iPulse® Installation and User Guide

IP1-STD

Hardware Version 3.0

iPulse® STD Manual P/N: 040-00002-001

Owner's Record

The model and serial numbers are located on the bottom of the iPulse unit. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your VideogeniX dealer regarding this product.

Model No. _____
Serial No. _____

WARNING
To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the unit. Refer servicing to qualified personnel only.

WARNING
This installation should be made by qualified service person and should conform to all local codes.

WARNING
A readily accessible disconnect device shall be incorporated in the building installation wiring.

Power Supply
Caution for U.S.A and Canada
The iPulse device operates on 5V to 24V AC/DC. Use a class 2 power supply which is UL Listed (in the U.S.A.) or CSA-certified (in Canada)

For customers in the U.S.A.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation

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1. About iPulse® IP1-STD

The iPulse® provides an automatic external means to reset an electronic device that has malfunctioned due to various internal or external events. This document details installation, basic operation, device connection and LED indicators of the VideogeniX iPulse® IP1-STD device.

iPulse® Model

Model	Operating Modes	Power Connector
IP1-STD	Intelligent Mode or Timed 12 Hour	5-24VDC/VAC

Note: The IP1-STD supports devices with a dry contact, passive or active solid-state output relay.

> **! Caution:**
> iPulse is not weatherproof. When connected to an outdoor camera Please make sure it is protected inside weatherproof enclosure. *Do not open iPulse® or all warranties will be voided.*
>
> **! WARNING:**
> To prevent fire or shock hazard, do not expose the unit to rain or moisture.
> To avoid electrical shock, do not open the unit. Refer servicing to qualified personnel only.

Operating Modes

The iPulse®-STD operates in one of two modes, Intelligent Reset Mode and Timed Reset Mode. iPulse® automatically detects the operating mode by monitoring the I/O Detect input. If iPulse® detects a change in the I/O Detect input, it will enter the Intelligent Reset mode. Otherwise, iPulse® will remain in Timed Reset mode. You can choose to use Timed Mode by twisting the I/O Detect wires together and securing them with the included wire nut.

Intelligent Reset Mode

The Intelligent Reset Mode monitors an output on the device being protected or on another device that can signal lockup. The output signal on the device is commanded by the iPulse Manager Software or other network software designed to support iPulse. When iPulse detects the loss of acceptable communication, after a pre-determined detection period, it power cycles the protected device and enters fault mode (Red LED Flashes). Generally, power cycling a device restores it to normal operation. After three (3) consecutive failed power cycles to restart the device, iPulse® goes into STANDOFF fault mode and only attempts to restart the the protected device after a four 4 hour STANDOFF period (RED and GREEN LED flash). At any time within STANDOFF mode, if the device starts operating correctly, iPulse immediately returns to normal (non-fault) mode (LEDs stop flashing).

Timed Reset Mode

The Timed Reset Mode, simply cycles power on the protected device once every 12 hours. When used in Timed Reset mode, iPulse connects directly inline with the device's power, does not use the I/O Detect Cable (black and brown leads) and does not require any remote commanding software (in this case the toggle wires should be twisted together using the included wire nut).

Note: If Timed Reset Mode is used on a PTZ camera, the camera will typically reset to its home position upon reset. For this reason, we recommend using Intelligent Reset Mode whenever possible for PTZ cameras.

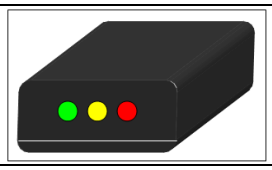
Relay Types

When operating in Intelligent Reset Mode, the iPulse monitors an output from your camera or other communication device. These outputs come in various forms. The iPulse has been developed to support Dry Contact, Passive Solid-State and Active Solid State relay types and standard line driven serial communication types such as rs232 and 485. Please refer to device compatibility document (040-000005-001) to ensure the I/O Detect Cable is connected correctly for your device's relay type. Please refer to Appendix A if your camera is not listed or if you need more information regarding the various output relay types, When connecting to the Tx pin of a line driven serial output make sure that the appropriate communication protocol is set up. (If hardware controls are not in use make sure they are disabled on the serial output device so serial output will not be prevented due to lack of control signal)

2. Package Contents

The IP1-STD contains the following components:

IPulse IP1-STD Components (095-00002-001)			
Item	**Qty**	**Description**	**Part Number**
1	1	iPulse® IP1-STD	084-00001-001
2	1	Wire nut	029-00001-001
3	1	Quick Start Guide	040-00005-001

1	
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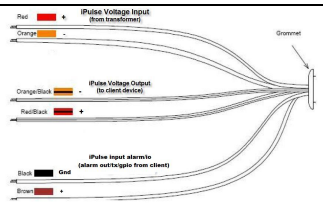
3	

Figure 1. iPulse IP1-STD Package Contents.

