

ΩMNIQND

Operation Manual



OMNIGND

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Description:

The Botron B92700 OMNIGND is a Multi-Ground Continuous Monitoring Automation System.

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OMNIGND Overview:



OMNIGND Features

Intuitive Tri-color LCD screen display
8 monitored ports for real-time measurement and recording events
2 Relays for TTL equipped devices
Network communication through built-in Ethernet connection
USB connection
Measures Ground resistance of 1 ohm—20M
VTR Technology (Variable Test Resistance Technology) for each port
Web Server TCP communication
Ports are transistor-transistor logic (TTL)
Ports accept Analog in Resistance and Digital IN and OUT
Aluminum Grounding Hub with 6 Banana Jacks and 5 Ring Terminals

Quick Setup Guide:

What's in the box

- 1 x B92700 OMNIGND Unit
- 1 x Ethernet Cable
- 1 x USB Cable
- 1 x 12V DC Power Cable
- 1 x Ground Cord
- 1 x Mounting Bracket

Powering On

- Install the power cable to the OMNIGND located on the top of the device.
 - Plug the power cable into desired outlet.
 - The OMNIGND will automatically power up and display the Serial Number and Version.
 - Once booted, you will be presented with the **Status Screen** (Home).
 - You can then cycle through the screens by pressing the **Select Button** on the top left corner of the device.
 - On 1st Press: **The TCP Information Screen**
 - On 2nd Press: **The Fail Range Screen**
 - On 3rd Press: **The System Information Screen**
 - On 4th Press: **The Auto-Logging Screen**
 - On 5th Press: **Returns to the Status Screen.**
- (For more information on what these screens mean, see page 15)*

Quick Setup Guide Continued:

Grounding:

To ground the OMNIGND, connect a wire from a properly grounded source (eg: the B92500 GroundHog from Botron) to either ring terminal or banana jack of the **Ground Hub** located on the bottom of the OMNIGND. This will ground the entire **Ground Hub**.

- When the OMNIGND has been properly grounded, the rest of the open ports of the **Ground Hub** may be used for grounding other devices.
- It is recommended that a ground wire is used to connect the grounding block on the bottom of the OMNIGND to the far left monitoring port (Port H) on the top of the OMNIGND. By factory default this Port H is named OMNIGND.
- When this configuration is done properly, the OMNIGND will continuously verify the built-in **Ground Hub** to insure that it is properly grounded.

Connecting Devices:

To monitor equipment, connect a ground wire from one of the available monitoring ports located on the top of the OMNIGND to a known point of ground on the desired device. (The name and description for the port may be changed to reflect the device being monitored. See Page 6)

Connecting the Relays (Optional):

When connecting a device to the relays, located on the left side of the OMNIGND, ports TWO and THREE are used in general. Port ONE of the relay is used for customized applications. (needs rewording to better understand)

Connect a wire from a power source to port TWO of the Relay and a wire from port THREE of the Relay to the device.

For the Relay to OPEN for the device to work:

- The Relay must be turned on for one or more Ports.
- The Ports that are turned on for the Relay must be in PASS states.

***Note:** Ports 1 & 2 are normally open. Ports 2 & 3 are normally closed.

Getting Online:

To connect the OMNIGND to your local area network (LAN), connect an Ethernet cable from an active router, switch or terminal that provides network access, to the Ethernet connector located on the top of the OMNIGND.

Quick Setup Guide Continued:

Mounting:

Once your OMNIGND is connected and your equipment setup is complete, find an optimal place to mount the device in an area where it can be easily accessed and/or viewed.

Ready for Customization.

Configuring Your Settings Online:

Locating the OMNIGND in your network:

- Finding the IP address on your OMNIGND
 - On the OMNIGND press the Select Button until you reach the TCP Information Screen (one press from the Status Screen).
 - Locate the IP Address on the screen. (ex.: IP: 192.168.1.217)
- Open an internet browser on a PC/Mac, tablet or phone connected to the same network as the OMNIGND.
 - Type in the IP address (located in the steps above) of the OMNIGND in your browser's address bar.
 - ◆ **OPTIONAL:** Type in `http://OMNIGND` to an internet browser connected to the same network as the OMNIGND.

