



BlueWave Security NetGen (NG1) Controller

Product Detail

November 2023

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BlueWave NetGen Controller (NG1) Overview

The NG1 board was designed with a singular goal- to provide an access control system that is flexible, reliable, and easy to install. If we have learned one thing in nearly 20 years of business in the access control industry, it's that every job brings a unique set of constraints: *the deployment variables*. This product guide will cover those deployment variables and how our NG1 can fit your exact specifications and needs.

BlueWave is currently on firmware version 7.03 and software version 20.0 (cloud enabled). To upgrade your system, please reach out to the BlueWave team for more information. All software training videos can be found on our YouTube channel.

[BlueWave Security - YouTube](#)

For more details, feel free to contact the BlueWave Support team (information listed above)

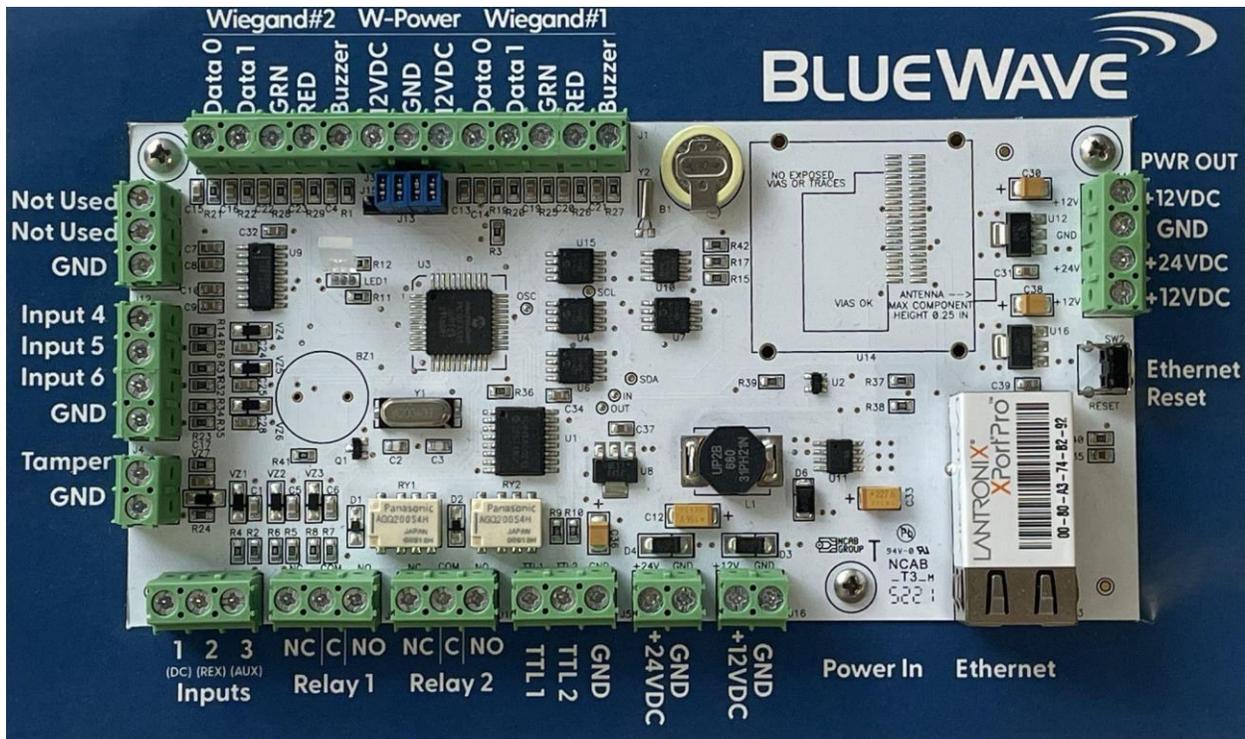


Diagram A

Power Consumption

The NetGen controller will use 12 or 24 volts with Direct Current (DC). To step power down from a wall outlet (110 V), we will need a transformer as well as a converter (SMP3 or SMP5). All of this is included in our single door kit (BW-DK-PS-E). If you order a BW-PP series, this will be included as well. When deploying the power supply, please confirm all locks, boards, and power supplies are on the same volt range (note readers will always run on 12 volts, the Wiegand relays regulate that).

