VideogeniX

Keeping Networks Alive

uSwitch™ Installation and Operating Manual

Table of Contents

Introduction

VideogeniX specializes in practical solutions for your network allowing you to *Stay Connected and Take Control*. uSwitch™ allows you to control any device over the web including modems, lights, sirens, gates and cameras whether you are right next door or halfway across the world. uSwitch will also reboot any network device automatically when it locks up or stops communicating, saving you costly and time consuming manual reboots. uSwitch is the perfect solution for industrial, security and personal applications.

Simple to use and with no programming required, uSwitch automatically builds a control web page, is password protected and can operate stand alone or be controlled via the Internet or a local intranet.

uSwitch comes with removable terminal connectors for simple wiring and two electromechanical relays with a built in web server that can be used as a dry contact or to turn on controls or appliances up to 220V.

Once connected, users can monitor, control and reboot any device over the web or over a network, from under a desk to the top of a pole including construction sites, summer homes and utilities. uSwitch is compatible with Android, iPhone, Blackberry and all other web based devices for anyone not at a computer, providing true remote control anywhere and anytime.

Features

- Plug-and-Play
- Simple to Use
- Two dry contact relays (15A@120Vac, 10A@250VAC), (15A@120VDC, 10A@ 250VDC) for direct connection to load. (Not designed with devices with large inrush current)
- No programming required
- uSwitch Auto Discovery Software
- Controllable via computers, cell phones, iPads and other web and network devices
- May be used as a standalone device
- Built-in web server provides simple, web based configuration and control.
- Customizable user interface with customizable controls and buttons.
- Removable terminal connectors (included) simplify wiring and service
- Custom applications can control uSwitch with simple CGI interface.
- Password protection
- Supports fixed IP or DHCP, and Dynamic IP with port forwarding
- Selectable TCP ports for proxy server and NAT applications
- 10/100 Ethernet connectivity.
- Built-in automatic watchdog mode on each relay; each relay has three independent, user assignable, pingable URL options
- Watchdog mode timers and counters fully configurable

- Momentary timers fully configurable

- Relay power on state fully user configurable (Closed, Open, Previous)

- Extremely small footprint

- Low power consumption

- Manual switching mode

- Enterprise grade software and remote monitoring packages offered.

- User customizable relay state colors and state text

- User customizable text fields for relay names

- Great documentation and support

Installation Guidelines (Read before Installing)

Opening the uSwitch enclosure or tampering will void the warranty.
1. uSwitch is not weatherproof (do not install outdoors without a proper environmental enclosure).
2. uSwitch must be installed by qualified personnel.
3. uSwitch is not designed to run in a radioactive environment
4. uSwitch must not be used for medical, lifesaving purposes, or for any purpose where its failure could cause serious injury, or the loss of life, or create significant financial losses.
5. uSwitch must be correctly wired. Incorrect wiring could result in damage to uSwitch or the device to which it is wired.

uSwitch Quick Start Guide

1. Connect the uSwitch to a 12V DC regulated power supply. As shown in the photo, the positive terminal is the terminal closest to the reset button; the negative terminal is the terminal closest to the edge of the board on the 2 pin terminal connector.

2. Connect an Ethernet cable between the uSwitch Ethernet port and an Ethernet port on the network switch/router. Connect a computer to the network switch/router. (See diagram below)

Network Switch or Router
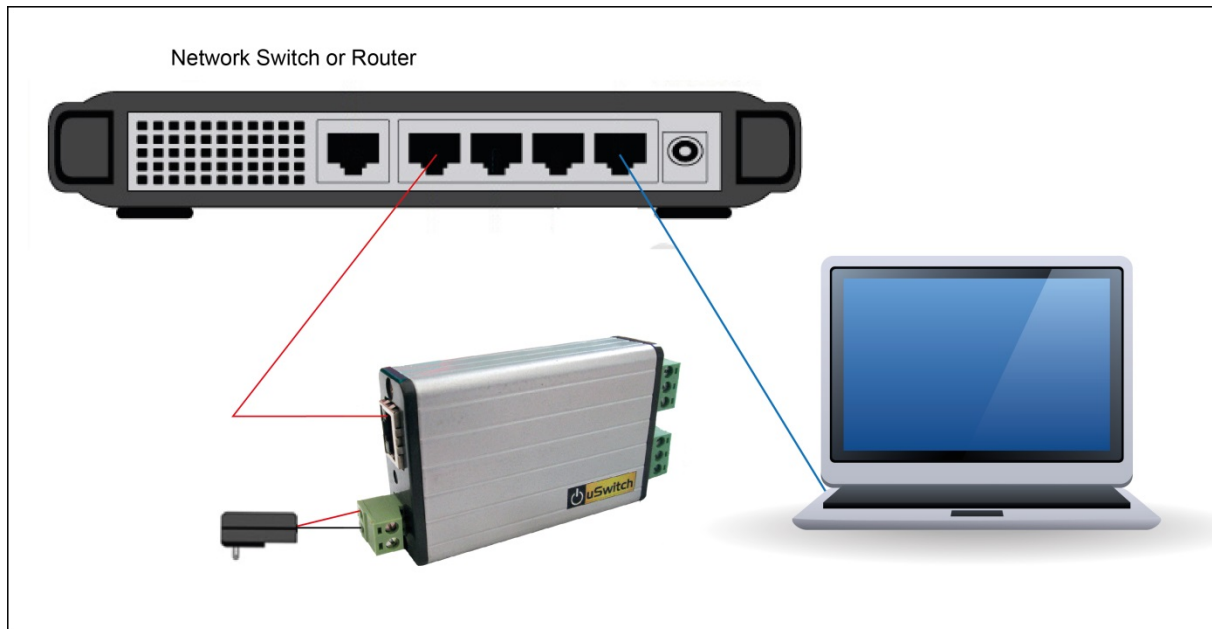
3. Set up a computer on the same network/subnet as the uSwitch. To do this set the IP address of the computer to 192.168.1.x with subnet of 255.255.255.0 (x can be any unused address on that network 2-254).

