NetGen Hardware
Installation Guide

for
NetGen Ethernet Door Controllers
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BlueWave Security is the first security products manufacturer to provide an end-to-end physical access control solution based on wireless 802.11 Wi-Fi and wired Ethernet network standards. BlueWave lowers installation costs by eliminating long wire runs and the need for panels.

The BlueWave panel-less system can be extended as needed, one door at a time. Loaded with advanced features such as auto unlock, distributed administration and real-time control of each door, BlueWave allows security professionals to spend less time managing the system and more time improving physical security.

**NetGen Door Controllers**

The hardware installation of a NetGen door controller consists of supplying power to the door controllers and wiring each unit to a locking device such as an electric strike, electric lock or magnetic lock as outlined in the NetGen wiring diagrams.

The NetGen door controllers communicate over an Ethernet network with the BlueView access control software. There are two models of the NetGen door controllers. The Ethernet model uses the 802.3 protocol over CAT5 or greater Ethernet cable. The Wi-Fi door controller uses industry standard 802.11b/g wireless communication with support for both WEP and WPA encryption.

The NetGen door controllers are typically installed at the door and can read cards using one or two Weigand readers, control the door locking device and communicate with the BlueView access control software. The door controller must be assigned an IP address on the network and be physically wired to the locking hardware on the door.

**Installation Overview**

The installation of a BlueWave access control system consists of four steps:

1. Go through the pre-installation checklist to be sure the network devices meet the BlueView system requirements.
2. Physically install and wire NetGen door controllers at the door.
3. Configure the NetGen door controllers for the target network.
4. Configure the BlueView software system with doors, groups, shifts, card holders and permissions.
STEP 1: PRE-INSTALLATION CHECKLIST

OVERVIEW
The BlueWave access control system consists of NetGen door controllers at each door and BlueView network-based access control software. Each door connects to a Wi-Fi or Ethernet network to deliver audit trail and management over the local area network, or remotely over a wide area network or the Internet.

COMPONENTS FOR NETGEN DOOR CONTROLLERS

* NetGen Wi-Fi or Ethernet door controller hardware with firmware version 3.1.24 or higher for HW1, OR firmware version 5.0.24 or higher for HW2.
* NetGen compatible Weigand proximity card, PIN pad or biometric card reader
* Electronic locking device such as an electric strike, magnetic lock or electric lock
* Any local building code required automatic exit devices or buttons such as “Press to exit” or infrared PIR
* Optional door sensor

Below are the pre-installation items you will want to verify before starting the installation process:

1. NetGen controllers require a 1000+mA 12V DC or 24V DC power supply. The power supply can be located at the NetGen controller, come from a central distributed power supply or use Power Over Ethernet (Ethernet model only and requires an additional external PoE splitter).
2. The BlueWave NetGen has a 30 volt capacity and a 2000 mA capacity per relay. We recommend a draw less than 1500 mA per relay.
3. Up to 8amp 12 volt battery can be connected to the power supply for battery backup. See table on the following page for more hardware specifications.
4. Verify the local fire and building code requirements on power management and wire accordingly.
5. Confirm whether the electric strikes, mag locks, or locking device are fail secure or fail safe, and use the appropriate wiring. Most applications are fail secure which is displayed on the wiring diagram shown in “Step 2: Hardware Installation” section. Go to our web site www.TechTips.BlueWaveSecurity.com for more wiring diagrams.
6. Each NetGen Ethernet model requires an IP address for target network and a network connection.
7. Download the Installation Connections List for www.TechTips.BlueWaveSecurity.com for a worksheet to assign doors to hardware components, MAC addresses, IP addresses, etc.
**NETGEN HW1 DOOR CONTROLLER SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
</table>
| **Input Voltage** | 12V DC or 24V DC  
*Note: When a 24VDC supply, the Vin MAXIMUM is 25V. The supply output must be less than 25V (loaded) or board damage can occur.* |
| **Current Draw** | .250 AMPS Maximum |
| **Certified HID Weigand Readers** | ProxPoint Plus, ProxPro, MiniProx, Thinline II, ProxPro II, MaxiPro  
*Note: MaxiPro requires separate power supply*  
*Note: See the BlueWave web site for the latest list of supported readers* |
| **Certified HID Card Formats** | 26-Bit HID cards |
| **Communication Interface** | TCP/IP over Ethernet or 802.11b/g Wireless Wi-Fi  
*Each controller must be assigned a static IP address on the network* |
| **Inputs/Outputs** | 3 Inputs (Door Sense, REX, AUX)  
2 TTL Outputs (Alarms @ 5V DC Normally High)  
Reader Inputs – Weigand1 (Data0, Data1, Green LED, Red LED, Beeper)  
Reader Inputs – Weigand2 (Data0, Data1, Green LED, Red LED, Beeper)  
Reader Power – 12V DC out and Ground  
Lock Power Out – 12V DC or 24 VDC (Only if input voltage also 24V DC)  
*Note: The combined current draw for the Reader Power and Lock Power Out terminals is a maximum of 1 Amp* |
| **Relay** | Two Relays: 1.0 Amp @ 30V DC or .3 Amp @ 125 VAC  
Dry Contact with Normally Open (NO) or Normally Closed (NC) outputs  
Relay 1 is controlled by Weigand reader 1  
Relay 2 is controlled by Weigand reader 2 |
| **Memory Capacity** | 2000 Cards/ 250 Events/ 30 Shifts |
| **Indicators** | 4 Status LEDs |
| **Operating Temperatures** | -15° To 70° Celsius  
The door controllers are not weather sealed.  
When used in outdoor applications, the door controller should be mounted in an appropriate NEMA rated outdoor enclosure. |
| **Physical Size** | 8” Width by 4” Height by 1” Thick |

