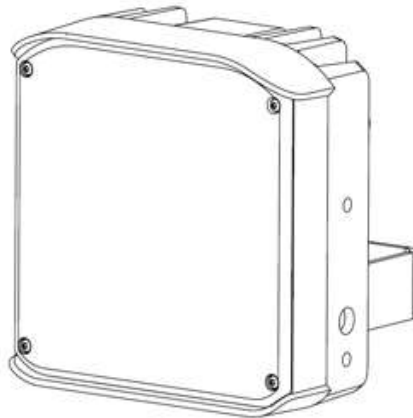


NuOPTIC

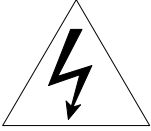




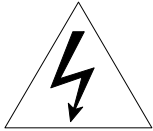
970-232-3113 | sales@nuoptic.com | www.NuOptic.com



NuOptic VIS-1000 Hybrid Series Installation Guide

INFORMATION TO USER

| | | |
|--|---|---|
|  | <p>CAUTION</p> <p>RISK OF ELECTRIC SHOCK, DO NOT OPEN</p> |  |
| <p>CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</p> | | |
| <p>CAUTION</p> <p>Do not continually stare at lamp.</p> | | |
|  | <p>CAUTION</p> <p>Illuminator may become hot to the touch. Metal objects can cause skin burns at 60°C (140°F).</p> | |



This symbol is intended to alert the user to the presence of un-insulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

1. FEATURES

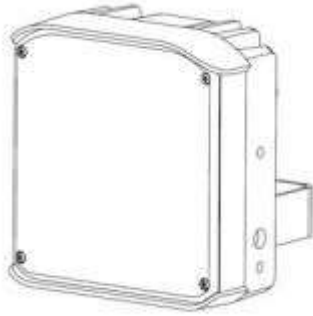
The VIS-1000 Hybrid Series provides a high performance optical design that creates consistent illumination over long distances and through an incredible range of variable illumination angles – all from a single product.

- One unit provides varifocal IR and varifocal white light illumination
- 9° to 90° IR and 6° to 70° white light varifocal illumination
- Designed for stand-alone or remote operation
- Ideally suited for integration with PTZ cameras
- Motorized model

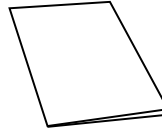
2. PACKAGE CONTENTS

Unpack carefully and handle the equipment with care. The packaging contains:

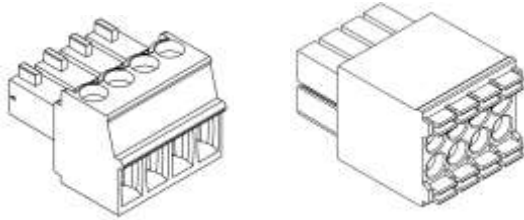
Illuminator



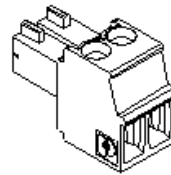
Quick Installation Guide



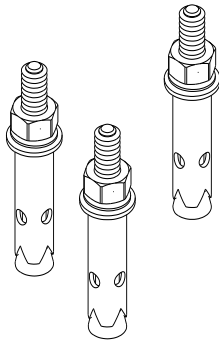
4 Pin & 8 Pin Communication Connectors



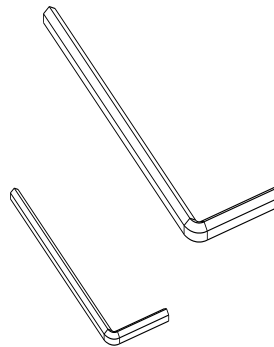
2 Pin Power Connector



Set Anchor Bolt



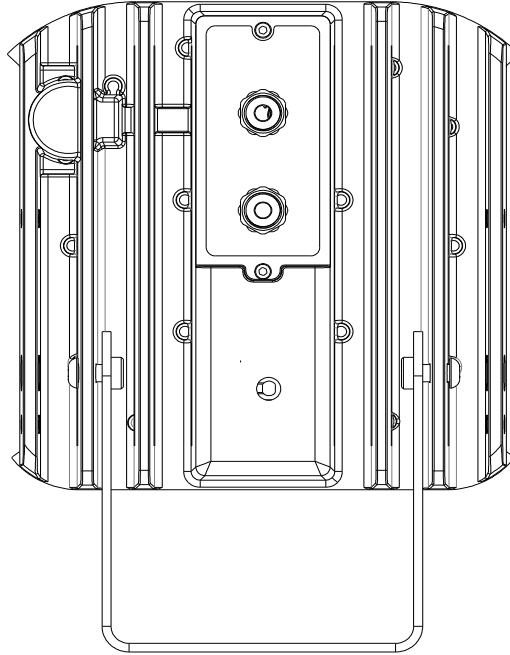
Hex Key Wrench (5mm, 2.5mm)



The above contents are subject to change without prior notice.