4. Configure the uSwitch by pointing your browser to the factory default IP address of the uSwitch: http://192.168.1.199

5. If this is the first time you are logging on to uSwitch at this address, a password dialog box will appear (see examples below). Enter "admin", for both the User name and Password fields (all lower case). Once logged on these can be changed in the section Authorization Configuration Page.
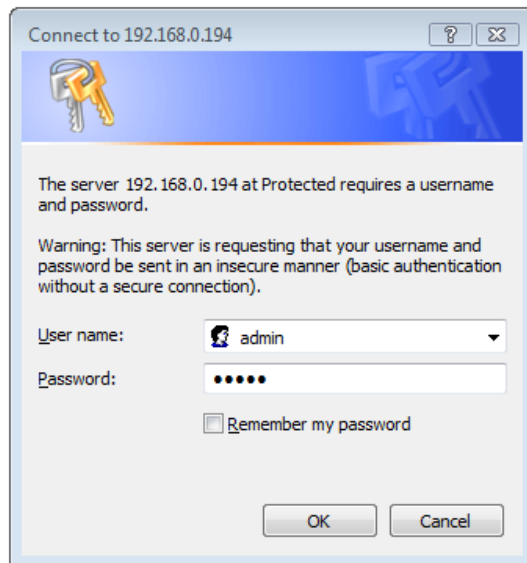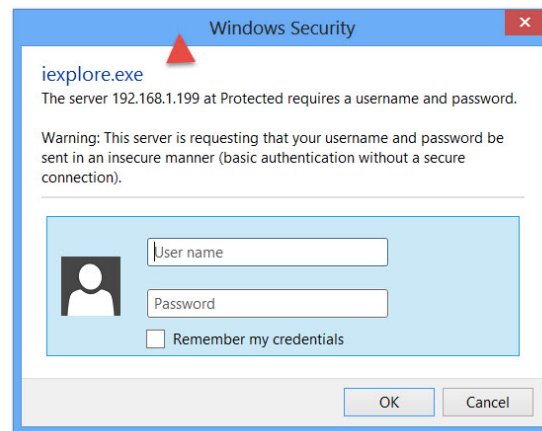
Windows Vista   Windows8

6. Press "OK".

7. Connect the relay contacts as desired (refer to the diagram below for relay connections).

About uSwitch

uSwitch contains two electro-mechanical relays and a built in web server. The web server can be controlled and/or monitored over any IP network including private networks, IP-based industrial control networks, and the Internet. uSwitch can be controlled from a web browser or via a custom application using standard CGI commands.

uSwitch can operate stand-alone or can be controlled from a remote or local web browser. It can be used to operate access control devices, lights, pumps, valves, locks, motors, etc.

It can also be programmed to automatically restart electronic devices that have frozen, or stopped functioning properly (even when communication to uSwitch or device has been lost). It can be used to remotely reboot servers, computers, satellite modems, and other devices over the Internet - either LAN or WAN. uSwitch can be wired in series with the power source of the device and switch the power on and off manually. uSwitch can be wired in parallel with the power switch of the device. This is useful for devices that will not automatically start operating when power is applied. Another option is to connect uSwitch directly into a device's reset circuit. In this configuration, uSwitch does not power down the device, but simply causes the device to reset. All reboot methods have different requirements in physical connection and setup. A fourth option is to wire a uSwitch relay to an isolated relay to control an isolated circuit.

uSwitch has a built-in Web Interface. You can access uSwitch by hostname, its fixed IP address or if you are on a remote WAN the URL of the LAN and or its assigned port using port forwarding. It can be accessed on networks with both static and dynamic IP addresses (in the case of a dynamic IP address a dynamic IP client may be required). The factory default settings for uSwitch are: 192.168.1.199 as its IP address, a default network port of 80 and a default gateway is 192.168.1.1.

Power Supply Connection

Connect an appropriate DC power supply to the **Vin+** and **Gnd** Terminals as shown below. A regulated power supply is recommended. The power supply should be rated to meet the operating current of the uSwitch (see uSwitch specifications for power requirements in Appendix B).
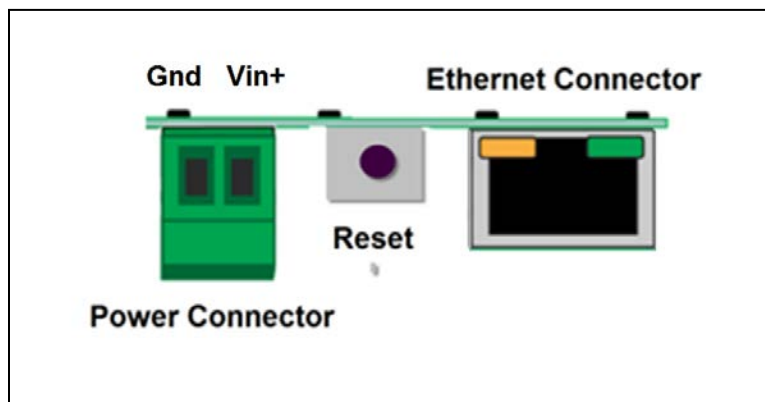
Relay Connection

When connecting to the relay contacts make sure not to exceed the specified load ratings for relay contacts. Load ratings may be obtained from the uSwitch specs (Appendix B).