*See Addendum “B” for picture of HW1 Door Controller*
# NetGen HW2 Door Controller Specifications*

<table>
<thead>
<tr>
<th>NETGEN HW2 DOOR CONTROLLER TECHNICAL SPECIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input Voltage</strong></td>
</tr>
<tr>
<td><em>Note: When a 24VDC supply, the Vin MAXIMUM is 25V. The supply output must be less than 25V (loaded) or board damage can occur.</em></td>
</tr>
<tr>
<td><strong>Current Draw</strong></td>
</tr>
<tr>
<td><strong>Certified HID Weigand Readers</strong></td>
</tr>
<tr>
<td><em>Note: MaxiPro requires separate power supply</em></td>
</tr>
<tr>
<td><em>Note: See the BlueWave web site for the latest list of supported readers</em></td>
</tr>
<tr>
<td><strong>Certified HID Card Formats</strong></td>
</tr>
<tr>
<td><strong>Communication Interface</strong></td>
</tr>
<tr>
<td><em>Each controller must be assigned a static IP address on the network</em></td>
</tr>
<tr>
<td><strong>Inputs/Outputs</strong></td>
</tr>
<tr>
<td>2 TTL Outputs (Alarms @ 5V DC Normally High)</td>
</tr>
<tr>
<td>Reader Inputs – Weigand1 (Data0, Data1, Green LED, Red LED, Beeper)</td>
</tr>
<tr>
<td>Reader Inputs – Weigand2 (Data0, Data1, Green LED, Red LED, Beeper)</td>
</tr>
<tr>
<td>Reader Power – 12V DC out and Ground</td>
</tr>
<tr>
<td>Lock Power Out – 12V DC or 24 VDC (Only if input voltage also 24V DC)</td>
</tr>
<tr>
<td><em>Note: The combined current draw for the Reader Power and Lock Power Out terminals is a maximum of 1 Amp</em></td>
</tr>
<tr>
<td><strong>Relay</strong></td>
</tr>
<tr>
<td>Dry Contact with Normally Open (NO) or Normally Closed (NC) outputs</td>
</tr>
<tr>
<td>Relay 1 is controlled by Weigand reader 1</td>
</tr>
<tr>
<td>Relay 2 is controlled by Weigand reader 2</td>
</tr>
<tr>
<td><strong>Memory Capacity</strong></td>
</tr>
<tr>
<td>Firmware 7.01 – 10,000 Cards/ 2,000 Events/ 168 Credential Shifts/ 1,000 Unlock Shifts</td>
</tr>
<tr>
<td><strong>Indicators</strong></td>
</tr>
<tr>
<td><strong>Operating Temperatures</strong></td>
</tr>
<tr>
<td><em>The door controllers are not weather sealed.</em></td>
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<tr>
<td><strong>Physical Size</strong></td>
</tr>
</tbody>
</table>

*See Addendum “B” for picture of HW2 Door Controller
STEP 2: HARDWARE INSTALLATION

OVERVIEW

The hardware installation of a NetGen door controller consists of supplying power to the door controllers and wiring each unit to a locking device such as an electric strike, electric lock or magnetic lock as outlined in the NetGen wiring diagrams.