3. PART NAMES

3.1. Back of Unit



1 Cord Grip Cover Plate

Remove this cover for the illuminator controls and cable connections.

2 Cord Grip

The cord grip is for water and dust ingress protection. Please use the provided cable with this cord grip or make sure to use a round cable that is between 2.9 and 6.5 mm in diameter. Use of cable that does not meet this description will compromise the IP66 rating. If you must use your own cord grip, make sure it is designed for a 12.5 mm clearance hole, otherwise water and dust may migrate into the illuminator.

If the illuminator is not being installed with a NuOptic power supply and provided power cord, a power cord of the correct diameter can be purchased from NuOptic.

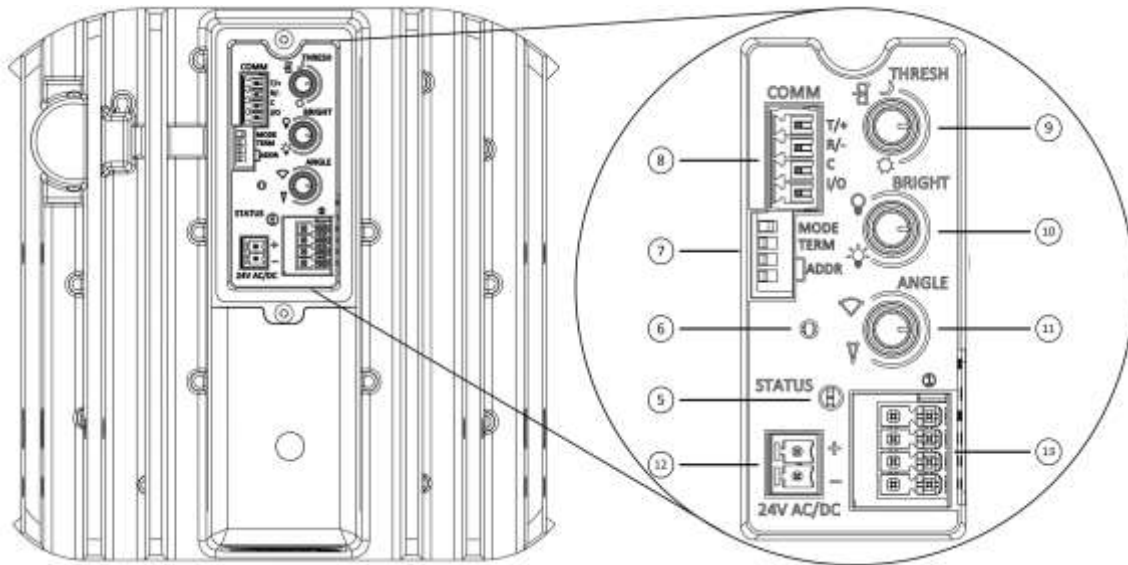
3 Ambient Light Sensor

The ambient light sensor automatically turns the illuminator ON or OFF according to the ambient brightness level that has been set via the threshold control knob.

4 Standard Bracket

The U-shaped bracket supplied with the illuminator.

4.2. Inside of Cover Plate



5 Status LED

The status LED indicates the system status with a green, red, or orange LED. While the unit is powering up, the green status LED will slowly flash until the unit is ready. Once it is, the green LED will be on solidly. If any of the controls are adjusted, the green status LED will flash rapidly. When the main LEDs turn ON, the green status LED is replaced by an orange one. It will remain on for as long as the main LEDs are ON. If the threshold control is adjusted (either using the control knob or via the serial communications interface), the green status LED will flash for 30 seconds after the control has been adjusted to indicate that the unit is in threshold setup mode. In the event of a fault, the red LED will stay on solidly until the fault is cleared and the unit is power cycled. During firmware upgrades, the orange LED will flash until the upgrade is complete, at which time it will turn off and the green LED will turn on solidly.

