, 19, 24, 36
Switch **E**, 19, 24, 36
Switch **F**, 19, 24, 29, 36
SwitchCraft, 9
SYNC, 9
SYNC Indicator, 35
SYNC LED, 13, 17
SYNC LED indicator, 15
SYNC Off, 33, 35
SYNC On, 33, 35
SYNC OUTPUT, 19, 34, 36
SYNC OUTPUT (BNC), 35
SYNC OUTPUT BNC, 9, 13, 17, 19, 24
SYNC Sensor, 36
Synchronization, 15
System Characteristics, 32

technical support, 26
Teflon, 29
termination, 11
transmit, 25
Trigger Cautions, 29
Trouble Shooting Tips, 29
TTL, 9, 11, 17, 33
Tx, 25

uni-stable, 9, 11, 19
uni-stable mode, 9, 24
uni-stable operation, 36
Upper RJ45 Jack, 33
User's Manual, 37
user-serviceable parts, 31

VDM1000B, 5, 8, 9, 11, 12, 13, 15, 16, 17, 18, 19, 22, 24, 25, 26, 27, 29, 30, 31, 34
Vincent Associates, 12
vincentassociates@*uniblitz*.com, 26

visible damage, 31
VS, 9, 11, 13, 19, 36
VS25, 29

warranty, 2, 29
weight, 9
Weight, 37
Wet/Damp Conditions, 5
www.*uniblitz*.com, 26

XRS, 9, 11, 13, 19, 36