Generation 3 Controller
Advanced Programming Guide

March 24, 2021

v1.0.5

Technical Brief

Help Commands

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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.

Supported User Levels	
☑	**User**
☑	**Installer**
☑	**Developer**
☑	**Factory**

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.

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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.

G3 LABEL

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).
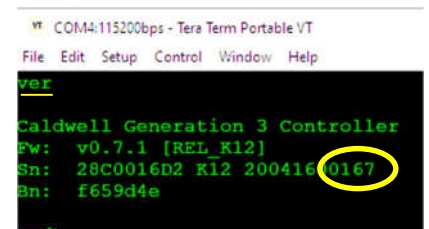
G3 VERSION COMMAND

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

* 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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Help Commands

The G3 controller supports a "command line interface" or "CLI" where various commands and instructions can be used to control or configure all the various modes and settings the G3 has to offer.

Help commands are informative in nature and for the most part will not affect the operational readiness of the door. Help commands that are not informative and will affect door operations are "**ecfg**" (Erase Config), "**epro**" (Erase/Swap Friction Profile) and "**rst**" (Reset). With the release of firmware version 0.7.2, two addition help commands have been added to this list, "**acdc**" and "**hfi**". The "**acdc**" command allows the installer to set all 4 acceleration & deceleration, "acco", "accc", "deco" & "decc", parameters at once. The "**hfi**" or High Friction Installation command allows the installer to set the 4 acceleration, deceleration plus open "**osp**" and close "**csp**" speeds to factory tested values to address "TLE over-current & over-temperature errors when dealing with very heavy door installations.

Erase Config and **Reset** are particularly intrusive as they can completely erase the configuration requiring the installer to reprogram the controller. Erase Config, "ecfg", has no prompt and immediately resets the critical parameters "learned" during programming.

Erase/Swap Friction Profile operations should be avoided unless **directed by a factory representative**. This command allows the installer, while the "Developer" password is active, to swap the runtime friction profiles with other versions stored in flash, as well as wiping out the runtime profile completely. Wiping the runtime profile leaves the door without a friction profile that will not be restored until the door is exercised for 3 full cycles. If a controller is allowed to run for the required 3 cycles, it will NOT stop for objects blocking the path and will try to push though with significant force in excess of 80lbs. It is essentially re-learning the friction profile of the door so "**soft touch**" is disabled until the profile is restored.

Entrapment at the jam can cause serious injury or death! If "eprof 0"(Erase Current Profile) has been executed, play it safe and just reprogram the door.

These 5 commands are the only "help" commands that after execution, result in a flash write. This means the affect is not going to be reversed by a reboot, with the only recovery option being reprograming the door.

The Help menu displayed is dependent on the current user level which is set by the password command, "pwd". A breakdown of which help commands are available at each user level, while the following pages describe each command in more detail.

At the "User" level, the only CLI help commands available, are "**help**", "**info**", "**ver**", "**pwd**" and "**temp**". Since a password must be entered after boot, the "**pwd**" command is available to all user levels. Determining the unit password requires the unit serial number and that is displayed in the "**info**" report as well as the "**ver**" output. Refer to the password documentation for more information about passwords and serial numbers.

The final command, "**temp**", displays the controller's internal temperature and the battery temperature if attached. A backup battery option will be available as part of a future update.

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G3 Advanced Programming Guide

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

help (CLI Help)

☑ **User**
☑ **Installer**
☑ **Developer**
☑ **Factory**

Syntax: help [command] **(Updated for firmware v0.7.2 and later)**
Abbreviation: h or ?
Range/Units: n/a
Default: n/a

Command Description

When executed, the CLI will display a list of supported commands based on the current user level. Help is supported for all user levels, with more commands becoming available as the user level is increased.

If help is executed with an [optional] command as a parameter, help for that command will be displayed.

At the user level the only commands available on the help screen are **help**, **info**, **ver**, **pwd** and **temp**.

User Level Commands

```
Commands:
help    [cmdname]         Command help
info                      Show system information
ver                       Show version & serial number
pwd     [password]        Enter password
temp                      Read temperatures inputs
```

Installer Help Commands

```
Commands:
help    [cmdname]         Command help
info                      Show system information
ver                       Show version & serial number
pwd     [password]        Enter password
config (I|a|c) [V|r]      Show/Set config values
brake  [1|0]              Brake On/Off
clutch [1|0]              Clutch On/Off
button [o|c|s|u|m|a]      Button press simulation
pos                       Show position [In]
ap     [position]         Show/Set actual pos [En]
er                        Show position error [En]
temp                      Read temperatures inputs
maxc                      Show max profile current
ecfg                      Reset configuration
dprof                     Read friction profiles
rst    [0|1|2|3|4]        Reboot/Reset system options(m)
acdc   [.5,30][.5,30]     Set acceleration/deceleration
hfi    [0-5]              Show/Set high friction install
cyct   [0-1000000]        Cycle test
```

Developer Help Commands

```
Commands:
help    [cmdname]         Command help
info                      Show system information
ver                       Show version & serial number
pwd     [password]        Enter password
log     [level]           Show/Set log level
config (I|a|c) [V|r]      Show/Set config values
brake  [1|0]              Brake On/Off
clutch [1|0]              Clutch On/Off
button [o|c|s|u|m|a]      Button press simulation
pos                       Show position [In]
ap     [position]         Show/Set actual pos [En]
av                        Show actual velocity [En/s]
er                        Show position error [En]
temp                      Read temperatures inputs
maxc                      Show max profile current
ecfg                      Reset configuration
epro   [0|1|2|3]          Erase/Swap frict profiles(m)
dprof                     Read friction profiles
rst    [0|1|2|3|4]        Reboot/Reset system options(m)
acdc   [.5,30][.5,30]     Set acceleration/deceleration
hfi    [0-5]              Show/Set high friction install
cyct   [0-1000000]        Cycle test
```

Highlighted commands are new for firmware v0.7.2 and later

References

pwd   Help output is dependent on the active user level / password
info   Display a list of customization parameters & commands to customize special features

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G3 Advanced Programming Guide

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

Supported User Levels	
☑	**User**
☑	**Installer**
☑	**Developer**
☑	**Factory**

info (Controller Information)

Syntax:	info **(Updated for firmware v0.7.2 and later)**
Abbreviation:	i
Range/Units:	n/a
Default:	n/a

Command Description

The info command displays all the pertinent settings for the G3 controller including programmed settings, features, and options for those features.

The "Features" section shows the currently active mode as Normal, Party Mode, Egress, One Button Operation or Move Assist. If a feature has been changed via the CLI, the active mode will not reflect that change until the panel is commanded to close.