The table below shows the possible system conditions as indicated by the LED:

| Condition | Color | State |
|----------------------|--------|-------------------|
| Powering Up | Green | Slow Flash |
| Ready | Green | Solid |
| Controls Adjusted | Green | Fast Flash |
| Threshold Setup Mode | Green | Moderate Flashing |
| LEDs On | Orange | Solid |
| Firmware Upgrade | Orange | Fast Flashing |
| Fault | Red | Solid |

6 Reset Button

Only use this button after contacting technical support.

7 Serial Interface Control DIP Switch

The DIP switch provides the following setting controls:

- **MODE:** RS-485 (with D-Protocol) or RS-232 physical interface select
 - When this switch is set to the left, the Main Communication Interface is configured to be half-duplex (i.e., 2-wire) RS-485. When in this mode, the illuminator can be controlled via D-Protocol at 2400 baud using either the Main or Alternate Communication Interface (which is always configured to be full-duplex RS-422).
 - When this switch is set as shown in the figure above (or to the right), the Main

Communication Interface is configured to be full-duplexed RS-232. The illuminator can be controlled via NuOptic Control Protocol or D-Protocol (using either the Main or Alternate Communications Interface) depending on the **ADDR** settings (see below).

- **TERM:** RS-485 bus termination enable
 - When this switch is set as shown in the figure above, no termination resistance is applied to the Main Communication Interface.
 - When this switch is set to the right, a 120 ohm termination resistor is connected between the D+ and D- signals of the Main Communication Interface. **IMPORTANT:** do not set this switch to the right if **MODE** switch is set to RS-232.
- **ADDR:** RS-485/RS-422 bus address or RS-232/RS-422 protocol select
 - When **MODE** switch is set to RS-485, these two switches determine the RS-485 and RS-422 bus address. The following table lists the possible bus addresses:

| Switch Setting | Bus Address |
|--|-------------|
| Upper switch: LEFT Lower switch: LEFT | 35 |
| Upper switch: LEFT Lower switch: RIGHT | 34 |
| Upper switch: RIGHT Lower switch: LEFT | 33 |
| Upper switch: RIGHT Lower switch: RIGHT | 32 |

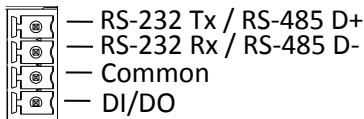
- When **MODE** switch is set to RS-232, these two switches determine the protocol used for both the Main and Alternate Communication Interface. The following table lists the possible protocol combinations:

| Switch Setting | Protocol | Baud Rate |
|--|--------------------------|-----------------------|
| Upper switch: LEFT Lower switch: LEFT | Firmware Upgrade | 57600 |
| Upper switch: LEFT Lower switch: RIGHT | NuOptic Control Protocol | 57600 |
| Upper switch: RIGHT Lower switch: LEFT | NuOptic Control Protocol | 57600 |
| Upper switch: RIGHT Lower switch: RIGHT | D-Protocol | 2400 (Bus Addr 32) |

NOTE: Changes to the **MODE** and **ADDR** DIP switches do not take effect until after the unit is power cycled. Therefore, if you wish to make changes to **MODE** or **ADDR**, remove power from the unit, change the switches to their desired setting, then apply power to the unit. Changes to the **TERM** switch do not require power cycling – the effects are immediate.

8 Main Communication Interface

The illuminator supports RS-232/485 serial communication and digital input/output with this interface. The serial communication utilizes 8 data bits, no parity, and 1 stop bit (8-N-1). Refer to *Appendix D* for more detailed digital input/output electrical interface information.



9 Ambient Light Threshold Adjustment Control

Use this control knob to set the ambient brightness level at which the illuminator will turn ON or OFF. Turning the control knob counter clockwise (CCW) makes the illuminator turn ON when the ambient light level is darker, and turning it clockwise (CW) makes the illuminator turn ON when the ambient light level is lighter.

In addition, this control knob affects the illuminator in the following ways:

- Turning the knob all the way CCW forces the illuminator to be OFF.
- Turning the knob all the way CW forces the illuminator to be ON.
- Any knob position between full CCW and full CW will cause the illuminator to turn ON and OFF based on the ambient light level and the knob setting as explained above.
- Additionally, when the knob is all the way CCW, DI/DO becomes DI input and controls whether the illuminator is ON or OFF. The illuminator turns ON by shorting DI to Common and turns OFF by open-circuiting DI. Any knob position except full CCW makes DI/DO become DO status output (High = OFF, Low = ON).

10 Brightness Adjustment Control

Use this control knob to set the brightness of the illuminator, counter clockwise for dimmer, clockwise for brighter.