NO2 COM2 NC2   NO1 COM1 NC1

Relay 2   Relay 1
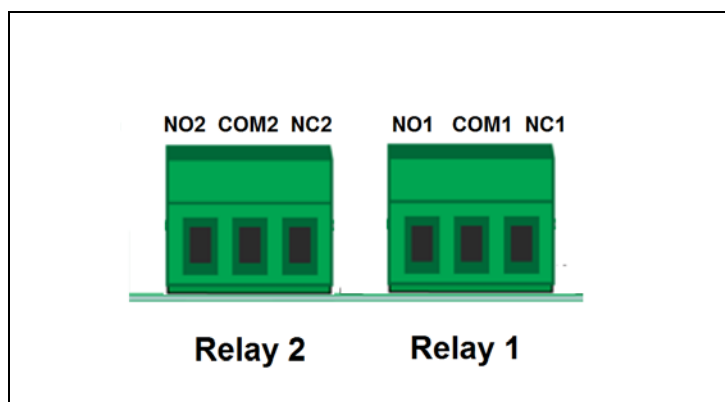
Network Connection

Connect uSwitch's Ethernet port to a 10 base-T or 100 base-T switch, router or cell modem/gateway (per diagram below). For configuration, uSwitch can also connect directly to the Ethernet port o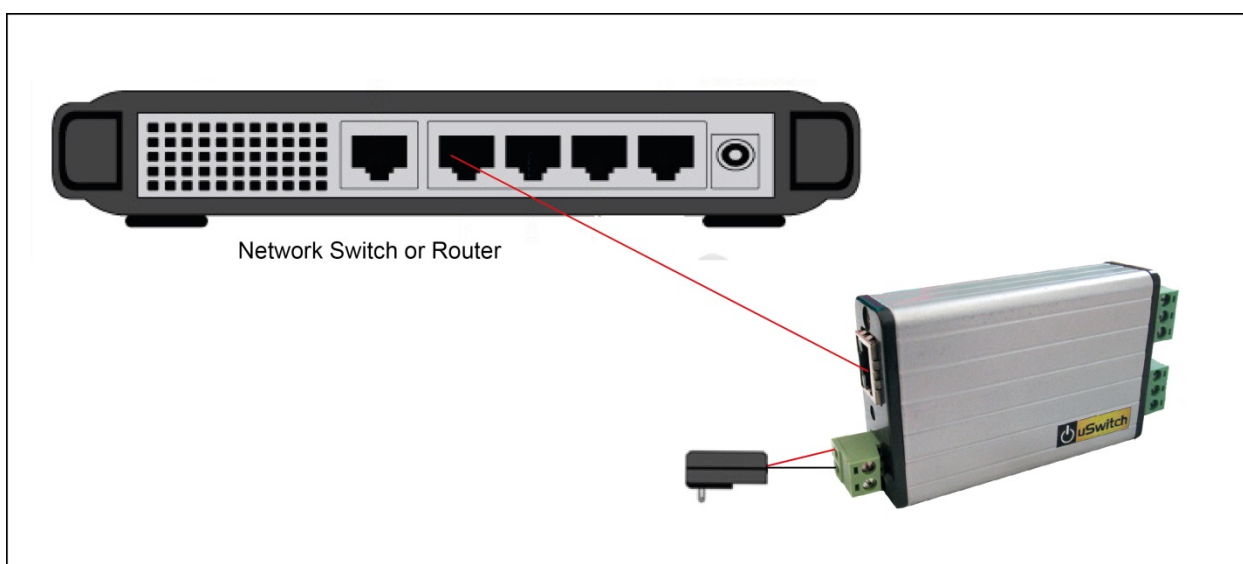n a computer using a "crossover" cable. Otherwise, for connection through standard communication equipment a "straight-through" cable should be used.

Network Switch or Router

Home Page

This is the uSwitch Relay Control page that appears when its IP address is entered into a browser. This screen provides manual relay control and status information based on the operating mode. Navigating between the uSwitch pages is done by clicking on the blue menu buttons on the left side of the page The menu options for the uSwitch are, Relay Control, Configuration, and Authorization Configuration.
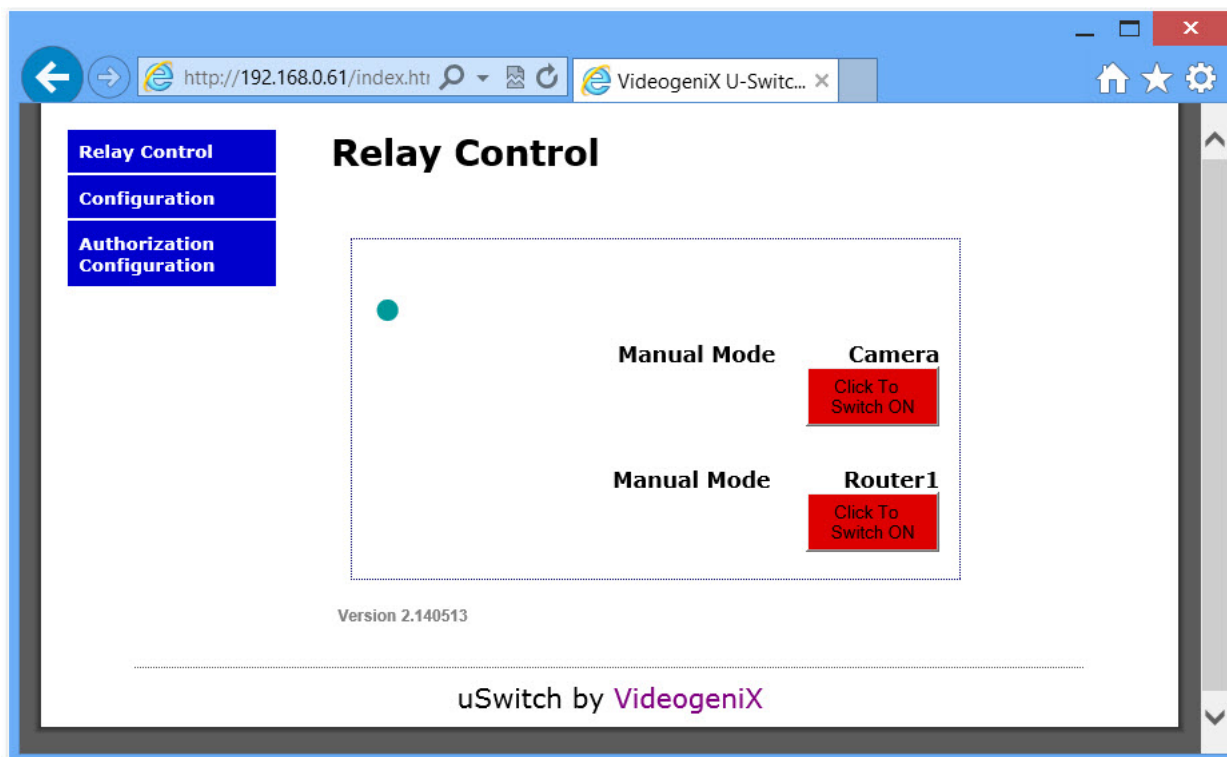
Selecting the red "Click to switch ON" button on the Manual Relay Control page for either relay, will energize the relay forcing the normally closed (NC) relay contact to open and the normally open (NO) relay contact to close. The button's color will simultaneously change from green to red (unless custom colors have been set from the Configuration page) and the button's text will change to "Click to switch OFF" (unless relay caption has been similarly changed on configuration screen).

"Relay1" and "Relay2" are the factory default names assigned to each relay. These names can be changed by the user from the Configuration page (for example, "Front Door", "Lights", etc).

Configuration Page

User configurable network and control options are modified from the Configuration page. If multiple uSwitch devices are to be used on the same network, connect only one at a time and set the IP address of each unit before attaching the next uSwitch to the network. This prevents having two devices on the same network with identical addresses (causing an IP address conflict). It is usually necessary to clear the Address Resolution Protocol Cache (ARP) each time you swap uSwitch units on the network (this is because each uSwitch has the same factory default IP address (192.168.1.199) and if the cache is not cleared an IP address conflict could occur if two IP addresses are associated with two different hardware MAC addresses). To clear the ARP cache on a Windows PC type "arp –d inet_addr" in a DOS/Windows command prompt window ("arp -d –a" as super user on Apple OSX). Once you have changed network settings on uSwitch you must cycle power (on the new uSwitch) before the network settings will take effect.

You can use a proxy server to connect multiple devices to the Internet using a single static or dynamic IP resolved address. This can be done using most consumer or industrial grade routers. If a proxy server environment is to be set up, each uSwitch will not be accessible from the internet until the proxy server (router) is configured to know the unique port number and fixed IP address assigned to each uSwitch on

its private network (LAN). To determine how to set up the proxy server (port forwarding) consult the manual for the device acting as the proxy server.