The table output profiles the current settings as well as the "config" command required to change those settings. As with the feature settings, most setting will not become *active* until the next command door close operation. E.g. "button close". Commands marked with an '*' require at least an "Installer" level password.

Terminal Output

```
cmd>info                                      Egress:          fege*  -------
                                                Span:          fegd*  40.00in
Gen3 Controller          Patio Door            Auto Close Time: fegw*  DELAY[10s]
---------------                                Brake On Close:  fegb*  DISABLED[0]
Part Number:        28C0016                  One Button Op:     fobe*  -------
Serial Number:      28C0016 D2 1903281335      Span:          fobd*  40.00in
Firmware:           0.7.2                       Auto Close Time: fobw*  DISABLED[0]
  Build Hash:       5de70b1                     Brake On Close:  fobb*  DISABLED[0]
  Build Type:       REL_K12
  Config Version:   2a813ec                  Move Assist:       fmae*  -------
Max Current:        879mA                       Span:          fmad*  40.00in
Programmed:         Yes                         Auto Close Time: fmaw*  DISABLED[0]
Error Log:          None                        Span Adj Time:   fmat*  5s

Settings                                     Cycle Test:               DISABLED
--------                                         Fault Limit:   ctfl*  5
Panel Mass:         p1ms*  400.00lbs
Pulley Diameter:    pdia*  1.7988in          Modifiers
Door Type:          drtp*  oneway            ---------
Jam Entry:          pje*   0.54in            Hard Close En(G):  mhdc*  ENABLED
Span:               pop*   96.13in           Hard Open En(G):   mhdo*  -------
  Sub-Span:         pops*  0.00in            Brake Disable(G):  mbd*   -------
Motor Direction:    mdir*  normal            Brake On Close(N): mboc*  ENABLED[1]
Encoder Polarity:   epol*  invert            Brake At Open(G):  mbpop* DISABLED[0]

Features - 'Normal Operation' ACTIVE          (G)=Normal & Features, (N)=Normal only
----------------------------------
Span Adj Time:      fsat*  5s               *Password protected commands 'pwd xxx'
  Actual Adj Time:         5s               ** Password protected help commands
Party Mode:         fpme*  -------             Syntax: 'c command value'
  Span:             fpmd*  40.00in             e.g.   'c fege 1' - Enable Egress
  Auto Close Time:  fpmw*  DELAY[10s]          e.g.   'hfi 5'    - Sets HFI to 5
  Brake On Close:   fpmb*  DISABLED[0]
```

Highlighted commands are new for firmware v0.7.2 and later

References

pwd	G3 passwords require the last 4 digits of the G3 serial number provided by the *info* command
ver	Besides this command, "ver" can also be used to retrieve the unit serial number
Appendix A	Minutes/Hours to seconds conversion for brake on close & auto close time parameters.
Appendix B	Inch position to Encoder count conversion table.
Tech Brief	Info Report in depth

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G3 Advanced Programming Guide

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

Supported User Levels	
☑	User
☑	Installer
☑	Developer
☑	Factory

ver (Version & Serial Number)

Syntax: ver **(Updated for firmware v0.7.2 and later)**
Abbreviation: v
Range/Units: n/a
Default: n/a

Command Description

The version command displays the G3's current firmware version and controller serial number. The *ver* command is typically the first command sent to the controller to initialize the command line interface (CLI).

It is also used to obtain the G3 serial number, which is required to gain access to the higher-level programming commands using the 'pwd' (password) command.

Terminal Output

```
cmd>ver                                   // Version command issued to get the serial number

Caldwell Generation 3 Controller
Fw:  v0.7.0 [REL_K12]
Sn:  28C0016 D2 1903281335                // Serial number displayed
HFI: 0 (High Friction Install)            // HFI setting 0 – 5 or '?' for custom HFI setting
Bn:  5de70b1
```

Highlighted line item is new for firmware v0.7.2 and later

```
Using the ver command to retrieve the last 4 digits of the serial number:

cmd>pwd pwd1335                           // Use the serial number for the "installer" password

Level = 1 (Installer)                     // Pwd reports the new user level

cmd>pwd IM1335                            // Use the serial number for the "developer" password

Level = 2 (Developer)                     // Pwd reports the new user level
```

References

pwd   Use the "ver" command to determine the unit serial number required by the "pwd" command
info   The "info" command also displays the G3 serial number in its header

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G3 Advanced Programming Guide

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

Supported User Levels
☑ **User**
☑ **Installer**
☑ **Developer**
☑ **Factory**

pwd (Password)

Syntax:	pwd [*PASSWORD*]
Abbreviation:	p
Range/Units:	n/a
Default:	n/a

Command Description

The "**pwd**" command sets or reports the current password which in turn sets the user level. Changing the user level alters the available commands in the *help* and *config* tables. On power up, the user level is set to *User*. At this level, only informational commands are available via the CLI and the door can only be controlled with the standard wall-switch interface to program the G3. To change options or control the door from the CLI requires at least an *installer* level password.

Passwords expire after 30 minutes and revert to *user* level. To renew the password without re-entering the full password, enter the command "**pwd**" or the abbreviated version ''p' before the 30-minute expiration. If an incorrect password is entered, the user level is immediately revoked to the default *user* level.

The passwords for all G3 controllers are semi-unique and require the last 4 digits of the serial number for the command to unlock the G3's CLI. The serial number can be obtained from the physical sticker on the back of the G3, or on the CLI using "**ver**" or "**info**" commands. If the G3 serial number is not programmed or is less than 4 digits long, the default passwords listed below become active.

The installer should enter the *installer* password for 99% of all installs as it provides protection from overwriting a few critical settings that should not be changed without consulting the factory first.

User Level	SN Available e.g SN = "28C0016 D2 1903281234"		Default Password when SN Not Available
User Level	0 (always)	**0** (always)	0 (always)
Installer Level	"pwd" + "1234"	**pwd1234**	pwd1
Developer Level	"IM" + "1234"	**IM1234**	IM1635

Terminal Output

```
cmd>pwd 0                              // Enter the user level "user's" password of "0"

Level = 0 (User)

cmd>pwd pwd1234                        // Enter the "installer" password

Level = 1 (Installer)

cmd>pwd IM1234                         // Enter the "developer" password

Level = 2 (Developer)
```

References

ver	Version command used to obtain serial number from the *ver* command
info	Info command used to obtain the serial number from the info report
rst	Reset command menu changes based on the current user level
dprof	Dump friction profile report changes base on the current user level
epro	Erase profile menu is only available with the *developer* level and above
log	*Developer* mode enables additional CLI output useful when field debugging issues

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Supported User Levels	
☒	User
☒	Installer
☑	Developer
☑	Factory

log (Log Level)

Syntax:	log [*VALUE*]
Abbreviation:	l (lower case 'L')
Range/Units:	0 - 3
Default:	2

Command Description

The text displayed on the CLI is controlled by the *log* level. It has been carefully crafted to only display the correct amount of information to complete basic and advanced programming tasks required by an installer. If an installer is working with a factory representative on a particular issue, the log level can be changed to display additional information to help diagnose a problem.