Note: Do not daisy chain the boards for power. Each board should run directly to a power terminal.

Direct Power

The NetGen can be powered via 12 or 24 VDC. The power relay will handle 1000 mA at 12 VDC or 500 mA at 24 VDC, the board uses 150 milliamps. The power supply can be located at the NetGen controller or come from a centrally distributed power supply. There is a power in and power out terminals on the board, be sure to use the power in terminals to power up the board and power out terminals to make relay 1 and 2 “wet” relays.

BW-DK-PS-E – includes SMP3 (2.5 amps at 12 or 24 volts) with a transformer.

BW-PP-6A (Altronix P/N AL600ULACM) – 6 amp output at 12 or 24 volts DC, has 8 outputs. Can interface with a fire alarm release.

Power over ethernet

While we suggest using locally dedicated power, POE (power over ethernet) is a viable solution in instances when there is no available power source within range of the controller. Keep in mind, POE will not power a magnetic lock nor any high amperage device. POE is only serviceable for 12v, low amperage electric locking devices. If the controller is wired to a POE switch, a simple POE splitter will be enough to power the NG1. That splitter will be wired to both the 12v power terminals and the ethernet port.

Power Supply and Backup Battery

For centrally powered access control systems, we recommend our larger power supply, the *BW-PP-6A*. If a group of your door controllers will sit in an IT closet or security room, then the *BW-PP-6A* is for you. Our smaller power supply, the *SMP5*, is a great fit for isolated door controllers and single door deployments. A battery can be wired to the NG1 as a backup power source. The battery can be up to 8 amps and 12 volts. Batteries will last about 2-4 hours depending on door usage and locking hardware.

Locking Hardware

The NetGen controller can be wired to any electrified lock. No matter the manufacturer, BlueWave has you covered between our in-house support team and our extensive catalog of wiring diagrams and documentation. See the attached diagrams or visit the support site listed below. For a general overview of how lock relays work (COM, NC, NO), please see the bottom of this section.

Normally Closed / Normally Open

You may wonder the difference between a normally closed and normally open terminal, and why differentiate between the two based on the locking hardware? Ultimately, it comes down to the design of the lock and its power requirements. Imagine a circuit as a loop connecting the power supply, NG1, and locking hardware. When that loop is closed, power flows freely between the devices. When the loop is open, power ceases to flow and the lock does not receive power.

Maglocks, for example, require constant power to secure a door. When someone attempts to exit through the door, the power is cut, the magnet disengages, and the door is released. This is a **fail-safe** locking device- in the event of a power outage or fire, any person behind the door is safe to exit. *Fail-safe* locks require a *constant power source* and therefore, are wired to the normally closed (NC) terminal.

Electric strikes, on the other hand, only require power at the moment they lock or unlock. When someone attempts to exit through the door, power is applied, the lock mechanism retracts, and the door is unlocked. In the event of a power outage or fire, the locked door will not receive power, and will remain locked. This is a **fail-secure** locking device. Fail-secure devices do not require power until the moment of action and are therefore wired to the normally open (NO) terminal.

www.bluewavesecurity.freshdesk.com/support/solutions

Maglock

Maglocks need constant power to secure the door. To power the maglock through the BlueWave NG1, ensure the positive terminal of the lock is wired to the NC (normally closed) relay, while the negative terminal of the lock wires to Power Out GND (located at the top right corner of the NG1). You will then need to pull a wire from power out (12 or 24 volt) to the common terminal on the relay to make the relay electrified. Please see diagram B.

REX devices can be wired to the input terminal or wired in series with the maglock. Please be sure the REX device is set to be NO to ensure the power circuit is connected. If you need other ways to power the maglock, please call us.

Electric Strike(s)

Electric strikes do not need continuous power. They will only require power to open the lock. Ensure the positive terminal of the lock(s) is wired to the NO (normally open) relay terminals of relays 1 or 2 (located at the bottom of the NG1). While the negative terminal of the lock is connected to the Ground terminal (GND). Finally, connect a wire from power out, with respect to 12 or 24 volts, to common. Please see diagram C.