Note: When multiple uSwitch devices are installed on the same local area network, each must have its own unique IP address. Every uSwitch comes from the factory with a default IP address of 192.168.1.199. If multiple units are used, assign a unique IP address for each uSwitch on the local network (192.168.1.195, 192.168.1.196, 192.168.1.197, etc).

Network Configuration

Host Name	U-SWITCH
Relay1 Name	Relay1
Relay2 Name	Relay2
	☐ Enable DHCP
IP Address	192.168.1.199
Gateway	192.168.1.1
Subnet Mask	255.255.255.0
HTTP Port	80
Primary DNS	8.8.8.8
Secondary DNS	8.8.4.4
MAC Address	<40:D8:55:16:3C:D7>

Host Name

This configurable field represents the name of your project or system. It will be used when reporting information from this relay and in status logs. It is a virtual name for the current uSwitch device.

'Relay1' and 'Relay2'

These two configurable fields represent user assigned names to each relay. Once they have been modified all web references to "Relay1" and "Relay2" from the uSwitch control pages are replaced with the user assigned names.

DHCP

This checkbox is used when the user chooses to have a DHCP server automatically assign IPV4 addresses to the uSwitch. This is not recommended as these addresses can change over time making it difficult to know the IPV4 address of any given uSwitch at any given time.

IP Address

This specifies the IPV4 address of the uSwitch, on the local LAN. (Each uSwitch is factory programmed with the default static IPV4 address of 192.168.1.199). This static LAN address should be modified to be consistent with the LAN's subnet. When using multiple uSwitches on the same leg of a LAN each uSwitch must have a unique LAN IPV4 address.

Gateway

This specifies the IP address of the gateway (typically router/cell modem) which is responsible for creating the LAN and connecting to the other subnets or the WEB. If unknown the gateway address should be obtained from the network administrator. The gateway is the LAN address of the device that routes a subnet to an outside network (WAN) or another subnet. The factory default gateway setting for the uSwitch is 192.168.1.1. This must be changed to be consistent with the network on which the uSwitch is connected for all uSwitch features to function correctly (pinging devices in Auto Reboot mode may not work if the gateway address is not programmed correctly).

Subnet Mask

The subnet mask identifies a specific LAN's private addressing scheme on an IPV4 network. This can typically be obtained from the network administrator. By default the uSwitch subnet mask is set to 255.255.255.0. Each of the four, three digit fields in the subnet mask represents an IPV4 address field. Each of these fields represents a byte worth of addressing (1-254). Any bit positions in the byte with a value of zero are variable on the network, any bit positions with a value of 1 are required to have the same address as the IP address of the device. In the subnet mask, 255.255.255.0, the first three IP address fields are fixed and the last IP field may vary from 1 to 254.

HTTP Port

This specifies the HTTP port used for outside communications to the uSwitch. By default, the port is set to 80 (standard port for HTTP devices). A unique port is required for each uSwitch if accessing multiple devices on a remote network through a gateway with a single IP address or URL. In this case, each uSwitch device would be assigned a different port (for example 8555, 8556, 8557, etc). When ports are assigned to a uSwitch, a gateway would know to forward all traffic for that assigned port to the specified uSwitch. Each uSwitch is then accessible to the outside world on the private network by entering the routable/resolvable IP address of the gateway and the port assigned to a specific uSwitch.   Any port (besides port 80) assigned to a uSwitch would require all outside communications to that uSwitch to reference the uSwitch via its gateway's resolvable IP address or URL and the uSwitch's assigned port. For instance http://192.168.1.1:8555 or www.MyHomeRouter:8555.

Primary DNS

This field is used by the uSwitch to resolve outside URLs that may be included in the automatic reboot options or device firmware whose actual IP addresses are unknown from within a private network.

Secondary DNS

This field is used by the uSwitch to resolve outside URLs that may be included in the automatic reboot options or device firmware whose actual IP addresses are unknown from the private network just in case the primary DNS specified is not accessible or is down.

MAC Address

This is the physical address assigned to the uSwitch. It cannot be modified by the users however it can be used to verify which LAN IP address is connected to which uSwitch by executing either an arp -a command, or when running the uSwitch discovery utility.

MAC Address <40:D8:55:16:3C:D7>

To access uSwitch remotely from an outside network, WAN or the internet you will need to set up port forwarding (also called NAT or Virtual Port addressing) in your router or gateway. You can set this up from your router's configuration page as follows:

1. Find the Port Forwarding/Virtual Server/NAT section in your router and map a unique port number to each uSwitch by specifying the uSwitch's private IP address on the private network.
2. If you are on a static IP line you may use a 3rd Party free DDNS provider to register a Domain Name for your Router (URL). Map your router to the free DDNS provider.
3. If the address assigned to your router by your ISP is dynamic (changes regularly) than you will need to set up the dynamic DNS page of your router to map the URL to a Dynamic IP Name Server (consult your router's user configuration manual).
4. Browse to your USwitch using the following protocol from a browser; http://myNetworksURL:myuSwitchPortNumber (i.e. http://myHomeRouter:8000)

Relay Settings

	CradlePoint	Devices
Button Text	ON ⌄	ON ⌄
1st State Color	RED ⌄	RED ⌄
PowerUp State	LAST ⌄	LAST ⌄
Momentary(s)	0	0 (0=Non-Momentary)
Ping Auto Reboot	☐	☐ (Overrides Timed Reboot)
Verify All URLs	☐	☐ (If Auto Reboot Checked)
Timed Reboot	12 ⌄	24 ⌄ (Hours)

The Relay Settings Panel allows a user to customize how each relay is displayed, controlled and its default startup features.

Button Text

This user definable field indicates the text displayed on the Relay Control Page when the relay is either in its de-energized or energized state. The choices from the selection box are "ON/OFF", "OPEN/CLOSED", "LOCK/UNLOCK","START/STOP". (Note:uSwitch's terminal connectors enable device connection to the relay to be either normally closed or normally open).

1st State Color

This field indicates the color displayed on the Relay Control Page when the relay is in either the de-energized or energized state. The choices are "RED/GREEN" or "GREEN/RED". Depending on you physically wiring to the uSwitch the colors may indicate different states.

PowerUp State

This selection box allows a user to configure the power on condition of the relay. The options are OFF, ON or LAST.

OFF - Relay is de-energized each time U-Switch power comes on.

ON - Relay is energized each time U-Switch power comes on.

LAST - Each time uSwitch is powered on the specified relay is put in the previous state it was in when device was last powered on.