11 Angle of Illumination Adjustment Control

Use this control knob to set the illumination coverage angle, counter clockwise for wider, clockwise for narrower; the narrower the angle is, the greater the illumination distance.

12 Power Connector

Connect the illuminator to a 24V AC or 24 – 36V DC power supply.

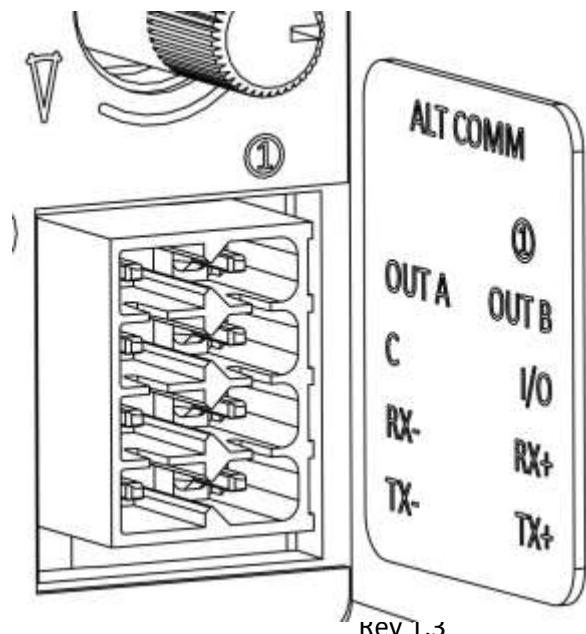
13 Alternate Communication Interface

This interface provides an RS-422 serial communication port as well as a digital input and opto-coupler output. The 4-wire (“TX+”, “TX-”, “RX+”, and “RX-” in figure below) serial communication utilizes 8 data bits, no parity, and 1 stop bit (8-N-1).

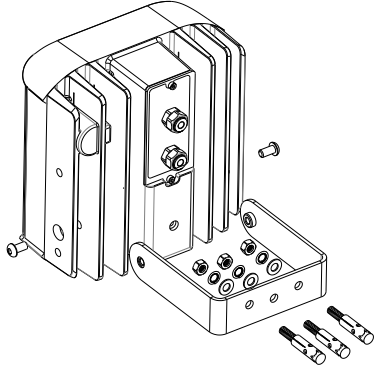
The digital input (pins “I/O” and “C”) is used to switch between IR and White light illumination. When the digital input is open circuit, the illuminator is in IR light mode; when “I/O” and “C” are shorted together, the illuminator is in White light mode.

Additionally, this interface provides an opto-coupler output between “OUT A” and “OUT B” pins. This isolated output is normally open (N/O) when the illumination is OFF and is short circuit when the illumination is ON.

Refer to *Appendix D* for more detailed digital input and output electrical interface information.



5. INSTALLATION



1. Make sure the bracket is firmly installed to the illuminator.

2. Install the illuminator and the camera at the desired position.

3. Remove the cord grip cover plate from the back of the illuminator so that access to the controls behind the cover plate is possible.

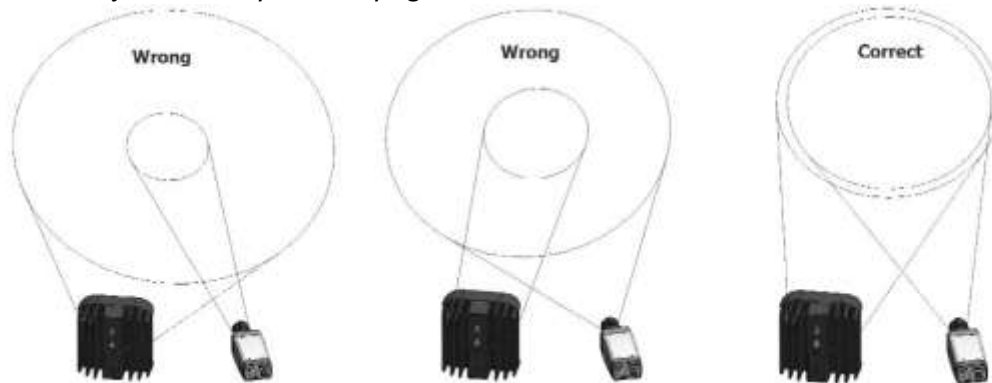
4. Connect the illuminator to a 24V AC or 24 – 36V DC power supply by first feeding the power cable through the lower cord grip in the cover plate, and then attaching the 2-pin power connector to the power cable. When attaching the power connector please take extra care not to leave any exposed wire, as this may cause a short. If necessary, trim back the wires.

