

Generation 3 Controller Advanced Programming Guide

Technical Brief

April 8, 2021

v1.0.7

IOS BLE



INNOTION

A Caldwell Company

G3 Advanced Programming Guide

Part Number(s): 28C0030(G3), 28C0061(RCM), 29C0052(RS485)

If you READ nothing else, read this...

- Prior to installing an INMOTION G3 system verify the mechanical installation is 100% operational.
 - All panels move smoothly, without excessive force required at all points across the span
 - The frame is square & plumb, and the lead panel meets the jam evenly top to bottom.
 - All required weather stripping is installed properly and not binding during panel movement.
 - Panels are NOT warped, and panel pickups release and operate smoothly without issues.
 - Interlocks engage and disengage properly without dragging extra panels etc.
 - In a nutshell the door should be at its mechanical “best” before automation is installed
- NEVER leave a door running on a Cycle Test unattended...even for a minute, unless it is in a controlled environment completely void of people and pets.
- DO NOT experiment with commands you find in this guide unless you know what you are doing or have been directed to do so by a trained factory representative.
- Remember the G3 has been certified by UL to be safe, but that only applies if it has been installed safely by the installer.
- If you have any question or concerns, please consult the factory.
- Remember INMOTION offers free training, year-round, all you have to do is ask.

About this Guide...

This guide documents the more advanced options and features of the G3 Controller by INMOTION. It covers the G3 Controller with v0.7.0 or later firmware. This release added 4 “special feature” modes besides the “normal” mode present in the previous release. In addition, there is a cycle test option available to integrators and installers that can exercise the G3 while running any of the 5 supported modes for testing, option enabling or tuning.

When the G3 first boots, it is operating at the “user” level, and no password is required. In this mode, all commands to operate the door must come from wired or wireless accessories such as wall switches and remotes or from a home automation system wired into the wall switch circuit.

To access any of the advanced mode options, called modifiers, a password is required. The password entered will set the user level. The current user / password level can be checked at any time by entering the command “**pwd**” or “**p**” on the CLI. The current level will be displayed on the CLI.

In this guide each page will indicate what user level is required for the given command or function by the graphic shown. A checkmark next to the various levels indicate which user levels can call or modify the command or function documented.

Installers have access to the User, Installer and Developer levels by entering the appropriate password. The difference between the Installer and Developer levels is that some commands change such that the Installer level will not accidentally erase critical door programming information causing more work than necessary. If an installer needs to access one these protected commands, they only need to change to the Developer level to perform the task. For general and advanced programming, the Installer password will work for 99% of the tasks required.

Supported User Levels

<input checked="" type="checkbox"/>	User
<input checked="" type="checkbox"/>	Installer
<input checked="" type="checkbox"/>	Developer
<input checked="" type="checkbox"/>	Factory

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CLI Password Access

Supported User Levels

- ☒ User
- ☒ Installer
- ☒ Developer
- ☒ Factory

Starting with the “Special Features” v0.7.0 firmware release, the G3 controller requires unique passwords for each controller. This is due a California law, as of Jan 1, 2020, requiring minimum security for IoT devices. To address this change, the G3 utilizes its unique serial number as part of the password. Once programmed at the factory, this new password scheme is activated. The previous release supported 2 password levels for access to the CLI. Those being “Installer” and “Developer” and they were the same for all G3’s running v0.6.7 firmware. If you memorized those passwords, then the new password mechanism will not take too much effort.

The previous passwords for firmware v0.6.7 were:

User:	“0”	// Rarely used as it’s the default at boot
Installer:	“pwd1”	
Developer:	“IM1635”	

The new passwords use the same characters as before but with different numbers at the end.

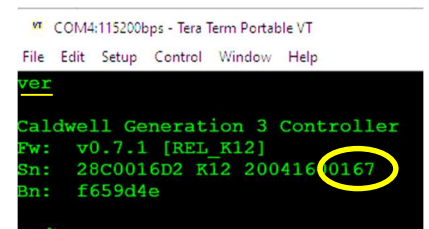
User:	“0”	// Did not change from v0.6.7
Installer:	“pwdXXXX”	// Replace the “XXXX” with the last 4 digits of the serial number
Developer:	“IMXXXX”	// Replace the “XXXX” with the last 4 digits of the serial number

Note: Entering an incorrect password, immediately puts the controller into “user” mode or minimum access.