Momentary(s)

This second timer field is used to put a relay into momentary switch mode. When set to zero manually changing the relay will leave it latched in the opposite state (non-momentary mode). Any non-zero value in the Momentary field forces the relay to become a momentary switch. In momentary mode, each time the relay is manually changed from the Relay Control page it retains the new state for the count of seconds specified in the momentary field and then switches back to its previous state.

Ping Auto Reboot

If this box is checked the selected relay will act as an automatic watchdog reboot device and its state will be automatically controlled as specified in the fields of the "Auto Reboot Ping Options" panel. (a single relay cannot be programmed to Ping Auto Reboot and be in the Momentary Mode at the same time).

Verify all URLs

This checkbox is only effective when the Ping Auto Reboot checkbox is also checked. When the Ping Auto Reboot checkbox is checked the Verify all URLs specifies whether response from pings to ALL URLs as set in URLs to Ping (in the Auto Reboot Options panel) for an associated relay must respond or whether a response from any single URL is used to determine device failure or success.

Timed Reboot

This field only has an effect when "Ping Auto Reboot" is not checked. To change it "Ping Auto Reboot" must not be checked and the configuration must be saved. The "Timed Reboot" field can be programmed to either OFF, 12 or 24 (hours). When 12 or 24 is set the relay will cycle once every 12 or 24 hours as configured. The total duration of the relay cycling time will be as specified in the "Relay Cycle Time" in the "Auto Reboot Options" box below.

Auto Reboot Ping Options

Auto Reboot Ping Options

URLs to Ping (Relay1)

Primary	192.168.24.1
Secondary	8.8.8.8
Tertiary	8.8.4.4

URLs to Ping (Relay2)

Primary	192.168.24.1
Secondary	8.8.8.8
Tertiary	8.8.4.4

Watchdog Mode Counters

Max Ping Failures	6
Max Reboot Attempts	4

Watchdog Mode Timers

	Min:	Sec:
Mode Start Delay	10	0
Time Between Pings	10	0
Relay Cycle Time	0	15

Fault Mode Timers

	Hrs:	Min:	Sec:
Period Before Retry on Fault	24	0	0

[Save Configuration Changes]   [Restore System Defaults]

The Auto Reboot Ping feature allows uSwitch to automatically detect failed equipment and reboot or restart it without human intervention. You may set one to three IP addresses to be periodically contacted. If the uSwitch determines a communication problem exists between these devices, the uSwitch can automatically reboot any attached devices by temporarily pulsing the assigned relay that has the locked up device's power running through it.

uSwitch has been successfully deployed with: IP cameras, kiosks, web signs, cellular routers, servers, DSL & cable modems, RTUs, control sensors etc.

The following parameters are effective only when USwitch is set to **Auto Reboot Ping** mode (in t)he Relay Settings panel).

URLs to Ping (Relay 1 and Relay 2)

These three (3) fields contain the IP addresses of remote or local devices/URLs that uSwitch will ping in determining operational failure. This may include the static IP address or remote IP of devices that will be tested (router, computer, Kiosk, network camera, or a device on the opposite side of a communications

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link). This is useful to auto reboot communications devices such as CSU/DSUs/RTUs, cameras, satellite modems, routers, reclosures, power meters etc.

Max Ping Failures

If no ping responses are returned for max ping "consecutive" attempts than the selected relay will be cycled (forcing a cold reboot of the connected device). A ping failure occurs if any specified devices fail to respond when <u>Verify all URLs</u> is checked, or if no devices respond to their pings when this field is not checked.

Max Reboot Attempts

After "Max Reboot Attempts" consecutive power cycles, without success, the uSwitch exits "Auto Reboot" mode and enters "Device Fault Mode". (During "Device Fault Mode" the uSwitch stops cycling the relay to the attached device for the specified <u>Fault Mode Time</u>. This prevents continuous power cycling on a device after detecting that simple power cycling is not curing a fault to the device).

Mode Start Delay

When uSwitch is first powered on, or after a device reboot attempt, the uSwitch will wait <u>Start Delay</u> time before restarting ping tests to renew failure detection. This start delay gives a newly power cycled device time to fully boot up and establish connections to external devices before the uSwitch starts re-testing it.

Time between Pings

This is the frequency (in seconds) between consecutive device ping attempts. (prevents ping flooding and allows for network down times).

Relay Cycle Time

This is the time period that the uSwitch will power down a device before repowering it (allows a device the necessary shutdown time before re-applying power).

Period before Retry on Fault

This is the length of time that uSwitch will remain in "Device Fault Mode" before returning to "Auto Reboot Mode" to re-attempt device startup after the specified Max Reboot Attempt consecutive failures have occurred. This feature prevents continuous power cycling of a device that may have an unrelated communication failure.

Authorization Configuration Page

The Authorization Configuration Page is used to change uSwitch access passwords. A password is required on initial login to the device. Passwords may be up to 23 characters and numbers. We recommend difficult passwords of at least 8 characters including both letters and numerals.

Authorization Configuration

Enter the new username and password below(up to 23 characters each):

Username:	
Password:	
Re-enter Password:	

Save

uSwitch by VideogeniX

Relay Control
Configuration
Authorization Configuration

Security Notes

uSwitch is an extremely secure networking control device. It does not support terminal or file transfer programs (TFTP/FTP). This means it is not possible for someone to 'break in' to it and access other devices on your local network. uSwitch does not support remote firmware updates so it is not possible for someone to remotely install malicious software. As with any device to be installed on a network, there are some security precautions that should be observed. If uSwitch is installed on the Internet, it is recommended that passwords be secure (at least 8 characters in length with a combination of upper case letters, lower case letters, and numbers). For additional security, a firewall may be used to limit access only to selected IP addresses. Another option may be to set up a Virtual Private Network (VPN) between the network where uSwitch resides and the client machine (web browser, second uSwitch, etc.).