Note: If any parts are missing, please contact VideogeniX for replacement.

3. Installation Steps

1. Check the package contents against the chart above,
2. Select Operation Mode
3. Install Hardware
   Timed Reset Mode
   Intelligent Reset Mode
4. Download software and manuals from VideogeniX Web Site
5. Read LED Operation instructions
6. Install Software – see iPulse Manager Software Manual

4. Hardware Installation

The hardware installation depends upon the desired operating mode. If the Timed Reset Mode is desired, follow the steps in section 4.A. If the Intelligent Reset Mode is desired, follow the steps in section 4.B.

4. A. iPulse® Timed Reset Mode Installation (IP1-STD)

The Timed Reset Mode connections are shown in Figure 2.

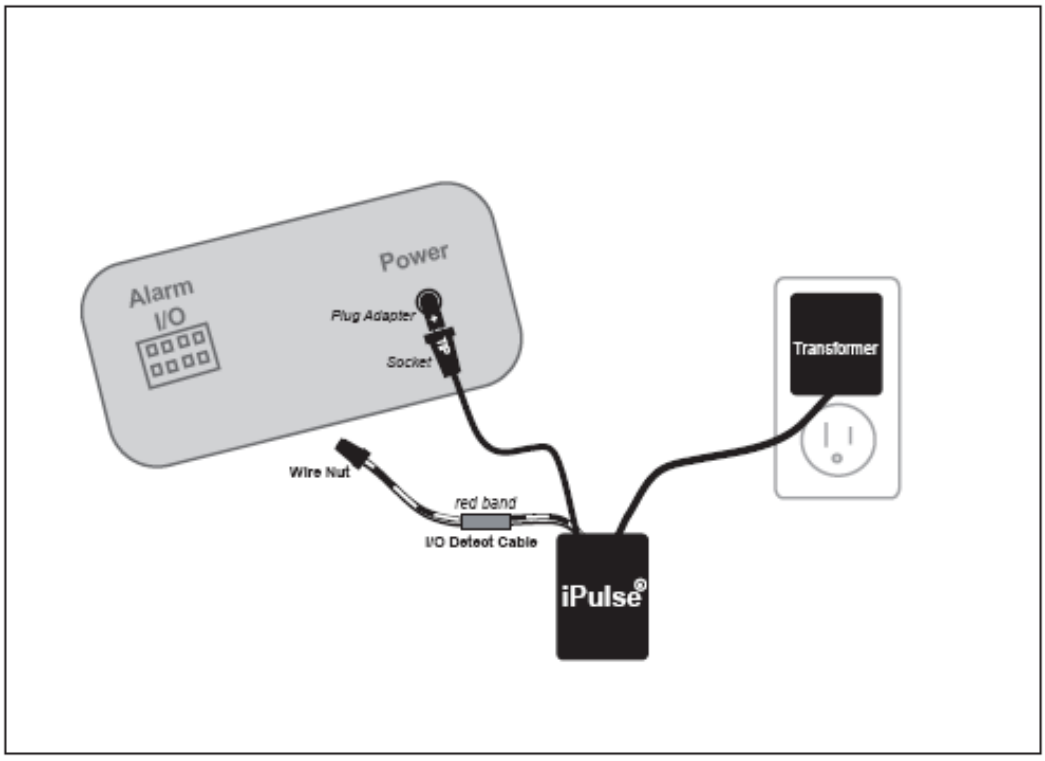


Figure 2: iPulse® IP1-STD – Timed Mode Installation

1. If your device's power input jack does not match the adapter plug supplied with the iPulse proceed to step 5.
2. Connect the power from the transformer to the power input in the iPulse.
3. Connect the output power plug from the iPulse to input power jack of your device.
4. Proceed to step 10.
5. Disconnect the adapter plug attached to the iPulse output power by unscrewing the two pin terminal connectors.
6. Plug the disconnected adapter into the power input jack of the iPulse.