As shown above adding the last 4 digits of the G3’s serial number will allow the installer to determine the password and access the G3’s CLI at the required user level. The serial number can be found on a sticker affixed to the back of the controller itself.



If for some reason the label is unreadable or missing, then the serial number must be obtained from the CLI using the “**ver**” or “**info**” commands. Both the password (**pwd**) and version (**ver**) commands are supported at boot (user level).



G3 VERSION COMMAND

After obtaining the serial number, the password can be entered in the CLI using the password command “**pwd**” or “**p**” for short.

Installer:	pwd pwd0167	// Installers should use this one
Developer:	pwd IM0167	// Only use if needed or when directed to do so by the factory

```
cmd>pwd pwd0167
Level = 1 (Installer)
cmd>
```

```
cmd>pwd IM0167
Level = 2 (Developer)
cmd>
```

* Passwords will auto-expire after 30 minutes regardless of CLI activity. This timeout can be extended by issuing the “**pwd**” or its abbreviation “**p**” (just the command, no password needs to follow)

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Tech Brief - IOS BLE

Wireless Serial Terminal Connection (Bluetooth)

The IOS platform has limited support for BLE due to the constraints that Apple puts on its hardware and software. We have identified an App on the their Store that will communicate with the G3 controller. It supports customizable buttons arranged in 4 rows, but unlike the Android App, there is no support for button import/export so end users must create their buttons from scratch.

The App to download is called “BLE Terminal HM-10” by Gopi Godhiya. Download and install the App from the store.

App Store Preview: <https://apps.apple.com/in/app/ble-terminal-hm-10/id1398703795?platform=ipad>

TCP Telnet Terminal (Experimental)

The same developer has another IOS App called “TCP Telnet Terminal” that may allow serial communication over IP. This has not been tested by the factory yet.

App Store Preview: <https://apps.apple.com/in/app/tcp-telnet-terminal/id1387816355>

Connecting to a G3 Over Bluetooth BLE

IOS BLE Terminal App, (Requires the Wired RS485 Adaptor)

Bluetooth BLE does not require device pairing. The BLE device is found from within the App by scanning for it. Before we scan for the G3 we need to make sure the BLE radio is powered on. The G3 Controller will automatically power off the BLE radio 3 minutes after first boot if nothing connects to it so there is a good chance that it is powered off right now.

To power up the G3's BLE Radio: (Make sure the doors are closed)

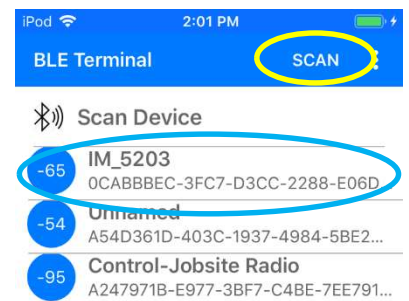
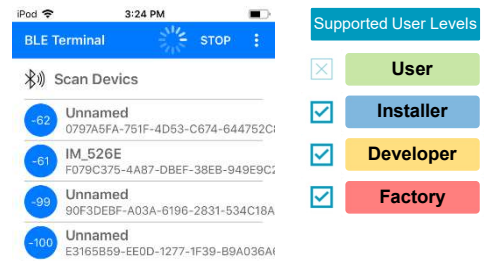
- From a wall switch, press and hold “**Stop**” and “**Release**” for about 10s. The system should reboot.
- Use the G3 power switch to power cycle the entire system.

Scanning for a G3's BLE Radio:

When starting the BLE Terminal app, it should default to the device scanning page and begin scanning for BLE devices. If it does not press the Scan button in the upper right corner.

In a few moments you should see 1 or more devices named IM_XXXX. Tip: The label on the back of “RS485 GPIO Adaptor” should have a label matching the “XXXX” numbers in the device names listed after scanning.

Select the device that matches the RS485 lable and you should wirelessly connect to the G3.