Other

There are many other scenarios where the NG1 controller can operate a door, for example, gates, elevators, high amperage locking hardware, etc. For these cases, we recommend running power outside of the door controller (either directly to the power supply, or to an external relay). Please contact our team for specifics on how that should be wired. Please see diagram D

Credentials and Readers

Connecting card readers to the NG1 is simple. Readers will communicate over the standard Wiegand protocol and will wire to either Wiegand 1 or Wiegand 2, on the board. Readers will be powered over 12 volts regardless of what the NG1 is powered at. Please see below for specifics about credential types and wiring.

Credential Types

The BlueWave controller can hold several different types of credentials, 26, 32, 34, and some 36-bit formats. 42 bit cards will not work on the NG1 controller. The Netgen can also work with PIN codes and other devices that have a Wiegand output. Card frequency does not play a factor in the different credential types, but it will play an important factor for the reader you select. If you have detailed questions about this, please see our documentation on Support.bluewavesecurity.com or reach out to our team.

Wiring

There are two Weigand terminals (Weigand 1 and Weigand 2) located at the top of the NG1. Wiegand 1 will trigger relay 1 by default and Weigand 2 will trigger both relay 1 and relay 2. Settings can be reconfigured in the software for Weigand 2. There are 7 terminals for the reader wires: ground, 12 VDC, Data 0, Data 1, Green LED, Red LED, and buzzer. We suggest using 22/8 to connect the reader to the NG1, 18/8 will work too. There is an on-board transformer to power the reader over 12 volts.

Inputs and TTL Relays

The NG1 is compatible with a variety of auxiliary devices such as REX devices, motion sensors, toggle buttons, intercom systems, fire alarms, etc. These devices are all wired to the input and TTL relays, located at the bottom of our board. We recognize that every deployment is different, so we have developed an extensive library of diagrams to assist with wiring devices to these input terminals. Please see our support site (support.bluewavesecurity.com) for more information. If you have any questions about the compatibility of a particular auxiliary device, give us a call and we will gladly assist you.

Input 1

This is typically used for a door contact. Note the door contact will tell us if the door has been forced open or in an extended open state.

Input 2

This is used for a request-to-exit device, most often for a maglock. This is a way to break power to the door via the NG1, rather than the maglock power circuit.

Input 3

This is our AUX input, this can be toggled in the software to change based on the needs of the deployment. Please see the software product guide for detailed uses.

TTL 1 and 2

This is used for an output. If you need to trigger a 3rd party device, you can signal a TTL output based on events that happen on the NG1. Please see the software product guide for detailed uses.

On-Prem / Cloud Hosted Server

These controllers ultimately communicate and are presided over by the BlueView Server application. This server can be hosted on-premises or in the cloud. BlueWave can accommodate the right hardware for whichever solution is best for you. Please see software product details for more information.

On-Prem

As the tried-and-tested industry standard, we recommend On-Prem solutions for end-users with a robust IT department and in interest in the daily administration and maintenance associated with a completely local network.

Cloud-Hosted

Cloud-hosted servers are inherently more reliable than on-prem solutions. The BlueWave application is securely accessible from anywhere, and available to our remote support team. Our cloud servers also allow for multiple sites to be administered from a single location- a perfect solution for users looking to conveniently manage access across multiple franchises or distinct facilities. Users who desire an access control system that requires minimal oversight and maintenance ought to consider a cloud-hosted system.

Connectivity

The NetGen controller allows for standard ethernet communication between door and server. For instances where an ethernet connection may be inaccessible or convoluted, we also offer cellular connectivity solutions to allow for a streamlined and headache-free installation.

Ethernet

Wiring the door controller via ethernet requires the necessary cabling infrastructure from switch to door. All BlueWave controllers are DHCP by default and need to be configured to a static IP to function properly.

Cellular

Our cellular door kits are designed to circumvent the often messy and time-consuming process of configuring a wired network connection to the door. Our cell kits are shipped pre-configured to access their cloud server. Simply wire the NG1 as usual and connect the cellular gateway via the ethernet port. Furthermore, a previously hard-wired NG1 can be retrofitted for a cellular connection. All cellular data uses roaming agreements with major US carriers.

Networking and Firmware Configuration

To check the version of firmware on the NG1, please go to the firmware update tool in the software and find the door. To access the network interface of the device, please go to a web browser on the same network as the door controller and type in the IP address of the NG1. Username is 'admin', password is 'PASS'. You will be able to change the network settings of the door controller and update firmware from the respective locations.