7. Leaving at least six inches of slack, cut the power plug adapter from your device's transformer.

8. Connect the wires coming from the transformer to the two pin terminal strip that is now plugged into the iPulse (If you don't know the polarity of the wires check the voltage from the transformer on the transformer's wires with a voltmeter)

9. Connect the power plug that came from your transformer to the output power wires (using the provided wire nuts) of the iPulse (the red/black cable is positive and the orange/black is negative and should be wired back to the jack keeping the positive connection positive and the negative connection negative).

10. Do not connect the black and brown I/O Detect wires. Instead, twist wires together with provided wire nut.

11. No iPulse Manager Software installation is necessary.

12. The Yellow LED should flash about once per second and the Green LED will be on indicating the iPulse has Power. The RED led should remain off.

Your iPulse STD is now connected in Timed Mode. Your protected device should be operating and power reset once every 12 hours.

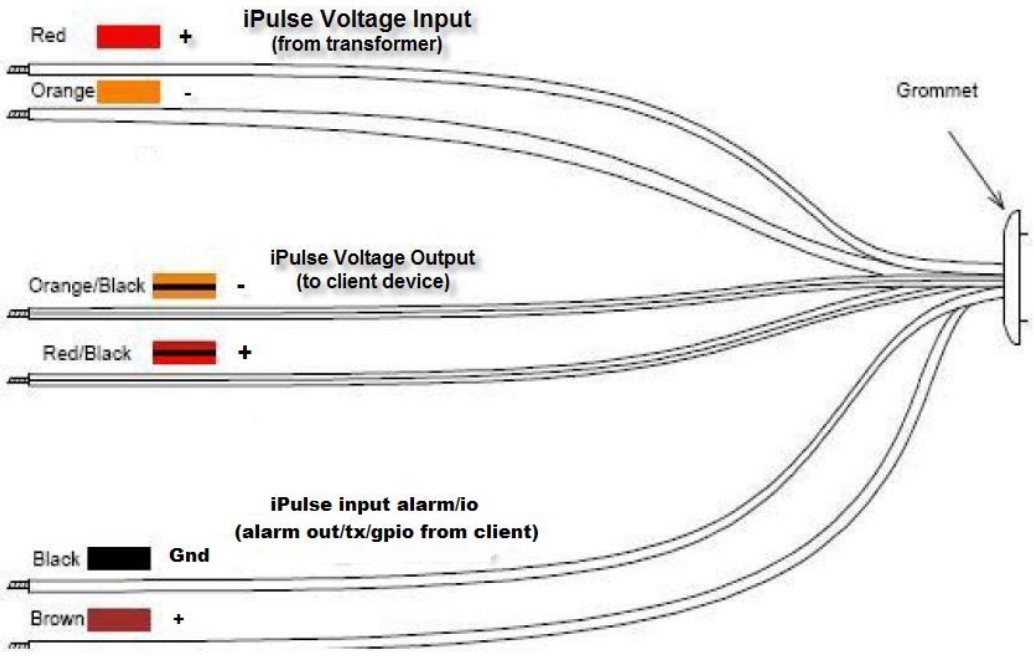


Figure 2.b: iPulse Wire Color Diagram

4. B. iPulse® Intelligent Reset Mode Installation - (IP1-STD)

Operating the iPulse® Intelligent Reset Mode requires an output connection to the protected device via the I/O Detect cable. Figure 3 illustrates the typical connections for Intelligent Reset Mode

! Warning- If Intelligent Reset Mode connection is incorrect and iPulse® does not detect I/O communication, iPulse will remain in Timed Reset Mode and re-start your device once every 12 hours (yellow LED flashes once/second).