Getting to know the OMNIManager interface:

- The Menu on the left side of the page contains the following sections for information and customization of the OMNIGND.
- **Main Tab**
 - Once you are logged on to the OMNIManager, you will find yourself on the **Main** page.
 - The **Main** page displays the following:
 - The name of the unit
 - The unit description.
 - ◆ Individual port information
 - ◆ Port Identifier (A, B, C, D, E, F, G, H)
 - ◆ Port Name (LCD Display Name)
 - ◆ Port Description (Descriptions)
 - ◆ Current Resistance Value
 - ◆ Port Status

Configuring Your Settings Online Continued:

The screenshot shows the 'Factory Default' tab selected in the left-hand navigation menu. The main content area displays the following information:

- Unit:** OMNIGND
- Description:** OMNIGND
- Hardware Table:**

Port	LCD Display Name	Descriptions	Resistance	Status
A	Port A	desc A	190k	Pass
B	Port B	desc B		Off
C	Port C	desc C		Off
D	Port D	desc D		Off
E	Port E	desc E		Off
F	Port F	desc F		Off
G	Port G	desc G		Off
H	OMNIGND	Main Ground		Off

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Port Name Tab

The **Port Name** page is where you can change the name of the Unit and its description, along with the name of each individual port and their corresponding descriptions.

- We recommend you change each ports display name to something easily identifiable. (ex. naming a soldering station "Iron 1")
- After changes are made, press the Save Button in order to update the Unit with your new settings.
- The maximum number of characters for the name and description of the Unit and the names and descriptions of the ports are as follows:
 - Unit Name: 33 Characters Max
 - Unit Description: 33 Characters Max
 - Port Names: 8 Characters Max
 - Port Descriptions: 33 Characters Max

Configuring Your Settings Online Continued:

The screenshot shows the 'Port Name' configuration page. The left-hand navigation menu has 'Port Name' selected. The main content area contains the following fields and table:

- Unit Name:** Input field containing 'OMNIGND'
- Unit Description:** Input field containing 'OMNIGND'
- Port Name Table:**

Port	LCD Display Name	Descriptions
A	PortA	desc A
B	PortB	desc B
C	PortC	desc C
D	PortD	desc D
E	PortE	desc E
F	PortF	desc F
G	PortG	desc G
H	OMNIGND	Main Ground

Save

Fault Logs Tab

The Fault Log Tab is where you can access the recorded data of port events.

- Press the **Retrieve Log** button to retrieve the **Fault Log** information for the Unit.
 - OMNIManager will display up to 50 events at a time.
 - The Start and End positions of the Fault Log can be changed to retrieve any stored events in batches of 50 by either entering a value or using the up/down arrows.
- The web page will then display a table of recorded **Fault Log** information stored on the Unit.
- This information will include:
 - Row Number
 - Log Number (event number)
 - The Port that recorded the event
 - The Date in which the event took place
 - ◆ Format: MM/DD/YY
 - The Time in which the event took place
 - ◆ Format: HH:MM:SS
 - The Status of the event
 - ◆ Ex: High Fault, Low Fault, or PASS
 - The Resistance (in Ohms Ω) of the Port recorded at time of the event
 - The Low Fault setting for the port
 - The High Fault setting for the port

Configuring Your Settings Online Continued:

B Botron Co Inc.

OMNIGND Monitor

Main

Port Name

Fault Logs

Hardware

Delay

Range

Auto Alert

Network

Factory Default

Fault Logs

Total Fault count: 10

Start Record Position: 1 Total Record List (max 50): 50

Retrieve Log

Row	Log Number	Port	Date	Time	Status	Resistance	Low Fault	High Fault
1	1	A	12/02/14	04:16:37	High Fault	20784900	0	3500000
2	2	A	12/02/14	04:16:40	Pass	1317998	0	3500000
3	3	A	12/02/14	04:16:43	High Fault	4936114	0	3500000
4	4	A	12/02/14	04:16:44	Pass	487891	0	3500000
5	5	A	12/02/14	04:16:46	High Fault	21694096	0	3500000
6	6	A	12/02/14	04:16:48	Pass	428073	0	3500000
7	7	A	12/02/14	04:18:40	Low Fault	89871	100000	3500000
8	8	A	12/02/14	04:18:43	Pass	158616	100000	3500000
9	9	A	12/02/14	04:18:46	Low Fault	89871	100000	3500000
10	10	A	12/02/14	04:18:49	Pass	131445	100000	3500000