uSwitch Board Schematic

Two Channel   Relay v1.0

Internet

Reset

NC2
C
NO2
TERML

NC1
C
NO1
TERM2

Reset - Hold for 4 seconds to restore default settings:
IP: 192.168.1.199   GW: 192.168.1.1
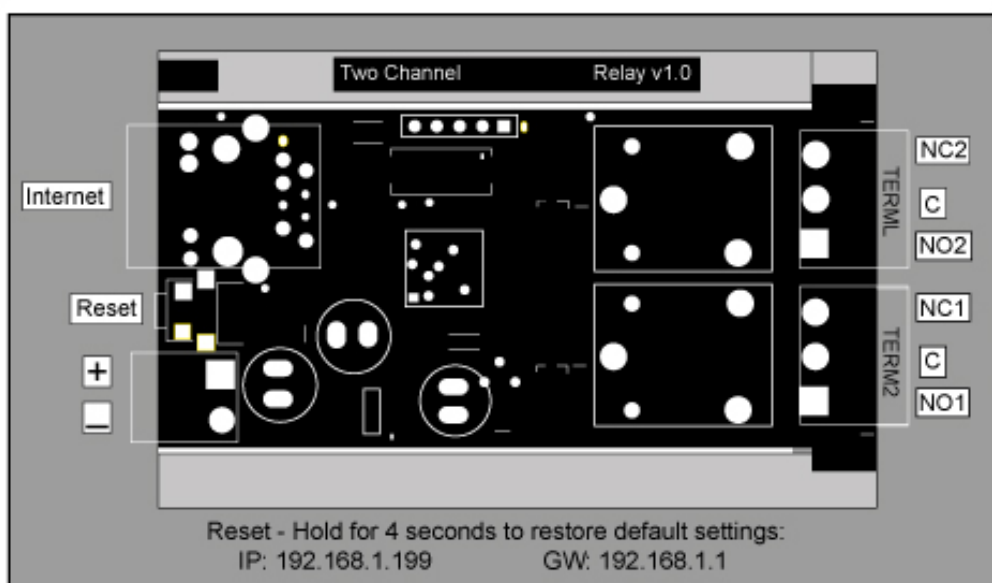
Configurations

Access Control to Electronic Door Strike

The following is a configuration where uSwitch is used to provide access control. When connecting to door strikes a reverse-bias diode is recommended. In this example, a reverse-bias diode is connected in parallel with the lock to protect the relay contacts from the inductive kickback that can occur when the lock is switched. A variety of diodes is available and can be ordered either online or directly from us.
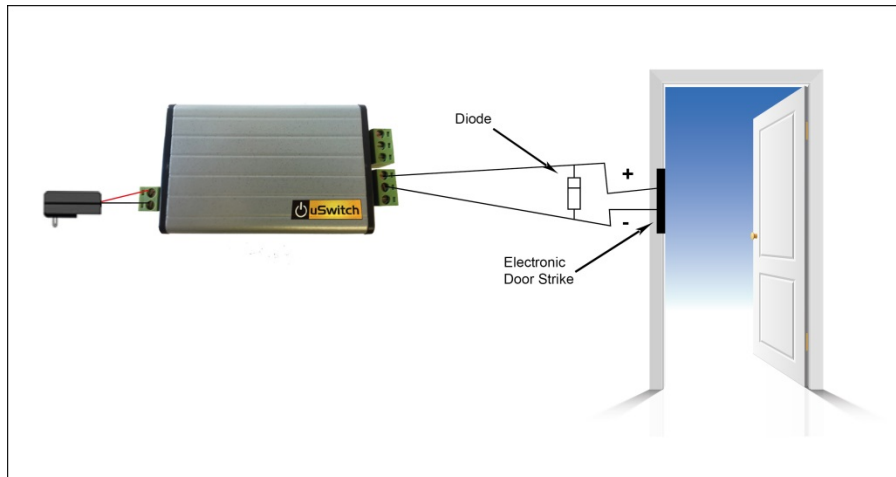
For loads greater than those rated for the uSwitch's internal relays, or when connected to devices with high inrush or peak current surge an external relay should be used with a uSwitch relay as the trigger. The illustration below shows how a high current motor or other high load device can be controlled using a wired to an external relay. A variety of external relays is available and can be ordered either online or directly from us.

External Heavy
Duty Relay

NC +
NC -
S1
S2
S3

Electronic
Motor

Connection to an External Relay
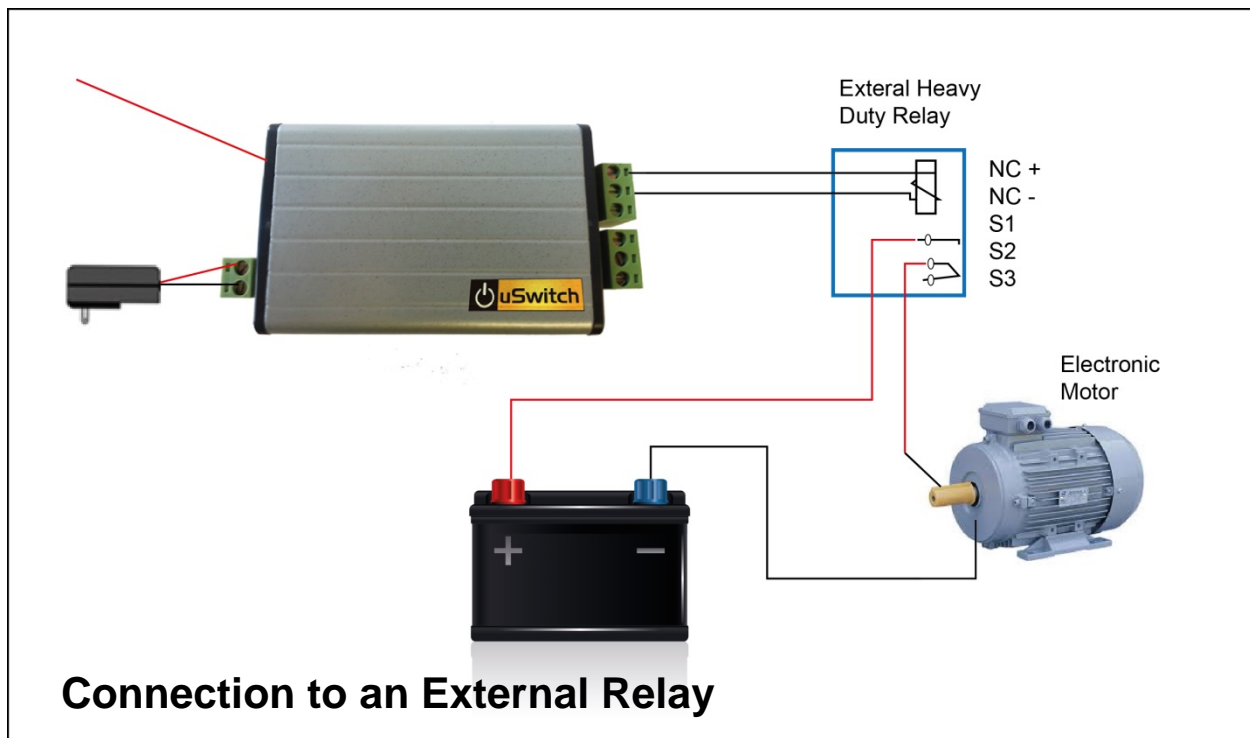
When relays switch inductive loads such as motors, transformers, relays, etc., electricity will arc across the internal relay contacts each time the contacts open. Over time this causes wear on the relay contacts which can shorten their life span. When switching a high inductive load, it is recommended that simple relay contact protection devices be used. To be economically feasible uSwitch cannot provide relay protection for all possible loads.