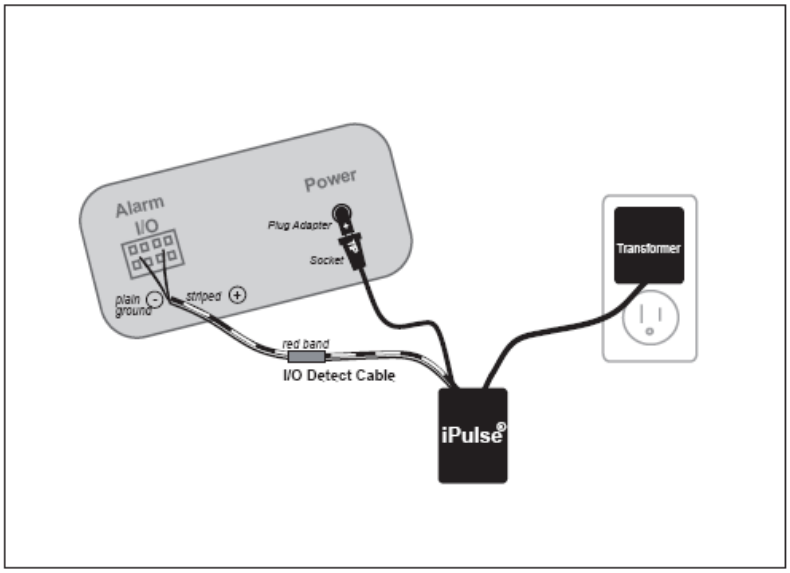


Figure 3: Connection for iPulse® STD in Intelligent Reset Mode

1. If your device's power input jack does not match the adapter plug supplied with the iPulse proceed to step 5.
2. Connect the power from the transformer to the power input in the iPulse.
3. Connect the output power plug from the iPulse to input power jack of your device.
4. Proceed to step 10.
5. Disconnect the adapter plug attached to the iPulse output power by unscrewing the two pin terminal connectors.
6. Plug the disconnected adapter into the power input jack of the iPulse.
7. Leaving at least six inches of slack, cut the power plug adapter from your device's transformer.
8. Connect the wires coming from the transformer to the two pin terminal strip that is now plugged into the iPulse (If you don't know the polarity of the wires check the voltage from the transformer on the transformer's wires with a voltmeter)

9. Connect the power plug that came from your transformer to the output power wires (using the provided wire nuts) of the iPulse (the red/black cable is positive and the orange/black is negative and should be wired back to the jack keeping the positive connection positive and the negative connection negative).

10. Locate your device in the device compatibility document (040-000005-001). For the latest Camera/Device Chart visit www.videogenix.com. If your device is not listed, please refer to Appendix A for proper I/O Detect connection.

11. Connect the Solid Brown (+) Detect wire to the I/O terminal specified for your device.

12. Connect the Solid Black (-) I/O Detect wire to the I/O terminal specified for your device.

13. Connect the power output pin from the iPulse to the Power input on your device. Use the supplied plug adapter that matches the power input to your device. Make sure plug adapter's positive ("+") marking is aligned with sockets "TIP" marking (see figure 2 above)

14. Connect the power from the transformer to the power input in the iPulse. If the power input pin does not match use the Universal input connector provided.

15. Add your device's configuration to the iPulse Manager Software or Network video recording (NVR) software (See iPulse Manager Software installation in CD-ROM).

Note 1: Connection polarity **MUST** be observed for all devices.