Hardware Tab

This is one of the many VTR Technology customization pages featured in OMNIManager. In this page, the controls for individual monitored ports may be changed.

- The first thing you want to do is turn the port on by checking the box corresponding to the specific port you have equipment connected to.
- If a Port is unchecked, then the port and its controls are considered to be turned off. This port will not be active for monitoring.
- Once the port is turned on, you may now activate any of the following controls for each individual port.
 - Turn Log Events to Memory - On/Off
 - ◆ This must be turned on for the Unit to store any information when a Port switches to a **FAIL** state and/or a **FAIL** state to a **PASS**.
 - Turn the Port - On/Off (active/inactive)
 - Turn Relay A - On/Off
 - Turn Relay B - On/Off
 - Turn Buzzer - On/Off
 - Turn Auto Alert Send on Fault - On/Off
 - ◆ If turned on, an email will be sent to the selected recipient with information regarding the event at the time of the fault.
 - The recipient may be changed under the **Auto Alert** page.
 - Turn Auto Alert Send on Fault to Pass - On/Off
 - ◆ If turned on, an email will be sent to the selected recipient with information regarding the event at the time of the fault to pass.
 - The recipient may be changed under the **Auto Alert** page.
 - Press the **Save Button** to save the changed settings to the Unit.

Configuring Your Settings Online Continued:

B Botron Co Inc.

OMNIGND Monitor

Main

Port Name

Fault Logs

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Hardware

Log Faults To Memory

Port	Port On	Relay A On	Relay B On	Buzzer On	Auto Alert Send on Fault	Auto Alert Send on Fault to Pass
A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
G	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
H	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Save

Delay Tab

The **Delay** page is where you can customize the delay settings for the TTL relays.

- The delays for the following may be changed:
 - Relay A Delay before turned On
 - ◆ The amount of seconds to wait before the Relay turns on after all Ports that are turned on are in **PASS** states.
 - Relay A Delay before turned Off
 - ◆ The amount of seconds to wait before the Relay turns off after all one or more Ports that are turned on are in a **FAIL** state.
 - Relay B Delay before turned On
 - ◆ The amount of seconds to wait before the Relay turns on after all Ports that are turned on are in **PASS** states.
 - Relay B Delay before turned Off
 - ◆ The amount of seconds to wait before the Relay turns off after one or more Ports that are turned on are in a **FAIL** state.
 - Alarm Delay before turned On
 - ◆ The Alarm Delay is the amount of seconds that pass before the buzzer goes off after a Port goes into a **FAIL** state.
- To update the Unit with the new changes press the **Save button**.

Configuring Your Settings Online Continued:

The screenshot shows the Botron Co Inc. OMNIGND Monitor web interface. The 'Delay' tab is selected in the left-hand menu. The main content area displays the following configuration options:

Relay A Delay Before On/Activate:	03
Relay A Delay Before Off/Deactivate:	03
Relay B Delay Before On/Activate:	03
Relay B Delay Before Off/Deactivate:	03
Alarm Delay Before On:	03

A 'Save' button is located at the bottom of the configuration area.

Range Tab

This is one of the many VTR Technology customization pages featured in OMNIManager. In this page, the range value settings may be changed anywhere from 0 to 20M.

- Use the **Range** page to change the Low and High fault resistance values of each individual Port.
 - Enter a number or use the arrows next to the input box to increase or decrease the fault range.
- To turn off the Low or High fault range of a Port, enter the ohm value of zero (0) in the corresponding input box for the High or Low section.
- To update the Unit with the new changes press the **Save** button.