How to IP Address a Board

As of 11/1/23, BlueWave statically assigns every NG1 board to 192.168.1.200 before shipping. The end-user or installer may reassign the boards to whichever IP address they would like upon installation. For any NG1's shipped before 11/1/23, the controller will be set to DHCP by default and will need to be configured to a static IP. There are multiple ways to find a controller's DHCP-assigned IP address. You can do this by using *Lantronix Device Installer* or using BlueView's built-in *Discover Door Controllers* tool. For more information, visit our knowledge base for an article entitled '*How to Assign an IP Address to a BlueWave Controller*'.

If you need to perform a network reset on the NG1, please find the button next to the ethernet port and hold the button for 5 seconds. This will reset the connectivity (it will hold the IP if statically assigned).

How to Update Firmware

Firmware can be updated directly from our BlueView software. Once the software is open, navigate to the toolbar at the top of the window. Select 'Tools→Firmware Updater'. From this menu, you can select the controller and the desired firmware version. Alternatively, you can schedule an automatic firmware update cycle. For more information, visit our knowledge base for an article entitled '*Software Tools: Firmware Updater*'.

When updating firmware, the door controller will be inactive and can take several minutes to update, please be aware. Depending on the version of software and compute resources, you will be able to update multiple controllers at one time

Troubleshooting

For general troubleshooting, we recommend first diagnosing the problem (locking hardware, reader, board, network, or power), then moving through the troubleshooting steps. Please note, our support site has extensive documentation on all of the above. If need be, please reach out to us at BlueWave security via phone, or submit a ticket via support@bluewavesecurity.com.

Connectivity Troubleshooting Steps

1. Find Controller's IP Address:
 - Check the Door screen in BlueView software.
 - If the door isn't set up, refer to the Network Configuration Guide for NetGen Ethernet Controllers.
2. Ping the Controller:
 - On the BlueView server, run: ping <controller's ip address> -t (e.g., ping 192.168.1.103).
 - Expect a consistent response below 300ms. Stop the ping using <Ctrl-C>.
3. If no ping response, check:
 - Controller power (green LED should be lit).
 - Power levels (close to 12V or 24V) using a multimeter.
 - Ethernet cables securely connected.
 - Blinking lights by the ethernet port indicate basic connectivity.
 - Press the reset button near the ethernet port to reboot the network component.
4. Verify network settings on the controller:
 - Access the controller's IP address through a web browser.
 - Login with Username: admin and Password: PASS (or no password for older NG1s).
 - Ensure correct settings: IP Address/Subnet Mask, Default Gateway.
 - Adjust settings if needed, then reboot the system through the interface.
5. BlueView Software Connection
 - Try to reconnect the door if it's marked "Not Connected."
 - Alternatively, use advanced configuration options to force a reconnect.
6. Potential Issues for "Controller Failed":
 - Firmware version compatibility with BlueView version. Use the firmware Updater tool.
 - Damaged firmware due to power disruptions. Use the Firmware Updater tool.
 - Verify Lantronix settings and eliminate duplicate IP addresses.
 - Check for firewall restrictions or other software accessing the same IP.
7. Advanced Troubleshooting:
 - Keep software and firmware updated.
 - Ensure computer specifications meet the requirements.
 - Address bandwidth limitations or switch configurations.
 - Monitor for power instability, especially with POE switches.
 - Adjust BNS Software settings for optimized performance if needed.

Product Reference List

Controllers and Door Kits

Part Name	Description
BW-BO-E	BlueWave single NG1 door controller
BW-DK-PS-E (Standard Door Kit)	BlueWave single NG1 door controller, power supply, battery, and metal enclosure
BW-DK-POE-E (POE Door Kit)	BlueWave single NG1 door controller (IP addressable) in a metal enclosure with a POE injector and splitter.
BW-DK-PS-C (Cellular Door Kit)	BlueWave single NG1 door controller in a plastic enclosure. Includes power transformer and cellular gateway

Power Supplies

Part Name	Description
BW-PP-6A	BlueWave power pack for 8 NG1 door controllers Includes enclosure, AC converter, power distribution unit, and pigtail for 110v plug