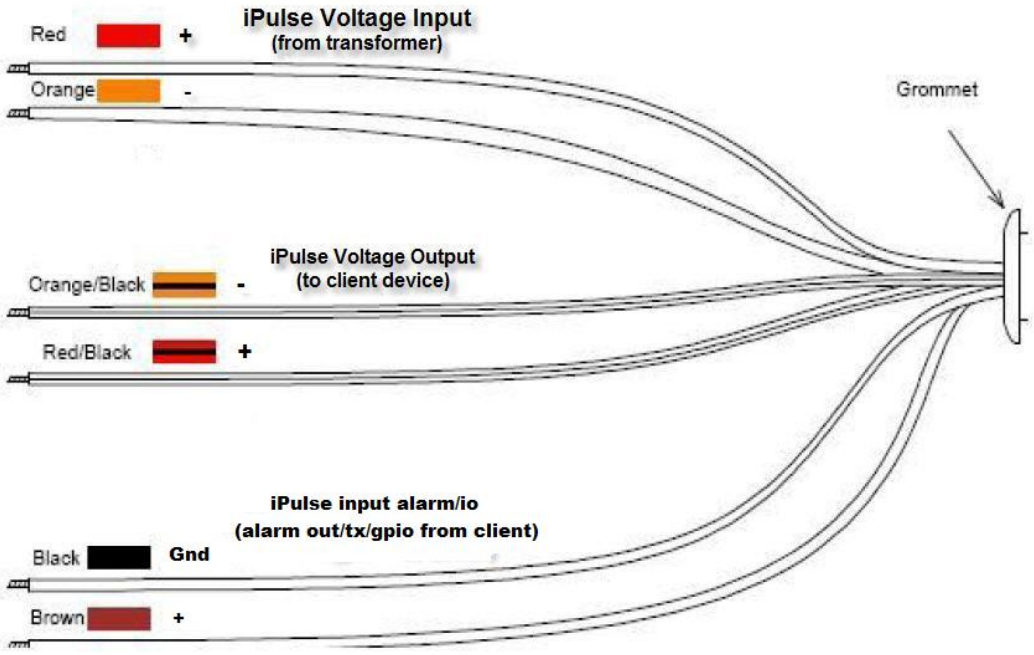
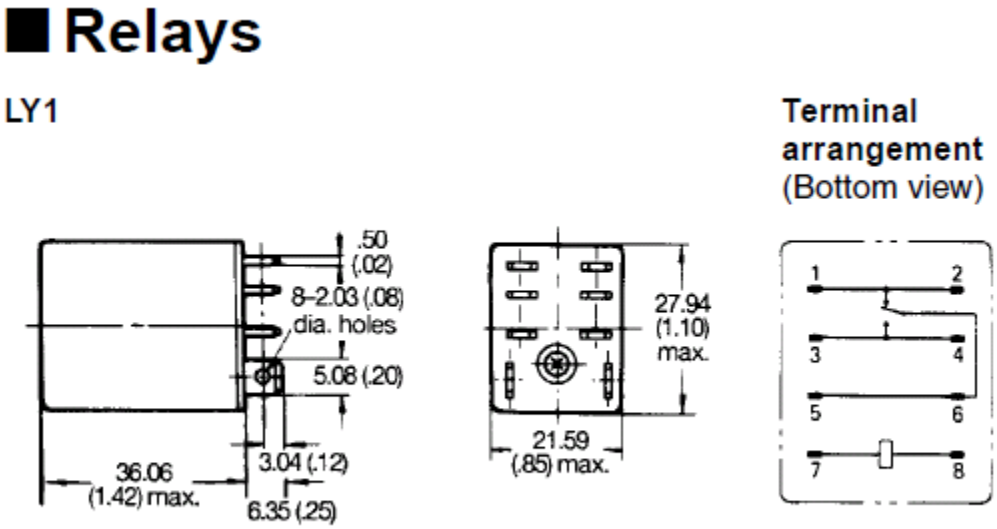


Figure 3.b: iPulse Wire Color Diagram

4.C. iPulse Wired to relay to switch an isolated external power supply (Recommended OMRON LY1F)



The Omron LY1F is an example of a readily available relay that can be used to enable the iPulse to cycle power on higher/multiple isolated voltages so that the iPulse software and hardware can watchdog devices beyond the scope of its low power design. The watchdog shown is a single pole double throw (SPDT) device (you may choose a multiple throw device such as the LY2f if you want to support more than 1 isolated power supply).

A variety of models of the LY1F relay are available to support a variety of input power options (12VDC, 24VDC, 24VAC). The following 2 steps describe the wiring configuration for an isolated power supply implementation. Whenever you implement a design with a relay you should select a relay with very low energization specs.

1. As shown above, Pins 7 and 8 should be wired to the switched output voltage from the iPulse. Pin 7 should be wired to the orange cable with black stripe (-Vout) and Pin 8 of the LY1f should be wired to the red cable with black stripe (+Vout). Whenever the iPulse energizes its output power, it will energize the relay and the relay will connect pins 3&4 (Normally open) to pins 5&6.

2. You can then place the positive or hot lead of the isolated power source that you want the iPulse hardware to cycle across pins 5&6 and Pins 3&4 of the relay. When the iPulse energizes the relay pins 5&6 will be shorted to pins 3&4. When iPulse drops its output voltage the LY1F (or other such relay) will open the circuit across pins 5&6 and pins 3&4 thus de-energizing the power source.

5. iPulse® LED Operation - (IP1-STD)

LED Operation

The iPulse® IP1-STD has three LEDs that define its state of operation. The picture and descriptions below detail LED operation.