The screenshot shows the Botron Co Inc. OMNIGND Monitor web interface. The 'Range' tab is selected in the left-hand menu. The main content area displays a table for configuring fault ranges for ports A through H:

Port	Low Fault In Ohms	High Fault In Ohms
A	0	3500000
B	0	3500000
C	0	3500000
D	0	3500000
E	0	3500000
F	0	3500000
G	0	3500000
H	0	10

Below the table, there is a note: "Enter ohm value of zero (0) to turn off fault range." and a 'Save' button.

Configuring Your Settings Online Continued:

Auto Alert Tab

The Auto Alert Tab is where you can enter email recipients information for event alerts.

- Under the Auto Alert Page the following settings may be changed:
 - SMTP Server
 - ◆ The SMTP Server name may be 32 characters or less.
 - ◆ Only letters from the English alphabet, numbers 0-9, and the "@" symbol may be used.
 - ***Note:** Only SMTP servers that do not require SSL may be used.
 - User Name
 - ◆ The User Name is the email address used to send the emails from. The User Name may be 32 characters or less.
 - ◆ Only letters from the English alphabet, numbers 0-9, and the "@" symbol may be used.
 - Password
 - ◆ The Password may be 20 characters or less.
 - ◆ Only letters from the English alphabet and numbers 0-9
 - Recipient (To whom the email is to be sent to)
 - ◆ The Recipient name may be 32 characters or less. Commonly known as an email address.
 - ◆ Only letters from the English alphabet, numbers 0-9, and the "@" symbol may be used.
 - Port
 - ◆ Use the Port that is in connection with the SMTP server that will be used.
 - Send Alert On Power Failure
 - ◆ If "Send Alert on Power Failure" is checked, the Unit will send an email alert to the chosen Recipient when the Unit is powered back up.
 - Message
 - ◆ Changes the message that is sent with the alert.
 - To update the Unit with the new changes press the **Test/Save** button.

Configuring Your Settings Online Continued:

B Botron Co Inc.

OMNIGND Monitor

Main
Port Name
Fault Logs
Hardware
Delay
Range
Auto Alert
Network
Factory Default

Auto Alert

Auto alert will send an email when any of the ports are in fault condition.
Auto alert can be turn on or off for individual ports in hardware tab under auto alert on.

Enter the appropriate settings in the fields below:

SMTP Server: Port: 25

User Name:

Password:

To:

Send Alert On Power Failure

Message:

```
Botron OMNIGND Test
Auto Alert Email.
```

The Email Alert to the recipient when a Port goes into a **FAIL** state will contain:

- Unit Name
- Unit Description
- Port Name
- Port Description
- Event value at time of fail
- Low Fault
- High Fault

OMNIGND Auto Alert

to me 12:23 PM (0 minutes ago)

Unit Name:OMNIGND

Unit Description:OMNIGND

Port Name:Port A (port A)

Port Description:desc A

high fault >20M ohms

Low Fault:Off

High Fault:3.50M

OMNIGND Auto Alert

to me 12:27 PM (0 minutes ago)

Unit have just powered up from reset.

Configuring Your Settings Online Continued:

Botron Co Inc Test Email

to me 2:23 PM (0 minutes ago)

Botron OMNIGND Test Auto Alert Email.

Network Tab

The **Network** Page displays the network information for the OMNIGND Unit:

- The MAC Address and Host name are non-changeable
 - The MAC Address is a way of identifying the Unit.
 - The Host Name may be used in an internet browser connected to the same network as the OMNIGND unit to get the TCP settings.
- Enable DHCP
 - By enabling DHCP, the user may change the IP Address, Gateway, Subnet Mask, Primary DNS, and Secondary DNS.
 - The IP Address, Gateway, Subnet Mask, Primary DNS, and Secondary DNS must be in the format: XXX.XXX.XXX.XXX
 - ◆ Note: If one or more of the four sections of numbers is in a format of "XXX.XXX.001.XXX", it may be submitted as "XXX.XXX.1.XXX".
 - ◆ Note: If one or more of the four sections of numbers is in a format of "XXX.XXX.000.XXX", it may be submitted as "XXX.XXX.0.XXX".
- To save and changes to the Network Interface, press the **Restart Interface button**. The Unit will then refresh its LCD screen, returning to the **Status Screen**.