5. Setup the video security camera so that you can see a good image from the video security camera on a computer or TV monitor.

6. Put the camera in "night mode" or IR cut filter removed mode.

7. Power on the illuminator, make sure it is at full brightness (rotate Brightness Adjustment control fully clockwise), and rotate the Ambient Light Threshold Adjustment control fully clockwise (this will force the illuminator to be ON regardless of the ambient light level). It is common to see a faint red glow from the illuminator. Do not stare into the illuminator for long periods of time (see safety notes at the end of the manual).

8. While viewing the output of the video security camera adjust the Angle of Illumination Adjustment control until the light beam from the illuminator is just slightly larger than the parts of the scene you are going to focus the camera to. The light beam should be only 5-10% larger than the object or area you are trying to view with the camera.



9. Once the light beam is properly set, zoom the camera to the scene as well.

10. Adjust the Brightness Adjustment control lower if there is too much illumination.
11. Short "I/O" and "C" pins in the Alternate Communication Interface to put the illuminator in white light mode.
12. Put the camera in "day mode."
13. Adjust the Brightness Adjustment control to the desired white light illumination level. Note: VIS-1000 Hybrid illuminators maintain separate brightness levels for IR and white light illumination modes.
14. Adjust the Ambient Light Threshold Adjustment control to the desired ambient light level for turn-on. The status LED will glow orange when the LEDs are ON to aid in setting this level. Also, while the control is being adjusted, the illuminator enters a "threshold setup" mode in which its light sensor response time is shortened so that the turn-on threshold can be quickly determined. While in this mode, the status LED will flash moderately quickly, either green if the LEDs are OFF, or orange if the LEDs are ON. After the threshold control has remained stationary for 30 seconds, the illuminator will return to normal operational mode, dramatically slowing down its response to ambient light levels to protect against false triggers, and to prevent ON/OFF oscillations.
15. Attach cord grip cover plate by sliding the loosened cord grips toward the illuminator, keeping the length of wire inside of the connector cavity as short as possible. Tighten the cover plate screws. Tighten the cord grips $\frac{1}{4}$ turn past snug to ensure a proper seal.

**Caution**

Failure to properly mount the illuminator to the installation surface may cause illuminator to fall. Make sure the ceiling is firm and stable enough to support the illuminator. If any reinforcement is needed, consult with your safety personnel and proceed with the installation.

**Caution**

When attaching your power supply to its connector please take extra care not to leave any exposed wire, as this may cause a short. If necessary, trim back the wires.

**Caution**

Infrared light produced by this illuminator is extremely bright, even though it is only weakly visible to the human eye. Limit exposure to the beam during installation and adjustment, when working in close proximity to the front of the product. Mount the illuminator well above eye height to limit exposure of others.

APPENDIX A: Specifications

Summary

| Illuminator | |
|----------------------------|---|
| LED's | Extremely high brightness LED's mounted on an aluminum core board for maximum thermal management |
| Number of LED's | 23 IR + 23 White |
| Beam Pattern (Approx.) | 9° to 90°, 6° to 70° White |
| Wavelength | 850nm(Default),940nm + White Light |
| Power Consumption | 0W – 40W or 0 – 80W |
| Input Voltage | 24 - 36V DC; 24V AC ± 10% |
| Operating Temperature | -40°C to +60°C |
| Environmental | IP66 |
| Housing | Single body die cast aluminum |
| Weight | 2.0 kg / 4.4 lb |
| Color | Black powder coat finish with UV stabilized polycarbonate front window |
| Power Cable | Optional 110/230V regulated power supply |
| Electrical Interfaces | (2) Serial Interface, (2) DI/DO Interface |
| Electrical Characteristics | Opto-isolator Output: N/O, 60V AC/DC, 400mA max load Digital Output: Open Collector, 12VDC max, 40mA max load current Digital Input (2): Enable threshold <= 1VDC |
| Mechanical Interfaces | (2) IP67 rated cord grips Ambient Light Sensor Brightness adjustment Ambient Light Sensor adjustment Wide/Narrow angle adjustment |
| Comm Interfaces | RS-232, RS-485, RS-422, D-Protocol |
| Certifications | FCC Class B, CE, RoHS |
| Operating System | VIS-1000 Series illuminators use the FreeRTOS operating system (www.freertos.org) |

APPENDIX B: Mounts and Accessories

The optional mounts are provided for various uses.