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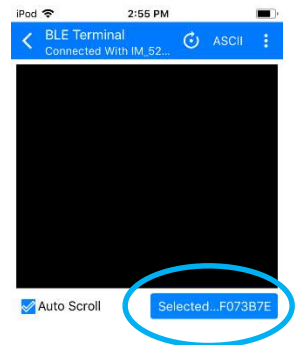
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App BLE Configuration Setup

IOS BLE Terminal App, (Requires the Wired RS485 Adaptor)

The IOS app requires a few additional to properly communicate with the G3 Controller.

Press the “Selected XXXXX” button just below the terminal window.

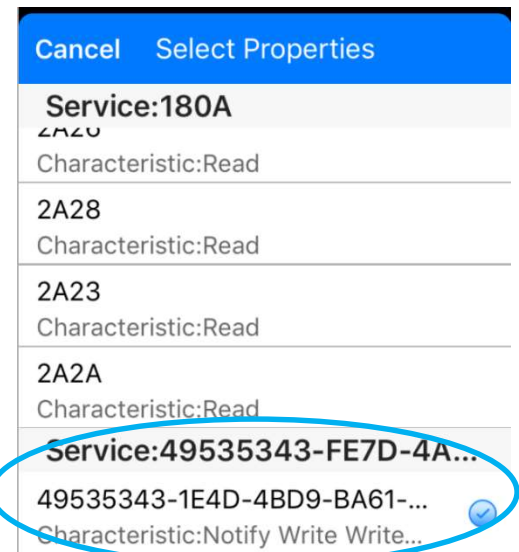


When the next window opens, scroll the list of “characteristics” down until you see the line that reads: “Service: 49535343-FE7D-4A...”. That entry should also have line below it ending in “**BA61**”.

Note: This must be done each time the App is run

Select this service and press Ok if prompted.

You should be returned back to the terminal screen



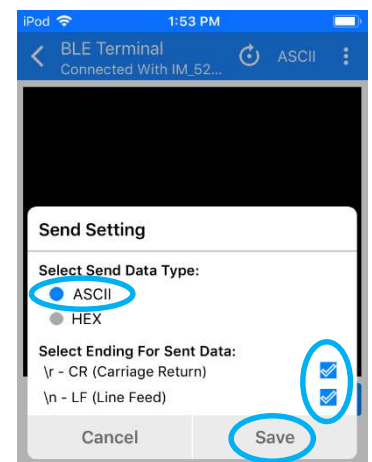
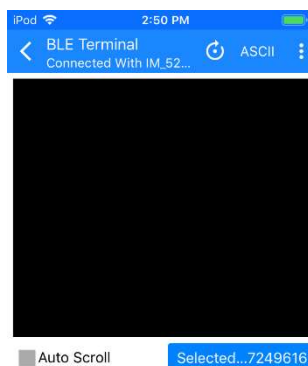
To complete the configuration there are some hidden options that must be enabled otherwise the G3 Controller will not respond properly to commands.

Press and hold the “**Send ASCII**” button for 1-2 seconds. A “**Send Setting**” windows should appear.

In the “**Send Setting**” windows make sure:

- ASCII is selected
- \r – CR (Carriage Return) is checked
- \n – LF (Line Feed) is also checked

Press the **Save** button



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Initial Communication Test

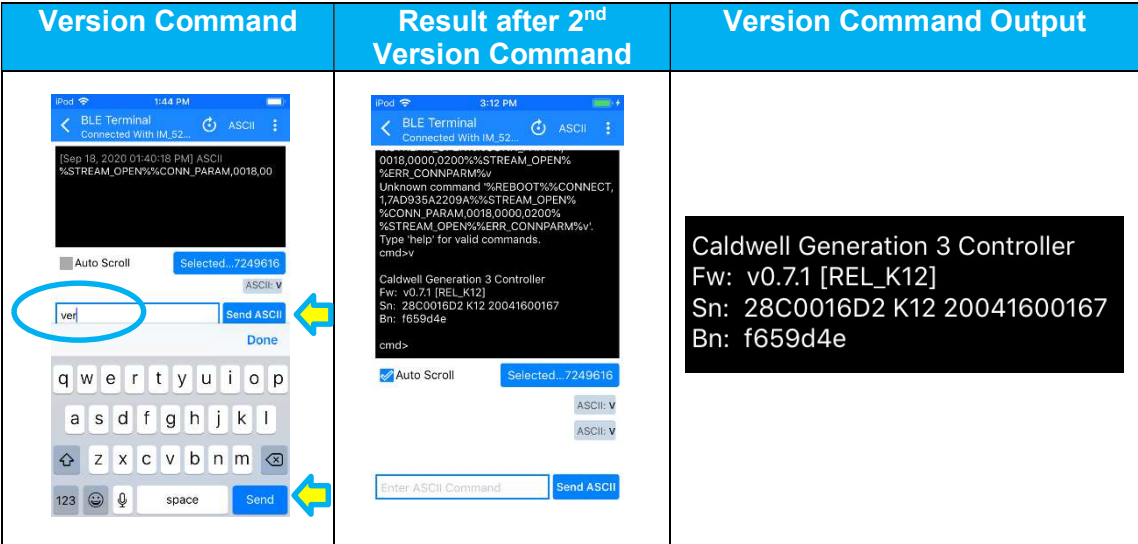
IOS BLE Terminal App, (Requires the Wired RS485 Adaptor)