If you have an excessive load, the following diagram shows a relay contact protection circuit for DC and for AC circuit. For component values required to provide sufficient contact protection for your application, refer to appropriate references. Note: for DC circuits a diode is used and for AC circuits an RC circuit across the load can be used.

Hard Wired Network Connection

Using standard Ethernet cabling, connect uSwitch's Ethernet port to a 10 Base T or 10/100 Base T Ethernet connection such as a network switch, router or cellular mode. To connect directly to a computer use a "crossover"/"Null Modem" cable. For connection to a router or switch, a standard "straight-through" cable is recommended.

Wired Network Connection

Network Switch or Router
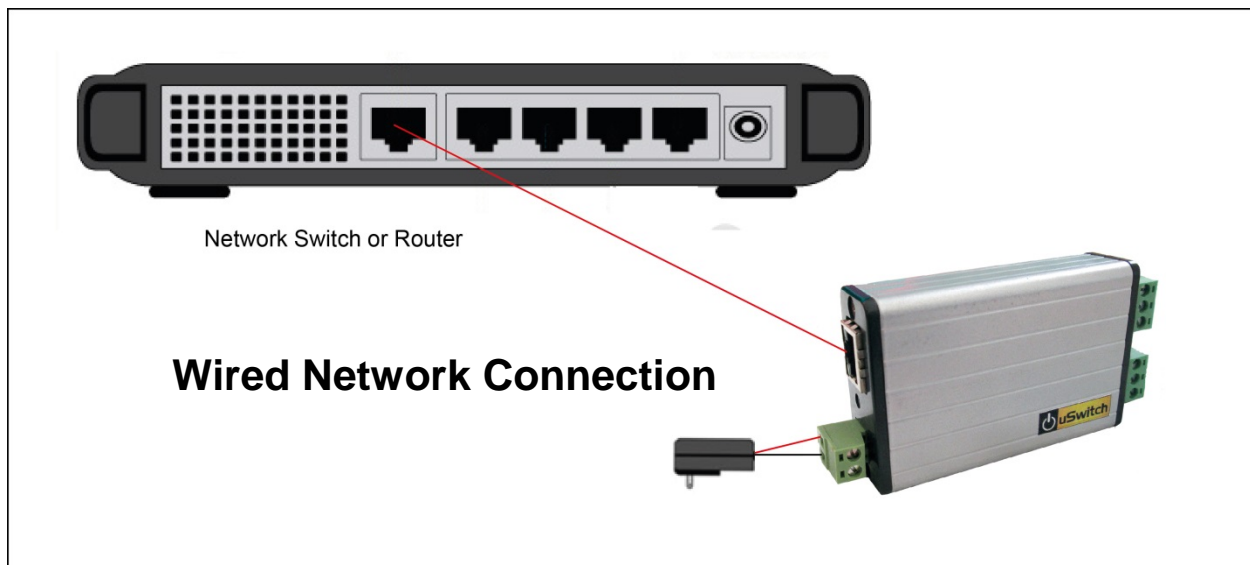
Wireless Network Connection

To setup uSwitch to operate in a wireless network environment, connect the uSwitch Ethernet port to a wireless repeater or bridge. The wireless bridge in turn connects to the wireless network. The wireless Ethernet bridge or router must be properly set up for the wireless network first. This information is contained in the End User documentation for the wireless networking device. A variety of wireless repeaters is available and can be ordered either online or directly from us.

Wireless Network Connection

Wireless Bridge
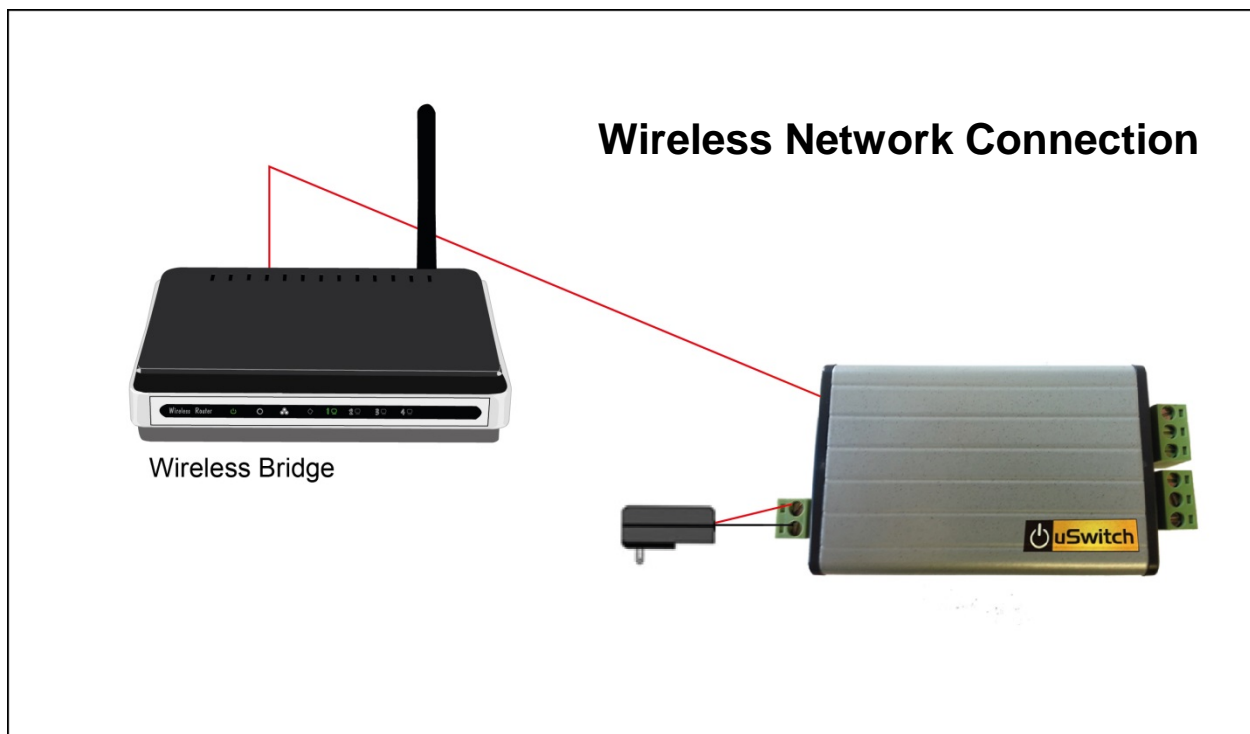
Troubleshooting:

Before returning a device test the power input transformer to uSwitch . This can easily be done by swapping out with a known working power transformer.