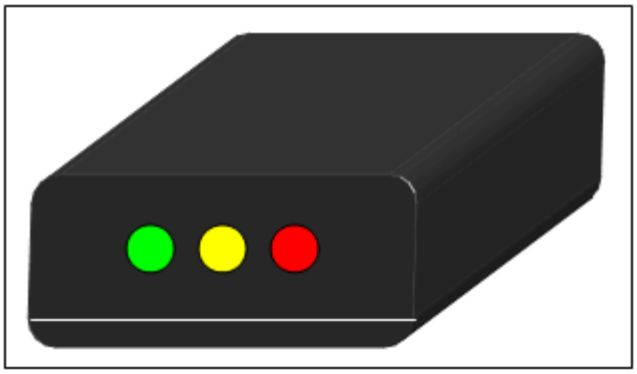


Figure 4: iPulse® STD – LED Operation

LED Operation

Green LED – Device Power Indicator

- ON : iPulse Output Power On to Device
- OFF : iPulse Output Power Off to Device (On device reboot for 5 secs)
- Flashing : Four Hour Standoff Mode, (after 3 consecutive reboots failures)

Yellow LED – Communication/Signal Status

- Timed Mode : Flashes once per second
- Intelligent Mode : YELLOW LED will track command signal output

Red LED – Operation Mode Indicator

- ON : Intelligent Mode, device operating as expected
- OFF : Timed Mode
- Flashing : Intelligent Mode, iPulse in fault mode

-

Timer Mode LED Operations

RED	YELLOW	GREEN	MODE	Power Output
ON	ON	OFF	Ipulse Power on cycle	OFF
OFF	Flashing	ON	Normal Operation	ON
OFF	Flashing	OFF	5 Second Power Down	OFF

Intelligent Mode LED Operations

RED	YELLOW	GREEN	MODE	Power Output
ON	ON	OFF	iPulse Power on cycle	OFF
ON	ON/OFF/FLASHING	ON	Normal Operation	ON
FLASHING	ON/OFF	ON	Fault Detection Phase	ON
FLASHING	ON/OFF	OFF	5 Second Power Down	OFF
FLASHING	ON/OFF	FLASHING	4 Hour Fault Mode	ON

6. Appendix

Appendix A – Output Relay Configuration and Connections

(intelligent mode only)

Output Relay Configuration

The relay output configurations vary based on the manufactures design. Because of these variations, the iPulse® I/O Detect input needs to operate in one of three ways. Refer to your device user manual for more information regarding the output relay configuration to your device. The following diagrams show proper connection to a device that is being run in iPulse intelligent mode and should be referenced in instances where the included device chart does not specify the output pins or terminals to be used when connecting to iPulse.

Dry Contact

The first and most common method requires the iPulse to supply current to the dry contacts of a relay. This configuration is shown in Figure 5.

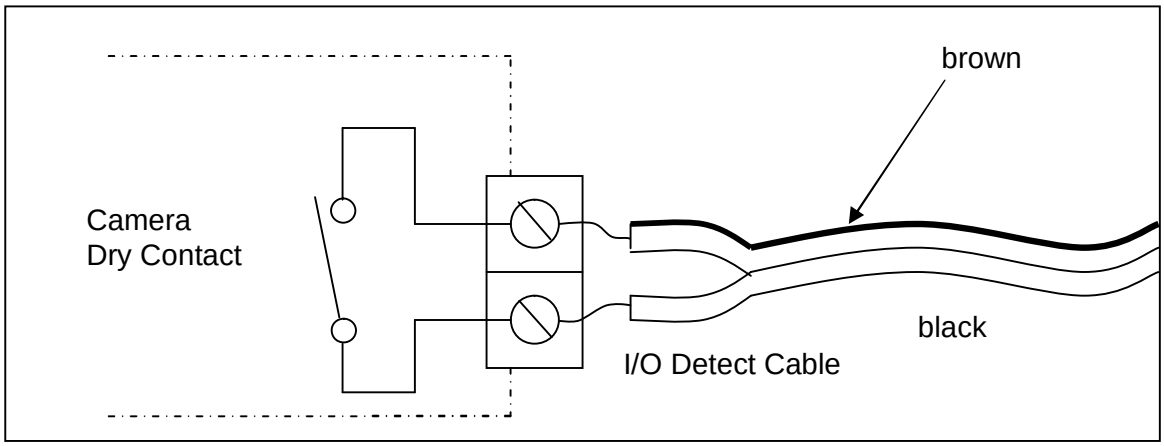


Figure 5: Dry Contact Relay I/O Detect Connection

Passive Solid-State
The second method is similar, requiring the iPulse to supply current to an open collector output transistor. This configuration is shown in Figure 6.