Send a “version” command to the G3 Controller as a test. In the entry box enter the command “ver” or ‘v’.

Then press the “Send” or “Send ASCII” button. The terminal windows should update with a response from the G3 Controller.


If the controller version text is not clearly visible, send the “v” command again.

The G3 Version command output should be visible in the terminal window.



Optional App Settings and Command Buttons

IOS BLE Terminal App, (Requires the Wired RS485 Adaptor)

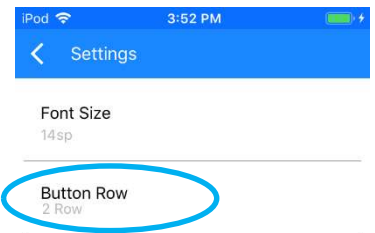
In the App's settings menu there are options to select font size and in particular enabling command buttons. To enable “command buttons” press  button, then select “Settings”. Up to 20 commands can be defined depending on how many button rows are enabled. Each button must be defined manually.

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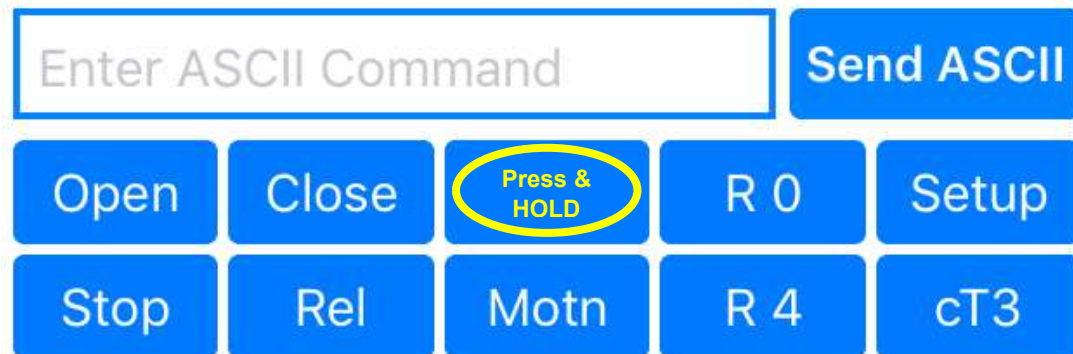
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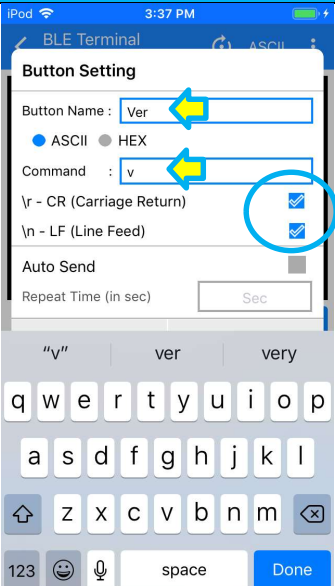
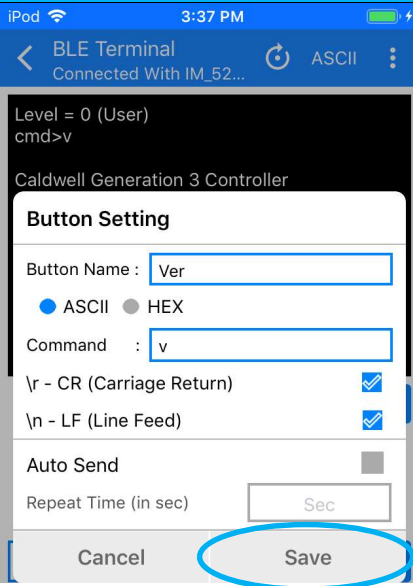

Defining Command Buttons

Before defining “command buttons”, make sure that at least 1 row of buttons are enabled in “Settings”



With buttons displayed on the main screen, press and hold a button to edit it.