Appendix A: Factory Default Settings

In the event that the IP address or passwords are forgotten and you cannot log in to uSwitch, you can reset uSwitch to its factory default settings. With power on insert a paperclip or other such device through the small hole adjacent to the power jack for uSwitch you will need a 1" paper clip. Press the reset button for about 5 seconds (you should feel or hear the reset pin click). After approximately 5 seconds, release the reset button. Wait 30 seconds then cycle power on uSwitch. Now all settings should be restored to factory default settings.

Network Configuration Settings

Host Name: USWITCH_BOARD
Relay 1 Name: Relay1
Relay 2 Name: Relay2
DHCP: Off
IP Address: 192.168.1.199
Subnet Mask   255.255.255.0
Gateway: 192.168.1.1
Primary DNS   8.8.4.4
Secondary DNS   8.8.8.8
HTTP Port: 80
MAC Address: Predefined at Factory (non-configurable)

Relay Settings

Button Text: On (Off)
1st State Color: Red/Green
Power Up State: Last (sets relay to return to previous state after each uSwitch power cycle)
Momentary(s):   0 (non-momentary)
Ping Auto Reboot: Unchecked
Verify All URLs: Unchecked
Timed Reboot: Off

Auto Reboot Ping Options

URLs to Ping (all relays)
URL Primary: 8.8.8.8
URL Secondary: 4.2.2.2
URL Tertiary   192.168.0.1

Auto Reboot Counters
Max Ping Failures: 3
Max Reboot Attempts   3

Auto Reboot Timers
Mode Start Delay: 5 min, 0 seconds
Time Between Pings: 1 min, 30 seconds
Relay Cycle Time: 5 Seconds
Period Before Retry on Fault: 4 hours, 0 minutes, 0 seconds

User Authorization Page
User Name: "admin"
Password: "admin"

Appendix B: Specifications
AC
Relay Capacity: 7.5 A Max at 105-125 VAC,   5 A Max at 210-240 VAC

Power Requirements:
Model uSwitch12, uSwitch+
Voltage: 12VDC ± 15%
Model uSwitch24
Voltage: 24VDC ± 15%

Standby Current
(Relays OFF) - 58mA
One Relay on - 92mA
Both Relays on - 126mA

Relay Ratings:
Rated Carrying Current: 15A @ 125VAC, 10A @ 250VAC, 15A @ 24VDC
Max Current: 15A
Max Voltage: 240VAC, 110 VDC

Relay Performance
Relay Control Options: ON/OFF, Pulsed, Automatic, Momentary
Contact Resistance <50m ohms (initial value)
Contact Material: Ag alloy
Max Switching Voltage: 240VAC, 110VDC
Max Switching Current 20A
Mechanical life (rated load) 10,000,000 ops.
Electrical life (rated load) 100,000 ops.

Networking:
Network: 10/100 Base-T, IPv4
Network Setup: static IP address assignment, DHCP, HTTP port selectable
Network Connector: 8-pin RJ-45 socket

Connectors:
Power/Input: 2-position, removable terminal strip, 3.81mm terminal spacing
Relays: 3-position (Normally Closed, Normally Open, Common) removable terminal, 3.81mm terminal spacing
Ethernet: 8-pin RJ-45 socket

LED Indicators: (on Ethernet jack)
-Network linked
-Network activity

Physical:
MTBF 360,000 hours
Temperature 0 – 50 degrees C (-30C , +80C)
Size: .4.2 in (106 mm) long, 2.15 in (55mm) wide, 1.0 in(25 mm) deep
Weight: 4.3 oz (122 grams)

Password Settings:
Password protection on setup page: Yes

Product Safety: FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two
Conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause
  undesired operation.

Warning:
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. This equipment
generates uses and can radiate radio frequency energy and, if not installed and used in accordance with
the instructions, may cause interference to radio communications. However, there is no guarantee that
interference will not occur in a particular installation. If this equipment does cause harmful interference to
radio or television reception, which can be determined by turning the equipment off and on, the user is
encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is
  connected.

Consult the dealer or an experienced radio/TV technician for help.

Warranty

VideogeniX warrants this product, if used in accordance with all manufacturers' specification, to be free
from original defects in material and workmanship for a period of One Year from the date of initial
purchase. If the product should prove defective within that period, Seller will repair or replace the product
at its sole discretion.

This warranty is extended to the original purchaser of the equipment only. Call VideogeniX Technical
service to receive a Return Materials Authorization (RMA) Number prior to sending any equipment back
for repair. Include all cables, power supplies and proof of purchase with shipment. For warranty service
or repair, return to VideogeniX at 1425 Beacon St, Brookline, MA. Purchaser shall prepay all charges for
shipping to VideogeniX. VideogeniX. will pay the shipping charges to return the product to the purchaser
as long as the product is shipped within the United States. If the product is shipped outside of the United
States, the purchaser shall pay all shipping charges, duties, and taxes.

THIS WARRANTY DOES NOT APPLY TO NORMAL WEAR OR TO DAMAGE RESULTING FROM ACCIDENT, IMPROPER USE, MISUSE, UNAUTHORIZED REPAIR, TAMPERING, MODIFICATION, IMPROPER CONNECTION, OPERATION OUTSIDE THE ENVIRONMENTAL OR ELECTRICAL SPECIFICATIONS, ABUSE OR NEGLECT. SELLER MAKES NO EXPRESS WARRANTIES OTHER THAN THE WARRANTY EXPRESSLY SET FORTH HEREIN. EXCEPT TO THE EXTENT PROHIBITED BY LAW, ALL IMPLIED WARRANTIES, INCLUDING ALL WARRANTIES OF MERCHANT ABILITY OR FITNESS FOR ANY PURPOSE ARE LIMITED TO THE WARRANTY PERIOD SET FORTH ABOVE; AND THIS WARRANTY EXPRESSLY EXCLUDES ALL INCIDENTAL AND CONSEQUENTIAL DAMAGES.

Limitation

Further, the warranty does not cover Acts of God, such as fire, flood, hurricanes, and tornadoes. This warranty does not cover damage to property, equipment, direct, indirect, consequential, or incidental damage (including damage for loss of business profit, business interruption, loss of data, and the like) arising out of the use or misuse of this product. UNDER NO CIRCUMSTANCES WILL THE LIABILITY OF VIDEOGENIX TO THE PURCHASER OR ANY OTHER PARTY EXCEED THE ORIGINAL PURCHASE PRICE OF THE PRODUCT, REGARDLESS OF THE FORM OF THE CLAIM. No other warranty is expressed or implied. VideogeniX specifically disclaims the implied warranties or merchantability and fitness for particular purpose. Some jurisdictions may not allow the exclusion of limitation of liability for consequential or incidental damage.

Notice:

Changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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