Log Values	Description
0	No CLI output except for the confirmation "OK"
1	No CLI output except for the confirmation "OK"
2	Installer CLI messages displayed (default)
3	Installer CLI + Internal operational messages displayed

Terminal Output

```
cmd>log                              // Report the current log level
Log output level = 2                 // The default level of 2 is reported
```

```
cmd>log 3                            // Change the log level to 3
Log output level = 3                 // The new log level is now 3
```

References

pwd   The *log* command is only available at the *developer* level and above

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Supported User Levels	
☒	**User**
☑	**Installer**
☑	**Developer**
☑	**Factory**

config (Configuration Command)

Syntax:	config *COMMAND* [*VALUE or Sub-Cmd*]	**(Updated in FW v0.7.2 and later)**
Abbreviation:	c	
Range/Units:	command dependent	
Default:	n/a	

Command Description

The *config* command sets or reports all the configurable settings of the G3 controller. This includes door movement commands, programming values, modifiers, and special features.

To report a configuration value, the config command should be entered without a *VALUE*. When the command is used with a *COMMAND* and a *VALUE*, that value is set and saved to flash memory. All values set in this way will be restored to the controller on power failures and will remain in effect until reprogrammed or changed.

The *config* command can be used to reset a single parameter to its default OR nearly all settings to their defaults. The *config* command can also show only <u>changed</u> values or values that are no longer set to their default values.

Using the *config* command to <u>set</u> then <u>reset</u> the pulley diameter back to default

```
cmd>config pdia 4                       // Set a new pulley diameter to 4.0000 inches
OK: 4.0000                              // New diameter is set

cmd>config pdia reset                   // Reset pulley diameter to factory default
1.7988                                  // Factory default of 1.7988 inches is set
```

Using the "*config all reset*" command to <u>reset</u> nearly all settings to defaults. The parameters excluded from the "reset all" function are those required to keep the door fully programmed in "Normal" mode and 100% functional. This function will reset all special feature parameters to disabled and feature modifiers to their default values. The excluded parameters are displayed after executing "config all reset"

```
cmd>config all reset
909.552: Parameter 'drtp' preserved       // Door type oneway or bipart manually set via CLI
909.556: Parameter 'p1ms' preserved       // Panel 1 mass manually set via the CLI
909.560: Parameter 'pdia' preserved       // Pulley Diameter manually set via the CLI
909.561: Parameter 'acco' preserved       // Open acceleration time in seconds set via the CLI
909.562: Parameter 'accc' preserved       // Close acceleration time in seconds set via the CLI
909.563: Parameter 'deco' preserved       // Open deceleration time in seconds set via the CLI
909.564: Parameter 'decc' preserved       // Close deceleration time in seconds set via the CLI
909.565: Parameter 'csp' preserved        // Close speed in inches/sec set via the CLI
909.566: Parameter 'osp' preserved        // Open speed in inches/sec set via the CLI
909.567: Parameter 'spl' preserved        // Open/Close speed limit in inches/sec set via the CLI
909.568: Parameter 'pcl' preserved        // Panel closed position set during programming
909.572: Parameter 'pje' preserved        // Panel door jam depth set during programming
909.576: Parameter 'pop' preserved        // Panel full open position set during programming
909.580: Parameter 'pops' preserved       // Panel sub-span manually set after programming
909.584: Parameter 'epol' preserved       // Encoder Polarity set during programming
909.588: Parameter 'mdir' preserved       // Motor Polarity set during programming
```
                              Highlighted line items are new for firmware v0.7.2 and later

Using *config* command to report "changed" settings. This version of the command will report any parameters not currently set to their default value. This includes active features and their modifier parameters.

```
cmd>config changed                        // "c changed" works too
pje   Pos Jamb        0.5in:[0.0-100.0]:[0.5]
                    * current:[range]:[default]
```

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To list all the available *config* commands, enter "**config all**" or "**c all**". The CLI will display the entire command list with the current value, units, range and the default in this form:

Terminal Output (Display all *config* commands)

```
Syntax:
cmd     Description      CurrValue&Units:[ValueRange]:[DefaultValue]

drtp   Door Type        oneway:[oneway|bipart]:[oneway]
p1ms   Panel 1 Mass     172.0000lbs:[50.0-50000.0]:[172.0]
pdia   Pulley Diam      1.7988in:[0.5-4.5]:[1.7988]
fpme   Party Mode En    0:[0|1]:[0]
fpmd    PM OpenSpan      40.0000in:[6.0-1200.0]:[40.0]
fpmw    PM CloseTime     10s:[0-86400]:[10]
fpmb    PM CloseBrk      0:[0-86400]:[0]
fege   Egress En        0:[0|1]:[0]
fegd    Eg OpenSpan      40.0000in:[6.0-1200.0]:[40.0]
fegw    Eg CloseTime     10s:[0-86400]:[10]
fegb    Eg CloseBrk      0:[0-86400]:[0]
fmae   Move Assist En   0:[0|1]:[0]
fmad    MA OpenSpan      40.0000in:[6.0-1200.0]:[40.0]
fmaw    MA CloseTime     0s:[0-86400]:[0]
fmat    MA AdjTime       5s:[0-98]:[5]
fsat   Span Adj Time    5s:[0-99]:[5]
fobe   One Button En    0:[0|1]:[0]
fobd    OB OpenSpan      40.0000in:[6.0-1200.0]:[40.0]
fobw    OB CloseTime     0s:[0-86400]:[0]
fobb    OB CloseBrk      0:[0-86400]:[0]
mhdc   Hrd CloseEn(G)   1:[0|1]:[1]
mhdo   Hrd OpenEn(G)    0:[0|1]:[0]
mbd    Brk Disable(G)   0:[0|1]:[0]
mboc   Brk OnClose(N)   1:[0-86400]:[1]
mbpop  Brk OnOpen(G)    0:[0|1]:[0]
acco   Accel Open       2.5000s:[0.5-30.0]:[2.5]
accc   Accel Close      2.5000s:[0.5-30.0]:[2.5]
deco   Decel Open       3.0000s:[0.5-30.0]:[3.0]
decc   Decel Close      3.0000s:[0.5-30.0]:[3.0]
csp    Close Speed      4.0000in/s:[0.5-10.0]:[4.0]
osp    Open Speed       4.0000in/s:[0.5-10.0]:[4.0]
spl    O/C Speed Lim    0.0000in/s:[0.5-10.0]:[0.0]
crsp   Crawl Speed      2.0000in/s:[0.0-5.0]:[2.0]
crdc   Crawl Decel      1.0000s:[0.5-5.0]:[1.0]
apmf   Acc PM Factor    5.0000:[1.0-20.0]:[5.0]
vpmf   Vel PM Factor    0.7000:[0.0-1.0]:[0.7]
epmf   Env PM Factor    1.0000:[1.0-100.0]:[1.0]
fpce   FP Env Lim       470mA:[0-2000]:[470]
fpthr  FP Fault Cnt     10:[1-2147483647]:[10]
fpcl   FP Hard Lim      0mA:[0-8000]:[0]
fpwar  FP WA Ratio      10:[0-20]:[10]
hdctf  Hard O/C Trq     1:[0-100]:[1]
hdclf  Hard O/C Lim     2.0000:[1.2-5.0]:[2.0]
pcl    Pos Closed       0.0000in:[0.0-5.0]:[0.0]
pje    Pos Jamb         0.5000in:[0.0-100.0]:[0.5]
pop    Pos Open         0.0000in:[24.0-1200.0]:[0.0]
pops   SubSpan Open     0.0000in:[6.0-1200.0]:[0.0]
epol   Encoder Pol      normal:[normal|invert]:[normal]
mdir   Motor Dir        normal:[normal|invert]:[normal]
ctfl   Ct Fault Limit   5:[1-1000]:[5]
kp     P term PID       3000.0000:[0.0-10000.0]:[3000.0]
ki     I term PID       2.0000:[0.0-25.0]:[2.0000]
               * current:[range]:[default]
```

Highlighted line items are new for firmware v0.7.2 and later

References

pwd   The *config* command is only available at the *installer* level and above

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Supported User Levels	
☒	User
☑	Installer
☑	Developer
☑	Factory

brake (Brake Engage/Disengage)

|	
Syntax:	brake [VALUE]
Abbreviation:	br
Range/Units:	0 – 1
Default:	n/a

Command Description

Brake is a command that can be used by the installer to test the controllers brake circuit, brake wiring or the brake itself. The brake command should not be used while the panel is moving as it will immediately activate the magnetic brake, possibly stopping the door abruptly.

If the brake is not engaging as the installer believes it should, the installer can execute this command to verify the entire circuit from the controller to the physical brake itself. When the brake is engaged or disengaged it should make an audible "clap" sound. The brake should respond to this command regardless of the state of the global modifier "**mbd**" (Modifier Brake Disable). This modifier disables the brake for all functions and wall switch / remote commands *except* for the "**brake**" help command. This command cannot be disabled.

When the brake is engaged, and operational a "red" LED should be visible on the motor BOB. When disengaged the LED should be OFF. This command should also command the state of the LED.

When the motor is enabled, a "white" LED will illuminate, and the brake and its LED should be OFF.

Disabling the brake will affect the "motor click" sound used by the controller to communicate programming steps or when enabling/disabling special features from the wall switch. When disabled, the "click" sound will be noticeably quieter because the clutch alone is used to make the sound instead.
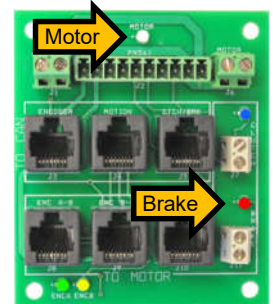
Terminal Output

```
cmd>brake 1              // Engages the magnetic brake
OK

cmd>brake 0              // Disengages the magnetic brake
OK
```

```
CLI Message displayed if the Motor Harness Cable is NOT connected to the motor BOB

ERROR: Clutch fault. Check clutch wires and/or motor cable.
001.002:*ERROR: Clutch fault. Check clutch wires and/or motor cable.
```

References

pwd	Requires a minimum user level of "Installer"
mbd	Modifier Brake Disable does NOT disable this help command
mboc	Modifier for normal mode Brake on Close
fpmb	Feature Party Mode Brake on Close
fegb	Feature Egress Brake on Close
fobb	Feature One Button Operation Brake on Close
mbpop	Modifier Brake on Open

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Supported User Levels	
☒	**User**
☑	**Installer**
☑	**Developer**
☑	**Factory**

clutch (Clutch Engage/Disengage)

Syntax:	clutch [VALUE]
Abbreviation:	cl
Range/Units:	0 – 1
Default:	n/a

Command Description

Like the brake command, the "**clutch**" command is a diagnostic tool used to verify the clutch circuit in the controller, though the wires all the way to the device itself. If the clutch is suspect, issuing the command "**clutch 1**" or "**clutch 0**" should result in an audible "click" from the motor. If a "click" is not heard, verify the motor to BOB 10 pin cable is connected and fully inserted into the controller and the motor BOB.

When the clutch is engaged, and operational a "blue" LED should be visible on the motor BOB. When disengaged the LED should be OFF. This command should also command the state of the LED.

When the motor is enabled a "white" LED & the "blue" LED for the clutch should be illuminated, while the brake's "red" LED should be off.
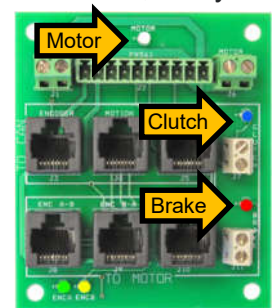
Terminal Output

```
cmd>clutch 0              // Disengages the clutch
OK

cmd>clutch 1              // Engages the clutch
```

```
CLI Message displayed if the Motor Harness Cable is NOT connected to the motor BOB

ERROR: Clutch fault. Check clutch wires and/or motor cable.
001.002:*ERROR: Clutch fault. Check clutch wires and/or motor cable.
```

References

pwd	Requires a minimum user level of "Installer"
brake	Similar command. If neither the brake nor the clutch work, check the cables

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Supported User Levels	
☒	**User**
☑	**Installer**
☑	**Developer**
☑	**Factory**

button (Button)

Syntax:	button [open close stop release unlock motion autosetup]
Abbreviation:	b [o c s r u m a]
Range/Units:	n/a
Default:	X seconds

Command Description

The "**button**" or '**b**' command simulates a wall switch/remote button press. For example, "**b o**" will cause the door to open.