Configuring Your Settings Online Continued:

The screenshot shows the OMNIGND Monitor web interface. At the top left is the Botron Co Inc. logo. Below it is the title "OMNIGND Monitor". A navigation menu on the left includes: Main, Port Name, Fault Logs, Hardware, Delay, Range, Auto Alert, Network, and Factory Default. The "Network" page is active, displaying the following configuration fields:

MAC Address:	00:1A:A0:AA:3A
Host Name:	http://OMNIGND
<input checked="" type="checkbox"/> Enable DHCP	
IP Address:	192.168.1.217
Gateway:	192.168.1.254
Subnet Mask:	255.255.255.0
Primary DNS:	192.168.1.254
Secondary DNS:	0.0.0.0

At the bottom of the network settings is a "Restart Interface" button.

Factory Default Tab

The **Factory Default** page may be used to reset the unit back to factory default values for the following:

- Table of Content
- Hardware Setting
- Fault Range Setting
- Fault Log Reset
- Alert Setting
- Port Name
- Network Setting
- Choose one of the available selections to be reset to its factory default values by the corresponding box next to it.
- After you have made your selections; press the **Update button** to begin the reset process.
 - (Please note that any values reset on a given tab will affect corresponding values across the OMNIManager.)
- Resetting Table of Contents is a full factory refresh.
- When the reset command is sent, the Unit will power off, and reboot with factory default settings.
 - (Please note the OMNIGND will disconnect with the TCP website as it powers down. When the Unit reboots, the TCP website will need to be refreshed to establish a connection with the Unit again.)

Display Screens:

Understanding Screen Modes

The Tri-color LCD screen gives color coded back lighting indicating the status of the OMNIGND.

- **Blue:** Passive Mode (not recording data)
- **Green:** Logging Mode
- **Red:** Ground Failure

The **Status Screen** displays 3 columns; Port Name, Resistance Value and Current State.

- Column One:
 - The first column lists the name of the 8 ports that the **OMNIGND** monitors.
 - By default the ports are named:
 1. Port A
 2. Port B
 3. Port C
 4. Port D
 5. Port E
 6. Port F
 7. Port G
 8. OMNIGND
 - ♦ The name of these ports can be changed by USB or Web Server. (See Page 6.)
- Column Two:
 - The second column lists the current resistance value (in Ohms Ω) of each port.
 - ♦ **"OFF"** indicates that the Port is turned off and not actively monitoring.
 - No numerical indicator represents Ohms
 - ♦ **Example: 200** is the equivalent of **200 Ohms**.
 - k represents kilohms
 - ♦ **Example: 200k** is the equivalent of **200,000 Ohms**.
 - ♦ **Example: 1.5k** is the equivalent of **1,500 Ohms**.
 - M represents Megohms
 - ♦ **Example: 3M** is the equivalent of **3,000,000 Ohms**.
 - ♦ **Example: 2.5M** is the equivalent of **2,500,000 Ohms**.
 - > (greater than sign)
 - ♦ **Example: >20.0M** means the resistance value of the Port is greater than **20,000,000 Ohms limit**.

Display Screens Continued:

- Column Three:
 - The third column lists the current state that each Port is in:
 - ◆ A **PASS** state means the current resistance value is in between the Low and High resistance values for that Port.
 - ◆ A **FAIL** state means the current resistance value is outside either the set Low or High resistance values for the Port.
 - ◆ If the Port is turned off, column three will **not** display anything.

TCP Information Screen

- The **Network Information Screen** displays the Unit's:
 1. IP address
 2. Gateway (GWY)
 3. Subnet Mask (Mask)
 4. DHCP (ON or OFF)
 5. MAC address
 6. NetBIOS

VTR Screen

- Column One
 - Lists the name of each Port, A through H.
- Column Two
 - Lists the **LOW Fail Range** setting (in Ohms Ω) of each port or will display "**OFF**" indicating that the Port has been turned off.
- Column Three
 - Lists the **High Fail Range** setting (in Ohms Ω) of each port.