NETGEN DOOR CONTROLLERS

The NetGen door controllers communicate over an Ethernet network with the BlueView access control software. There are two models of the NetGen door controllers. The Ethernet model uses the 802.3 protocol over CAT5 or greater Ethernet cable. The Wi-Fi door controller uses industry standard 802.11b/g wireless communication with support for both WEP and WPA encryption.

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BlueWave Access Control System with NetGen door controllers
**Installing NetGen Hardware**

Now that you’ve gone through the pre-installation checklist, follow the steps listed below to install the NetGen hardware. Refer to the wiring diagram on the following page for more detail.

1. MOUNT the NetGen controller in a suitable enclosure with the power supply, and if necessary, battery backup.

2. On the READER, run 8 strand conductor cable from reader to Wiegand 1 power and data inputs.

3. On the LOCK, run 2 conductor cable from the lock to RELAY 1 NO (electric strike or electric lock) or RELAY 1 NC (mag lock or other NC type lock) and LOCK PWR OUT GND. Wire LOCK PWR OUT +12V OR +24V as appropriate for lock to RELAY 1 COM.

4. On the DOOR SENSOR, run 2 conductor cables from door sensor to NetGen INPUTS IN 1 and TAMPER GND.

5. For the REX, if you are using a PIR or Press-To-Exit request to exit device, run a 2 conductor cable from the PIR or MOTMIC to INPUTS IN2 and TAMPER GND.

6. To TEST the unit, turn on the power to the NetGen controller. Activate the REX input to test the operation of the locking device.
BlueWave Security
NetGen Fail Secure Wiring Diagram

This wiring diagram shows how to use a single 12V DC power supply to power the NetGen Door Controller, one BlueWave Weigand reader and a fail-secure 12V DC electric strike lock or Mag Lock.

Note: If a door sensor is not used, the IN1 (Door) contact on the NetGen controller should be connected to ground.

Reader types may vary, please consult product manual.

NetGen held with Velcro for easy removal.
STEP 3: NETWORK CONFIGURATION

After the hardware has been installed at each door location, you can now configure the Network settings. Below is an overview of the network configuration process.

1. Attach NetGen to router using a CAT5e or greater patch cord and supply power to the NetGen door controller.

2. Use the Lantronix Device Installer on a PC connected to the router to configure the NetGen* with a static IP address, provided to you by the site Network Administrator**.

3. Test the NetGen on the target network using the PING command.

*NetGen must be on the same network subnet

**If the site Network Administrator prefers to use DHCP, or if you would like more detailed information on the network configuration process, please see the “Bluewave Network Configuration Guide” on the www.TechTips.BlueWaveSecurity.com website for more information. Choose the version of this document that matches your NetGen models, either Ethernet or Wi-Fi.
STEP 4: SOFTWARE CONFIGURATION

After the network configuration has been complete for each door location, the BlueView software needs to be downloaded and installed on a network PC. You will need to use this software to configure the doors and network information into the software. Below is an overview of the software configuration process.

1. PC requirements: Windows XP SP3 or higher or Windows Server 2003 with 512M or more of memory and an Ethernet or Wi-Fi network adapter.

2. Required Microsoft components: .NET 4.0 Framework, SQL Server Express 2005 or higher and SQL Server Studio Management Express (optional).

Note: For systems with 20+ doors, additional system requirements are necessary – please contact BlueWave Security for more information.


4. Configure the BlueView software with the NetGen door controllers, assigning each a name and IP address.

5. Test each NetGen door controller by issuing an Operations Admit for each door using the BlueView software.

6. Add to the BlueView system a Card Holder with a valid badge number a facility code.

7. Create a BlueView Permission for the 24x7 shift, the All group and the Door and then Activate Permissions.

8. Use the Card Holder’s credentials to test opening the door.

9. Perform complete software configuration of Doors, Card Holders, Groups, Shifts and Permissions as required the customer.

Note: See the HELP menu in the BlueView software, or the document “BlueView Software Install & Configuration Guide” for complete software configuration documentation (Express & Professional Versions).
ADDENDUM “A” - POE Wiring Diagram

BlueWave Security
POE Diagram

Disregard if using a POE switch

12v dc power

Cat5e

To Switch

White dashes on wire indicate positive +
Solid black indicates negative −
HW1 Door Controller

HW2 Door Controller