Wall mount bracket

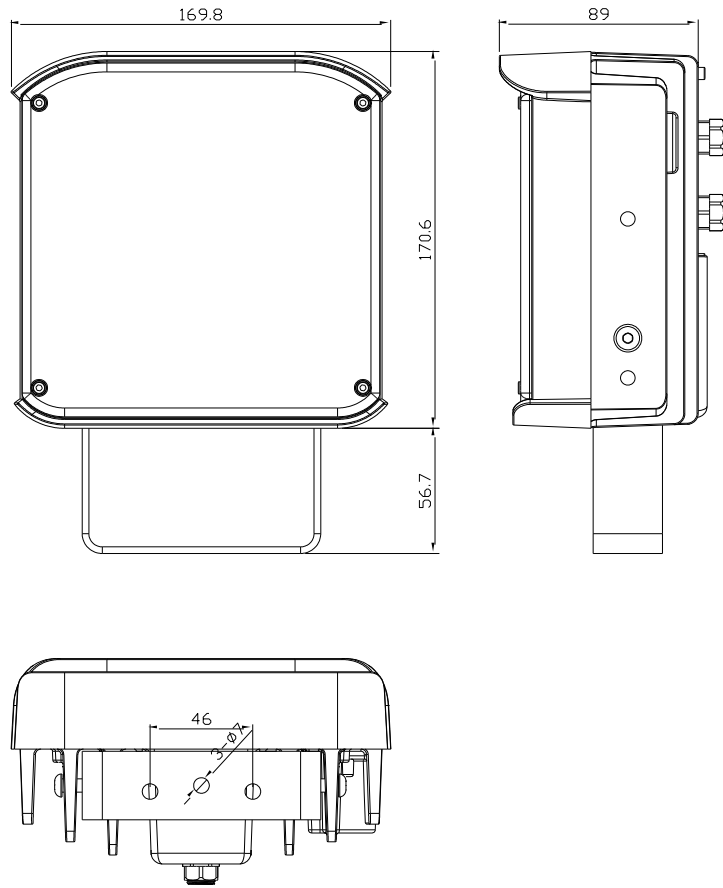


Corner mount bracket



Pole mount bracket

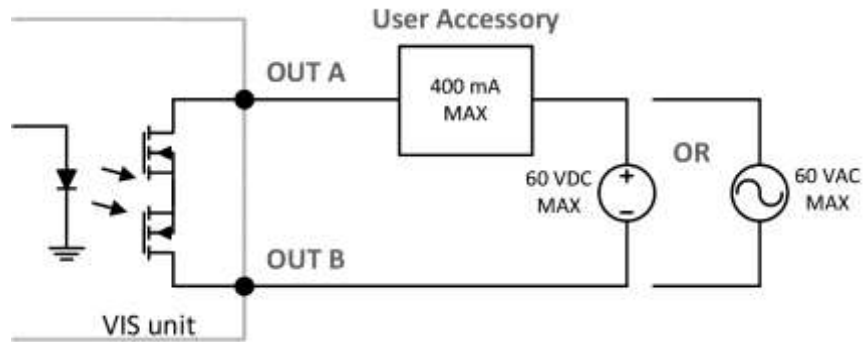
APPENDIX C: Dimensions



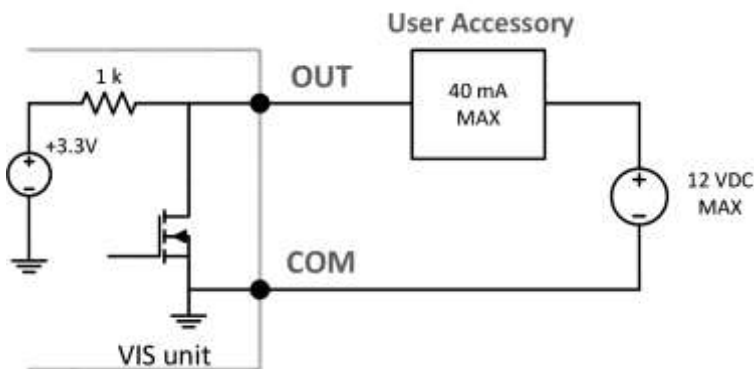
(Unit: mm)

APPENDIX D: Digital In/Out Interfaces

Opto-isolator Output



Digital Output



Digital Input