Defining “Version” Button	Save the Button Definition	Two Button Rows Defined Example
 <p>Set the “Button Name” “Ver” Set “ASCII” Enter the Command “v” Set “\r CR (Carriage Return)” Set “\n LF (Line Feed)” Then Press Done</p>	 <p>Press the Save button</p>	 <p>Eight buttons defined: Open, Close, Stop, Release, Motion, Version, Reset 0, Reset 4, Autosetup and CycleTest 3x.</p>

Up to 20 buttons can be manually defined. Any single G3 command should be supported except for commands that change from unit to unit such as the password command. The password command needs to be entered without the help of a button on IOS.

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2021-04-08

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Document Revisions

Revision	Release Date	Description
1.0.0	Sep 22, 2020	Initial release
1.0.1	Oct 2, 2020	Fixed typos in "Soft Touch" Tuning
1.0.2	Nov 19, 2020	Added info on "hard current limit" vs "Soft Touch"
1.0.3	Mar 15, 2021	TLE update with firmware v0.7.2
1.0.4	Mar 22, 2021	Updated TLE Tech Brief
1.0.5	Mar 24, 2021	Fixed some typos & added a recommended command to the TLE docs
1.0.6	Apr 6, 2021	Adjusted command order in TLE Mitigation tech brief
1.0.7	Apr 8, 2021	Fixed typos in the IOS BLE section

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G3 Firmware Revisions

Revision	Release Date	Description															
0.7.2 (latest)	Mar 11, 2021	Maintenance release to address "TLE" over-current/temp issue. <ul style="list-style-type: none">• "hfi" help command added for "TLE" issues• Help commands "avi", "maxc" and "acdc" added• Config command "spl" added• "c all reset" updated to preserve "spl" and "hfi" settings• "TLE" over-current/temps counts tracked in flash• G3 LED color code updated• Panel 1 mass increased to 50,000/100,00lbs (Oneway/Bipart)															
0.7.1	Aug 28, 2020	Functionally identical to the v0.7.0 release. Updated 4 parameters to use new defaults. <table><tr><th>Command</th><th>v0.7.1 New Defaults</th><th>v0.7.0 Defaults</th></tr><tr><td>osp</td><td>4.0000 IPS</td><td>4.5000 IPS</td></tr><tr><td>csp</td><td>4.0000 IPS</td><td>4.5000 IPS</td></tr><tr><td>fpce</td><td>470mA</td><td>430mA</td></tr><tr><td>fpthr</td><td>10 counts</td><td>5 counts</td></tr></table>	Command	v0.7.1 New Defaults	v0.7.0 Defaults	osp	4.0000 IPS	4.5000 IPS	csp	4.0000 IPS	4.5000 IPS	fpce	470mA	430mA	fpthr	10 counts	5 counts
Command	v0.7.1 New Defaults	v0.7.0 Defaults															
osp	4.0000 IPS	4.5000 IPS															
csp	4.0000 IPS	4.5000 IPS															
fpce	470mA	430mA															
fpthr	10 counts	5 counts															
0.7.0	Aug 21, 2020	"Special Features" release for G3 K12. G3 K02 is not supported. <ul style="list-style-type: none">• Entertainment, Close Behind, Simplicity & Motion Assist modes• UL325 closing force reduced by 35% over v0.6.7• Improved security, delayed mag brake, manual span adjust, etc• Integrated cycle testing• Profile bin resolution increased by 300%.• Cleaner CLI interface optimized for smart phone access															
0.6.7 (K12) 0.5.91(K02)	Dec 3, 2019	Initial production release for G3 supporting basic door functions only using wired & wireless accessories. Processors K02 & K12 supported.															