System Information Screen

- The **System information Screen** displays the Unit's:
 1. Serial Number (SN)
 2. Firmware (FW)
 3. Fault Count
 - The Fault Count is the cumulative number of recorded faults.
 - ◆ The Fault Count will also increase if the Unit is powered off and the "Send Alert on Power Failure" is turned on.
 4. Date (MM/DD/YY)
 5. Time (HH:MM:SS)

Display Screens Continued:

Auto-Logging Screen

- The Auto-Logging Screen is used to turn Auto-Logging on and off.
 - Auto-Logging means the unit will record all monitored ground events.
- Changing Auto-Logging ON and OFF:
 - Hold the Select Button (located on the top of the unit) until loading is completed.
 - If Auto-Logging is turned on, the background color of the screen will change from blue to green.
 - If Auto-Logging is turned off, the background color of the screen will change from green to blue.

Functionality:

Buzzer Alert

An audible alert that sounds on ground failure.

- The Buzzer alert for each individual port may be changed using the OMNIManager.
- In order for the Buzzer to sound:
 - The OMNIGND must be in logging mode.
 - The Port must be turned on.
 - The Buzzer feature must be selected.
- The Buzzer will continue to sound unless the failing Port or Buzzer is turned off from the OMNIManager.

Relay

The OMNIGND comes with two relay connections. Each port can be assigned to one of the two relays. The relays can be connected to compatible TLL devices, lights, alarms, doors, etc.

- The Relay Functions for each individual port may be set using the OMNIManager.
- When all of the active Ports with the Relay setting turned on are in **PASS** states; the switch will remain open, passing current to the device connected to the Relay.
- When one or more of the active Ports with the Relay setting turned on are in **FAIL** states; the switch will be closed, not allowing passing current to the device connected to the Relay. (See Relay warnings and specifications on page 20)

Select Button

The **Select Button** is used to toggle between Display screens and to enter into **Logging Mode** when the **Auto-Logging Screen** is displayed.

Ground Hub

When one of the banana jacks of the **Ground Hub** is connected to ground, the entire **Ground Hub** becomes a verified point of ground. The remaining banana jacks and ring terminals may then be used to ground workstations, carts, ionization, benches, matting, and much more.

Technical Specifications:

- Size and weight
 - 5.5" x 4" x 1.38" (w/Stand 2.24")
 - 13.97cm x 10.16cm x 3.51 (w/Stand 5.69cm)
 - .7 lbs. (11.4oz.)
- Display
 - Tricolored LCD Screen (Red, Green, Blue)
- Connections and Expansion
 - (2) Relay Ports
 - (8) Data Ports
 - Aluminum Grounding Hub
- Electrical
 - 12V Power Jack DC/100mA
 - RJ11 Serial Connector to PC
- Audio
 - Built-in audible failure alarm
- Internet Connection
 - RJ45 Ethernet Connector
- Logo
 - 5 Blue LEDs located behind OMNIGND logo

Relay Information:

Relay Warnings

- The relay only acts as an off or on switch.
- The relays do not provide any power or current.
- The relays should not be used for voltage over 30volts.
- The relay should not be used for current over 1 ampere.
- The relay can be use on access control or signaling of devices that operator on voltage less or equal to 30Volts at 1amp max.
- Recommend wire gauge to be use with relay system 12gauge for wires length under 13ft.
- Recommend wire gauge to be use with relay system 10gauge for wires length under 22ft.
- Do not connect wire length over 22ft with relay system.
- Do not connect voltage over 30volts and over 1amp to relay.
- Do not connect AC line power to relay.

Relay Specifications

- Nominal switching capacity : 1A 30V DC
- Max switching power: 30W
- Max switching volt: 30V DC
- Max switching current: 1A
- Recommended wire gauge: 0-13ft 12-ga; 13-22ft 10-ga
- Recommended max wire length from load/source to relay: 22ft
- Recommended operating temperature: 15°C to 35°C; 59°F to 95°F
- Recommended operating humidity 25% to 85%

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