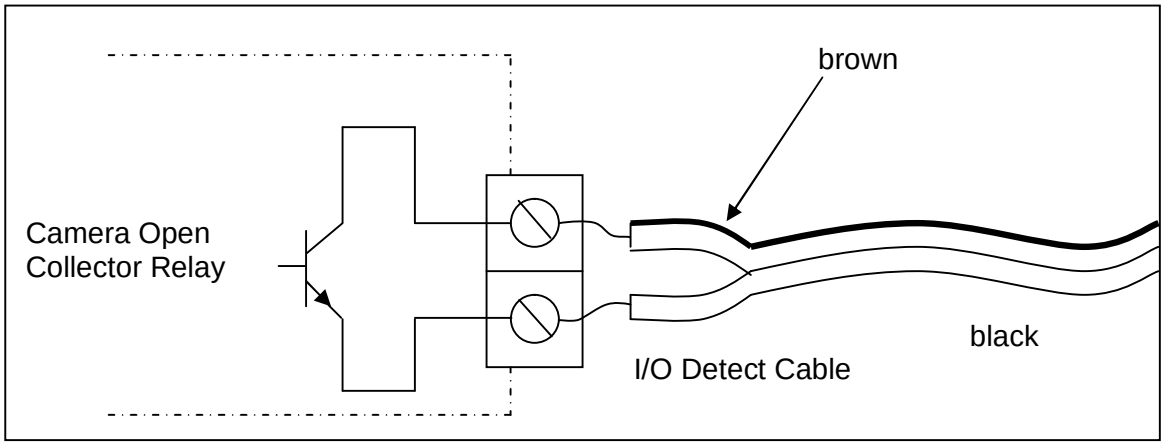


Figure 6. Passive Solid-State Relay I/O Detect Connection

Active Solid-State
The third and least common method is the emitter follower where the device output supplies the current used for detection. This configuration is shown in Figure 7.

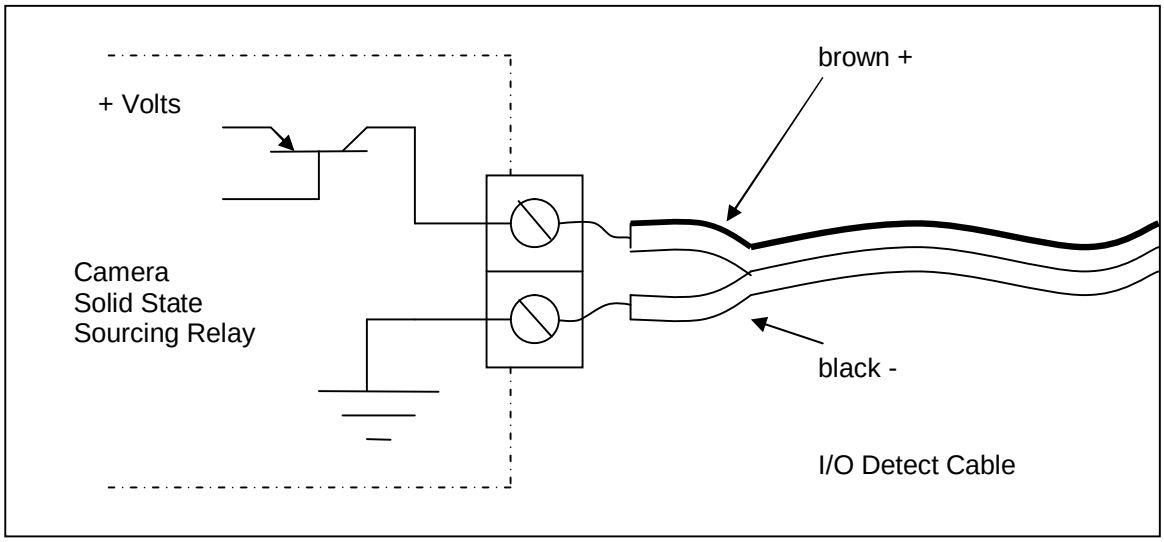


Figure 7: Active Solid-State Relay I/O Detect Connection

Appendix B – Product Specifications (IP1-STD)