The button command can simulate a motion signal from a wired/wireless motion detector or IR beam sensor. While the door is closing, issuing a "**b m**" command will stop the door for a motion fault. It can be used even if a motion detector is not attached to the system.

The button command can initiate the G3 programming sequence. It works the same as the "*15s Stop*" press from the wall switch except there is no delay. To program the door, make sure the lead panel is closed AND in the jam, then send the command "button autosetup" or "b a". The controller will not enter "autosetup" while the panel is mid span and out of the jam <u>unless</u> it was powered up while not fully closed. If this occurs, do not move the door and wait for about 30s. The command will timeout leaving the controller's program unchanged.

Full Command	Abbreviation	Description
button open	b o	Opens the door
button close	b c	Closes the door
button stop	b s	Stops the door
button release	b r	Releases the magnetic brake
button unlock	b u	Releases the magnetic brake
button autosetup	b a	Initiates the G3 programming sequence

Terminal Output

```
cmd>b o                                    // Command the door to open
OK
cmd>b r                                    // Command brake release when globally disabled with
OK                                         //    "c mbd 0"
154.446: FEATURE: Brake DISABLED.
  Use 'c mbd 0' to ENABLE brake functionality.
```

```
cmd>b a                                    // Initiate G3 Programming
OK
050.800:
 <<<<<< INSTALLATION >>>>>> 1/5            // Programming has begun…
 Manually open panel until it just clears
 the jam. Then wait for the motor 'click'.
```

References

pwd	Requires a minimum user level of "Installer"
mbd	If "**Modifier Brake Disabled**" is enabled, "button r & u" commands have no affect and a CLI message "*FEATURE: Brake DISABLED" is displayed.*"

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Supported User Levels	
☒	**User**
☑	**Installer**
☑	**Developer**
☑	**Factory**

pos (Position Open in Inches)

Syntax:	pos
Abbreviation:	po
Range/Units:	0 – Max Span in Inches
Default:	n/a

Command Description

The position command is an information command reporting the lead panel's, leading edge position in inches. If the door is closed, then "**pos**" should report a value close to zero. If fully open, the command should report a value very close to the full open parameter "**pop**". The distance reported by "pop" should be within ½" of its actual position in the span *if the belt is tight and the pulley diameter setting is correct.*

The "**pop**" command can be used as a diagnostic tool. When an installation has a belt that is too loose, the encoder cannot accurately locate the door's true location and the reported position will be wrong. The position reported can also be significantly off if the motor pulley has been changed to different diameter and the controller was not updated with this information via the "**c pdia**" command.

The command will function while the door is moving, returning back the door position at the time of the commands reception. This has little value other than being fun to play with.

Terminal Output

```
cmd>pos
Position:  10.51            // Position is reported back in inches
```

Converting Encoder Counts to Position (ap to pos)

Three formulas are presented here based on the size of the pulley on the motor used. The "Silver" pulley is the current OEM pulley, while the "Black" short pulley is our older motor stack that preceded the new tall silver version. The last formula can be used for custom pulley sizes, so the pulley diameter value becomes part of the calculation. All values are in inches and encoder counts.

For example, if you have a "silver" pulley and the actual position, "ap", is 1248 encoder counts, the "pos" value reported should be very close to 29.39" because 29.39 = *1248 / 42.4696*. If the value is way off, it's a sign that the belt is too loose, or you have a custom pulley installed.

$$pos_{CurrentSilver} = \frac{ap_{CountSilver}}{42.4696}$$

$$pos_{CurrentBlack} = \frac{ap_{CountBlack}}{42.5975}$$

$$pos = \frac{ap \; x \; pdia}{76.3944}$$

References

pwd	Requires a minimum user level of "Installer"
ap	Similar to "pop" except the position is reported back in "encoder counts"
pdia	Pop will be way off if the "pulley diameter" is incorrect.
Appendix B	Inch position to Encoder count conversion table.
Tech Brief	Pulley Diameter Calculation

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Supported User Levels	
☒	**User**
☑	**Installer**
☑	**Developer**
☑	**Factory**

ap (Actual Position in Encoder Counts)

Syntax:	ap [VALUE]
Abbreviation:	ap
Range/Units:	0 – Maximum encoder counts of the physical span
Default:	n/a

Command Description

This command is very similar to the "**pos**" (Position) command except it can also <u>set</u> the position of the leading edge of the lead panel in encoder counts. While this may seem exciting or very handy, it is in fact very dangerous.

If for example, the lead panel is stopped somewhere mid span, and an "**ap 0**" is executed, the controller now thinks the door is fully closed. Commanding the door to open will result in the door ramming the frame at full span because the fully closed position was moved via this command. DON'T DO THIS.

The only valid scenario where the installer may need to reset the "**ap**" is when the jam is truly "in the jam", and the "**ap**" command is not exactly 0. In this scenario setting "**ap 0**" is ok. A safer and easier method of accomplishing the same thing is make sure the panel is in the jam, fully closed, and power cycle or reboot the controller with "**r 0**".

Terminal Output

```
cmd>ap                      // Report the current position in encoder counts
ap: 0                       // Actual Position is 0 encoder counts

cmd>ap 10                   // Set the actual position to 10 encoder counts
ap: 0                       // Reports back the previous setting of 0 encoder counts
Control set ap: 10          // Then sets the value to 10 encoder counts
cmd>ap                      // Re-issue the command and
ap: 10                      //  ap reports the new value as 10 as expected
```

Converting Position to Encoder Counts (pos to ap)

Three formulas are presented here based on the size of the pulley on the motor used. The "*silver*" pulley is the current OEM pulley, while the "*black*" short pulley is our older motor stack that preceded the new taller silver version. The last formula can be used for custom pulley sizes, so the pulley diameter value becomes part of the calculation. All values are in inches and encoder counts.