Readers

Part Name	Description
RDR-PRX-MM	Proximity Reader Mullion Mount Backlit Blue 26 Bit Wiegand 125kHz
RDR-PRX-SG	Proximity Reader Single Gang Backlit Blue 26 Bit Wiegand 125 kHz
RDR-PRX-KP26-SG	Proximity Reader Single Gang 26 Bit Keypad
RDR-PRX-KP26-MM	Proximity Reader Mullion Mount Backlit Blue 26 Bit Keypad

Credentials

Part Name	Description
Cred-26B-ISO-EACH	26 Bit ISO Print-Ready Card Custom FAC and numbering available
CRED-26B-ISO-25	26 Bit ISO Print-Ready Card Pack of 25 cards
CRED-26B-FOB-10	26 Bit FOBs Pack of 10 cards

Wiring Diagrams

Diagram 1: Electric-Strike

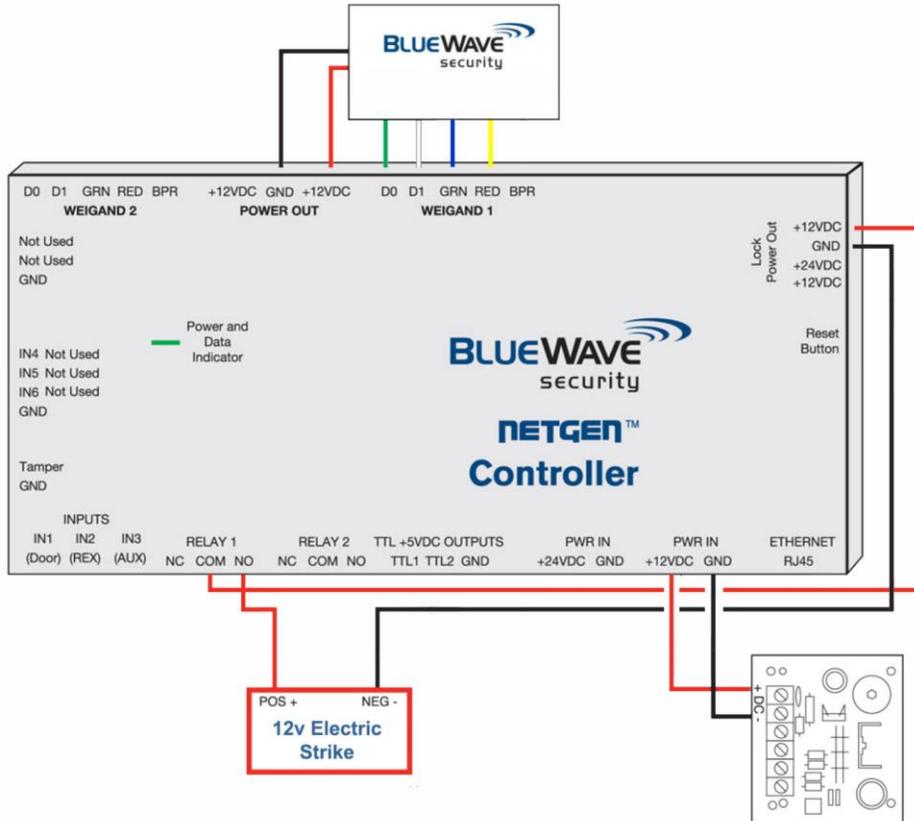


Diagram 2 - Maglock with Door Sensor + Request to Exit Device

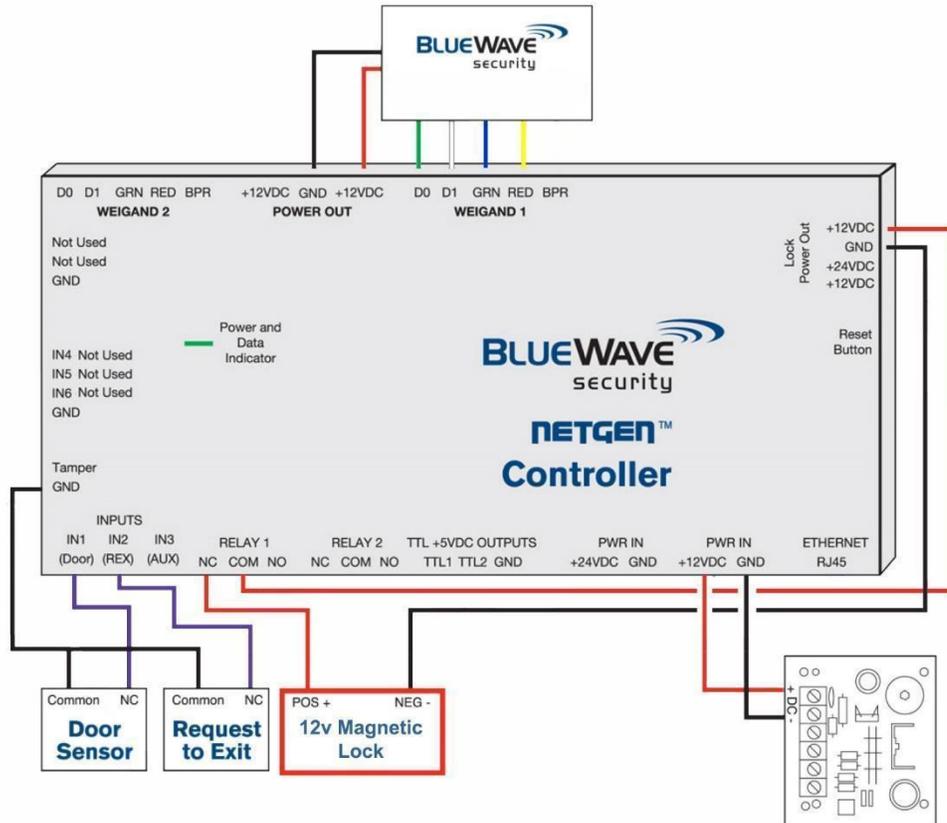


Diagram 3 - High Amperage Locking Hardware

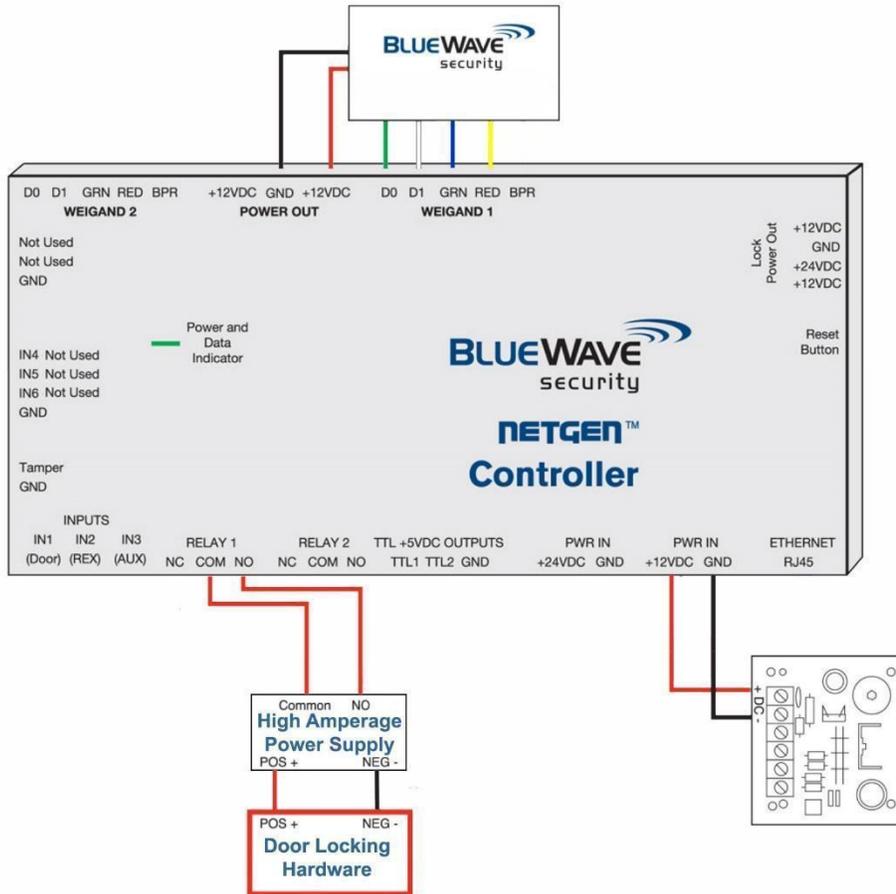


Diagram 4 - Electric Strike with Power Over Ethernet (POE)