Power Cable Options
- Transformed Y cable :

Power Requirements
- Input Voltage : 5 to 24 VDC
  : 5 to 24 VAC
- Operating Current : 12 ma

Switch Ratings
- Max Switching Current : 5 Amps
- Continuous Current : 2 Amps

I/O Detect Input
- Input Voltage : -25VDC to +25VDC
- Threshold : +1.9 VDC

Timer Mode Reset Cycle
: 12 Hours

Power reset period
: 5 Seconds

Environmental
- Temperature : 0 to 158 Degrees F
- Humidity : 5 to 95 % non-condensing

Enclosure Dimensions
: 1.97” x 1.38” x 0.79”
: 50mm x 40mm x 20mm

Appendix C – iPulse Quick Start Guide

iPulse® IP1-STD (5-24V AC/DC)

P/N: 095-00002-001 Patent 7,536,594

Installation Quickguide

P/N: 040-00005-001

Parts List

iPulse IP1-STD *(with power out plug adapter socket).*
Wire Nut
CD Rom
Connectors:

iPulse to Device	Transformer to iPulse
2.1mm plug adapter	Universal Connector
1.3mm plug adapter	with 2.1mm plug and
1.7mm plug adapter	3 input jacks *(1.3mm,*
EIAJ-04 plug adapter	*1.7mm and EIAJ-04)*

Before you start

Please check that iPulse's connectors are compatible with your device* and determine if you will use iPulse in Intelligent Mode (reset as needed) or in Timed Mode (reset every 12 hours). Please note that if your device does not have I/Os or if iPulse is not properly connected to I/O ports, then iPulse will default to Timed Mode. Refer to camera chart for correct I/O terminal connection.

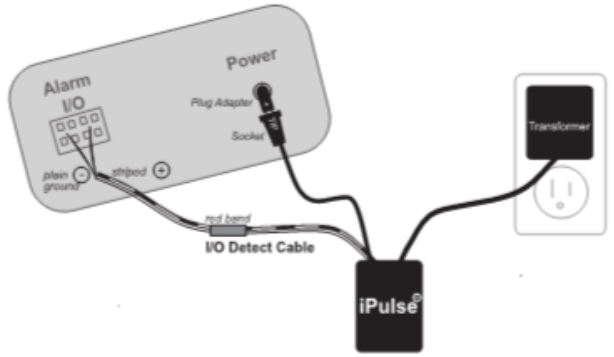
Installation Steps

1. **Intelligent Mode**: Connect iPulse's I/O detect cable to device's Alarm I/O terminals (plain wire - /striped wire +). **Timed Mode**: do not connect iPulse's I/O detect cable but twist wires and secure them with provided wire nut.
2. Connect iPulse's power out cable to device by plugging the appropriate plug adapter into Socket (align TIP to +)*
3. Plug device's power supply into iPulse. If necessary (not a 2.1mm plug), use Universal Connector.

1 **iPulse to I/O Alarm** Connect iPulse to I/O terminals (refer to camera chart for correct pins)

2 **iPulse to Device Power** Connect power out from iPulse to device, using the correct plug adapter (TIP aligned to +)*

3 **iPulse to Power Supply** Connect device power supply into iPulse using the Universal Connector if necessary.



Warning!

iPulse is not water resistant (humidity: 5 - 95% non-condensing, temperatures: 0 - 158 degrees F)

LED Operation IP1-STD

Green LED: Power Indicator
ON = Power On to device
OFF = Power Off to device
Flashing = 4 hour Fault Mode

Yellow LED: Communication/Signal Status
Timed Mode: flashes every second
Intelligent Mode: solid

Red LED: Operation Mode Indicator
ON = Intelligent Mode
OFF = Timed Mode
Flashing: signal not received by iPulse

* iPulse comes equipped with the most common connectors (2.1mm, . If your device is not compatible with those, please call us to purchase alternative connectors or check your manual for information on connector modifications and safety precautions.

Patent 7,536,594 VideogeniX Inc. 1423 Beacon St. Brookline MA 02446 Tel: 877 731-5550 Fax: 617 731-5525 www.videogenix.com