For example, if you have a "*silver*" pulley and the door position is 29.39", the "ap" value reported should be very close to 1248 encoder counts because *1248 = 29.39" x 42.4696.* If the value is way off, it's a sign that the belt is too loose, or you have a custom pulley installed.

$$ap_{CountSilver} = pos_{CurrentSilver} \: x \: 42.4696$$

$$ap_{CountBlack} = pos_{CurrentBlack} \: x \: 42.5975$$

$$ap = \frac{pos}{pdia} \: x \: 76.3944$$

References

pwd	Requires a minimum user level of "Installer"
pos	Changing the encode count position directly affects the position reported in inches too
pdia	Encoder count position is directly related to motor shaft rotations, not the pulley diameter
Appendix B	Inch position to Encoder count conversion table.
Tech Brief	Pulley Diameter Calculation

INMOTION

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Supported User Levels	
☒	**User**
☒	**Installer**
☑	**Developer**
☑	**Factory**

av (Actual Velocity in Encoder Counts / sec)

Syntax:	av
Abbreviation:	av
Range/Units:	0 - ~ 800 Encoder Counts / sec
Default:	n/a

Command Description

The "av" command is an informative command reporting back the current velocity of the lead panel in encoder counts / second. As it deals in velocity it is a command for use while a panel is moving while under power or while being manually moved. The resulting data should not be considered overly accurate as there is no buffering or averaging of the data being reported. Internally the velocity is used in an algorithm to smooth the data point values increasing accuracy, while this command is just outputting raw data points.

Terminal Output

```
cmd>av                    // "av" issued while the door is stopped
av: 0

cmd>av                    // "av" report while the door is moving
av: 533
```

Converting Velocity in Encoder Counts / sec to Inches / Second

Three formulas are presented here based on the size of the pulley on the motor used. The "Silver" pulley is the current OEM pulley, while the "*black*" short pulley is our older motor stack that preceded the new taller silver version. The last formula can be used for custom pulley sizes, so the pulley diameter value becomes part of the calculation. All values are in inches and encoder counts.

For example, if you have a "*silver*" pulley and panel is moving at 383 encoder counts/s, "**av**", the velocity in IPS should be very close to 29.39" because 29.39 = *1248 / 42.4696*. If the value is way off, it's a sign that the belt is too loose, or you have a custom pulley installed.

G3 firmware v0.7.2 and later support the "avi" command, which reports the panel velocity in inches / sec directly.

$$VelocityIPS_{CurrentSilver} = \frac{av_{CountsPerSecSilver}}{42.4696}$$

$$VelocityIPS_{CurrentBlack} = \frac{av_{CountsPerSecBlack}}{42.5975}$$

References

pwd	Requires a minimum user level of "Installer"
pdia	Velocity of the physical panel will be increased with a larger pulley while torque is decreased
avi	Report the current panel velocity in inches / sec (firmware v0.7.2 and later)
Appendix B	Inch position to Encoder count conversion table
Tech Brief	Pulley Diameter Calculation

INMOTION

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Supported User Levels	
☒	**User**
☒	**Installer**
☑	**Developer**
☑	**Factory**

avi (Actual Velocity in Inches / sec)

Syntax:	avi **(Firmware v0.7.2 and later)**
Abbreviation:	avi
Range/Units:	0 - ~ 10 inches / sec
Default:	n/a

Command Description

The "avi" command is an informative command reporting back the current velocity of the lead panel in inches / second. As it deals in velocity, it is a command for use while a panel is moving while under power or while being manually moved. The resulting data should not be considered overly accurate as there is no buffering or averaging of the data being reported. Internally the velocity is used in an algorithm to smooth the data point values increasing accuracy, while this command is just outputting raw data points.

Terminal Output

```
cmd>avi                    // "avi" issued while the door is stopped
avi:  0

cmd>avi                    // "avi" report while the door is opening (positive velocity)
av:i  4.91

cmd>avi                    // "avi" report while the door is closing (negative velocity)
av:i  -2.39
```

References

pwd	Requires a minimum user level of "Installer"
pdia	Velocity of the physical panel will be increased with a larger pulley while torque is decreased
av	Report panel velocity in Encoder Counts / second
Appendix B	Inch position to Encoder count conversion table
Tech Brief	Pulley Diameter Calculation

```
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Supported User Levels	
☒	User
☑	Installer
☑	Developer
☑	Factory

er (Error Position in Encoder Counts)

Syntax:	er
Abbreviation:	er
Range/Units:	Encoder Counts
Default:	n/a

Command Description

The "**er**" command is an informational command reporting the error, in encoder counts, between the current position and the actual command position of the door. The reported data can be for either a moving or stationary panel. Each movement is in fact a series of very small movements executed in rapid succession. For each of those movements there is an "actual position" and a "commanded position" and the difference between the two is the "**er**". The value can be negative or positive.

If for example the door is in the jam, the "commanded position" will be something very close to 0. If the door is then manually opened, the "actual position" will be some positive encoder count value. The "**er**" value is calculated as (Commanded$_{Position}$ – Actual$_{Position}$) making a net negative "**er**".

On the other hand, if a panel is stopped mid span and then manually moved back to the jam, the "**er**" value will be positive.

Terminal Output

```
cmd>er
error: 264
```

References

pwd	Requires a minimum user level of "Installer"
ap	Shows where the controller thinks the actual panel position is in encoder counts
Appendix B	Inch position to Encoder count conversion table.

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Supported User Levels	
☑	User
☑	Installer
☑	Developer
☑	Factory

temp (Temperature)

Syntax:	temp
Abbreviation:	te
Range/Units:	Degrees Celsius
Default:	n/a

Command Description

The "**temp**" instruction is an informational command and reports back the temperature, in ºC, of the main board and backup battery pack. For this release, the backup battery is not supported and thus not attached, so it reports back with a value of "-273.0 ºC."

Terminal Output

```
cmd>temp
Mainboard = 35.9 C
Battery   = -273.0 C
```

References

pwd   Requires a minimum user level of "Installer"

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Supported User Levels	
☒	**User**
☑	**Installer**
☑	**Developer**
☑	**Factory**

ecfg (Erase Configuration)

Syntax:	ecfg
Abbreviation:	ec
Range/Units:	n/a
Default:	n/a

Command Description

The erase configuration, "**ecfg**" command, at one time was a required option to return all configuration data to factory defaults in preparation for a reprogram. It still performs that function, except other commands do it better such as "**rst 2**" or "**rst 4**".

The erase configuration, "**ecfg**" command is an unforgiving command, that once executed, will wipe out the G3 controllers programming requiring a full reprogram. "**ecfg**" does not erase friction profiles and will preserve the pulley diameter "setting" exclusively. The pulley diameter is preserved, because the value is calculated and requires a bit of effort to retrieve. Accidentally deleting a custom pulley diameter will create subtle issues that will be difficult to diagnose.

Terminal Output

```
cmd>ecfg                                          // The command
cmd>                                              //   and the result nondescript…
                                                  //   however all settings have been cleared!

cmd>c changed                                     // The "c changed" command shows the actual result
             * current:[range]:[default]          // The list is empty, so reprogramming is required

cmd>info                                          // The "info" report indicates the same thing…

Gen3 Controller         Development, R45x3 Beta Test
---------------
Part Number:       28C0016
Serial Number:     28C0016D2 K12 20041600167
Firmware:          0.7.2
  Build Hash:      f659d4e
  Build Type:      REL_K12
  Config Version:  2a8142cd
Max Current:       858mA
Programmed:        No                             // NOT PROGRAMMED so we must reprogram controller
Error Log:         None

Settings
--------
Panel Mass:        p1ms*  172.00lbs
Pulley Diameter:   pdia*  1.7988in
Door Type:         drtp*  oneway
Jam Entry:         pje*   0.50in
Span:              pop*   0.00in                  // NO SPAN, must reprogram
  Sub-Span:        pops*  0.00in
Motor Direction:   mdir*  normal
Encoder Polarity:  epol*  normal
O/C Speed Limit:   spl*   DISABLED[0]
High Frict Inst:   hfi**  0
```

Highlighted line items are new for firmware v0.7.2 and later

References

pwd	Requires a minimum user level of "Installer"
rst	Various "**rst**" commands do this command's job better with fewer keystrokes required.
pdia	Pulley diameter is not reset with the "**ecfg**" command intentionally

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Supported User Levels	
☒	**User**
☒	**Installer**
☑	**Developer**
☑	**Factory**

epro (Erase/Swap Friction Profiles [menu])

Syntax:	epro [VALUEl]
Abbreviation:	ep
Range/Units:	0 – 3
Default:	n/a

IMPORTANT:

- **This is an advanced debugging tool. Consult the factory prior to use.**
- **If profiles have been "swapped" the controller MUST be reprogrammed prior to job completion.**

Command Description

The "**epro**" command is an advanced command that should not be required by most installers. It should only be used after consulting the factory representative and after all other debug options are exhausted.

In the previous release, this command was used to clear out the friction profile so that it could be "relearned". With this release, and the addition of 4 full profiles saved in flash memory, its functionality has been expanded. Besides clearing the runtime profile, the runtime profile itself can now be overwritten with a copy of the Current Full Span Backup Profile, Last Profile Programmed or the First Profile Programmed.

The ability to change current runtime profile with one that was created months or years ago can be a helpful debugging tool. After all the repair work is done and the door is operating at its best, swapping in the First Profile Programmed may show that yes indeed the door is as good as new, or it could go the other way.

Remember: This is a debug tool, so if profiles have been swapped, the installer, with the Developer password entered MUST perform a "**rst 2**" on the door and then a final reprogram to complete the job.

Table	Description
Installer	No access
Developer	Erase Current Profile, Restore Backup, Restore Last Program, Restore First Program

Terminal Output

```
cmd>epro
Erase/Restore Profile
---------------------
 0. Erase Current Profile(CP)
 1. Restore Backup(CPF)
 2. Restore Last Program(LPP)
 3. Restore First Program(FPP)
```

References

pwd	Requires a minimum user level of "Installer"
dprof	Dumps 1 or all profiles to the terminal for diagnostic & debugging
rst	The factory reset command, "**r 4**" will clear all profiles from the profile table

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Supported User Levels	
☒	User
☑	Installer
☑	Developer
☑	Factory

maxc (Maximum Current)

Syntax:	maxc **(Firmware v0.7.2 and later)**
Abbreviation:	ma
Range/Units:	0 – 8000mA
Default:	n/a

Command Description

The max current command, "maxc" reports the maximum current between the open and close operations recorded by the "current profile" saved in flash. It is the same value reported at the end of the "dpro" (dump profile) report.

Calculating the max current takes a bit of time, so a 2s delay before the output is displayed is normal. The max current is also reported in the "info" report.

When the max current value is above 5,000 – 6,000mA, it indicates the a "high friction" condition where the motor controller is nearing an over-load condition. It can also indicate the panel installation may need maintenance or an inspection to determine if there is a mechanical issue affecting the smooth operation of the door.

Terminal Output

```
cmd>maxc                                                    // The command
Max Current: 842mA
```

Highlighted line items are new for firmware v0.7.2 and later

References

pwd	Requires a minimum user level of "Installer"
hfi	Sets various parameters to help address "high friction installations"
info	Reports various settings including the "max current" (new for v0.7.2 G3 firmware)
pdia	Pulley diameter is not reset with the "**ecfg**" command intentionally

INMOTION

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Supported User Levels	
☒	**User**
☑	**Installer**
☑	**Developer**
☑	**Factory**

dprof (Dump Friction Profiles)

Syntax:	dprof
Abbreviation:	d
Range/Units:	mA (milliAmps)
Default:	n/a

Command Description

The "**dprof**" command is an informational command that dumps the "learned" friction profiles to the terminal for data analysis. Friction profiles are the key to the "Soft Touch" function of the controller.

The span of the door is divided up into 42 "bins" equally spaced across the programmed span. For each bin the starting and ending location in inches is reported. In flash, each profile bin stores min & max current for open and min & max for close. At the end of the report a single maximum current value is displayed indicating the max current for both open or close which is useful if the optional secondary Friction Profile Hard Limit "**fpcl**" is active.

There are 5 friction profiles in total, 4 of which are saved to flash memory. The 5th profile is in memory and loaded from flash at boot. The in-memory profile is the called the runtime profile and is used to detect friction faults.

All profiles store their current measurements as "mA" in a comma delimited format (csv). Minimum and maximum current values for both open and close are stored for each profile.   This format is ideal for importing into Excel for analysis.

User Level	Profiles Reported
Installer	Runtime Only
Developer	All, Runtime, Runtime Flash, Backup Full, Last Program, First Program
Factory	All, Runtime, Runtime Flash, Backup Full, Last Program, First Program

Friction fault determination uses an algorithm to determine if the motor current has exceeded the "learned" profile current *plus* a margin current set by the default or by the installer. If the margin has been exceeded, the door will stop with a friction fault. Only the maximum current per bin, for either open or close is used in making this determination.

Terminal Output (User Level: Installer – Runtime Profile Only)

```
cmd>dprof
Bin,BinStartIN,BinEndIN,OpenMin,OpenMax,CloseMin,CloseMax     // Header for each column
0,0.000,0.518,-5,-725,581,2580                               // Bin0,StartPos,EndPos,OpenMin,OpenMax,CloseMin,CloseMax
1,0.542,1.648,-720,-741,566,595
2,1.672,2.778,-725,-715,565,590                              // Bin 2's position is between 1.672" and 2.778"
3,2.802,3.909,-738,-718,578,622
4,3.932,5.039,-738,-735,572,623                              // Bin 4's max current for Open is -735mA.

. . . (bins 5 – 37 removed for clarity)

38,42.313,43.419,-610,-606,724,739
39,43.443,44.549,-620,-619,728,744                          // Bin 39's max current for Close is 744mA.
40,44.573,45.656,-606,-598,695,725
41,45.680,46.174,-300,-567,-10,683                          // Bin41,StartPos,EndPos,OpenMin,OpenMax,CloseMin,CloseMax

Max Current: 744mA (Bins 1 - 40)                            // Runtime Max Open/Close current in milliAmps
```

Negative current measurements are dependent on motor polarity and will be inverted between open and close. Polarity will vary between open & close based on the learned motor polarity during programming.

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Terminal Output (User Level: Developer – All Profiles)

```
cmd>d
Bin,BinSt,BinEn,OMin_M,OMax_M,CMin_M,CMax_M,CpOMin_F,CpOMax_F,CpCMin_F,CpCMax_F,CpfOMin_F,CpfOMax_F,CpfCMin_F,CpfCMax_F,LppO
Min_F,LppOMax_F,LppCMin_F,LppCMax_F,FppOMin_F,FppOMax_F,FppCMin_F,FppCMax_F
 0,0.000,0.612, -5,-729,550,3913, -5,-729,550,3913, -5,-729,550,3913, -5,-729,564,3971, -4,-723,566,2572
 1,0.636,1.742, -709,-756,546,602, -709,-756,546,602, -709,-756,546,602, -709,-756,558,605, -690,-737,553,594
 2,1.766,2.873, -703,-744,566,619, -703,-744,566,619, -703,-744,566,619, -703,-744,577,620, -680,-709,549,589
 3,2.896,4.003, -682,-713,556,587, -682,-713,556,587, -682,-713,556,587, -682,-713,561,592, -679,-713,567,622
 4,4.026,5.133, -695,-720,566,605, -695,-720,566,605, -695,-720,566,605, -695,-720,570,608, -698,-731,564,623
 5,5.157,6.240, -672,-719,552,629, -672,-719,552,629, -672,-719,552,629, -672,-719,560,625, -622,-700,538,582
 6,6.263,7.370, -599,-683,508,561, -599,-683,508,561, -599,-683,508,561, -599,-683,518,563, -605,-630,538,570
 7,7.394,8.500, -595,-619,509,534, -595,-619,509,534, -595,-619,509,534, -595,-619,519,540, -613,-638,540,565
 8,8.524,9.630, -607,-653,518,631, -607,-653,518,631, -607,-653,518,631, -607,-653,532,635, -606,-631,535,608
 9,9.654,10.761, -633,-666,608,642, -633,-666,608,642, -633,-666,608,642, -633,-666,622,647, -607,-637,607,655
10,10.784,11.867, -621,-656,604,642, -621,-656,604,642, -621,-656,604,642, -621,-656,616,649, -619,-658,648,679
11,11.891,12.998, -617,-645,599,646, -617,-645,599,646, -617,-645,599,646, -617,-645,613,652, -621,-656,621,657
12,13.021,14.128, -621,-649,599,634, -621,-649,599,634, -621,-649,599,634, -621,-649,612,639, -606,-640,609,647
13,14.151,15.258, -619,-646,596,634, -619,-646,596,634, -619,-646,596,634, -619,-646,608,640, -613,-642,612,643
14,15.282,16.388, -623,-660,607,647, -623,-660,607,647, -623,-660,607,647, -623,-660,617,652, -620,-662,637,660
15,16.412,17.495, -632,-661,616,654, -632,-661,616,654, -632,-661,616,654, -632,-661,633,661, -633,-663,635,669
16,17.518,18.625, -622,-653,611,654, -622,-653,611,654, -622,-653,611,654, -622,-653,617,659, -619,-656,610,656
17,18.649,19.755, -597,-649,599,633, -597,-649,599,633, -597,-649,599,633, -597,-649,611,638, -603,-640,622,651
18,19.779,20.886, -603,-633,586,631, -603,-633,586,631, -603,-633,586,631, -603,-633,602,637, -608,-637,615,644
19,20.909,22.016, -604,-646,610,665, -604,-646,610,665, -604,-646,610,665, -604,-646,625,667, -608,-645,620,667
20,22.039,23.122, -623,-650,603,663, -623,-650,603,663, -623,-650,603,663, -623,-650,614,665, -628,-655,642,668
21,23.146,24.253, -602,-639,589,635, -602,-639,589,635, -602,-639,589,635, -602,-639,606,642, -612,-646,630,665
22,24.276,25.383, -600,-628,612,662, -600,-628,612,662, -600,-628,612,662, -600,-628,629,666, -599,-631,613,649
23,25.406,26.513, -607,-637,610,653, -607,-637,610,653, -607,-637,610,653, -607,-637,619,655, -597,-628,605,641
24,26.537,27.643, -602,-623,616,656, -602,-623,616,656, -602,-623,616,656, -602,-623,630,663, -608,-638,635,672
25,27.667,28.750, -602,-626,626,666, -602,-626,626,666, -602,-626,626,666, -602,-626,643,672, -621,-644,646,682
26,28.774,29.880, -590,-621,614,657, -590,-621,614,657, -590,-621,614,657, -590,-621,626,662, -606,-640,624,656
27,29.904,31.010, -587,-618,604,645, -587,-618,604,645, -587,-618,604,645, -587,-618,619,651, -587,-615,629,657
28,31.034,32.141, -592,-618,605,655, -592,-618,605,655, -592,-618,605,655, -592,-618,623,663, -595,-622,633,679
29,32.164,33.271, -605,-629,627,661, -605,-629,627,661, -605,-629,627,661, -605,-629,641,666, -603,-624,656,679
30,33.294,34.378, -601,-627,618,663, -601,-627,618,663, -601,-627,618,663, -601,-627,633,666, -598,-616,619,682
31,34.401,35.508, -598,-625,597,639, -598,-625,597,639, -598,-625,597,639, -598,-625,617,647, -594,-615,620,659
32,35.531,36.638, -586,-612,590,630, -586,-612,590,630, -586,-612,590,630, -586,-612,607,639, -591,-623,621,654
33,36.661,37.768, -550,-595,604,644, -550,-595,604,644, -550,-595,604,644, -550,-595,623,648, -528,-603,607,637
34,37.792,38.898, -539,-570,605,648, -539,-570,605,648, -539,-570,605,648, -539,-570,623,652, -515,-538,615,635
35,38.922,40.005, -505,-553,579,628, -505,-553,579,628, -505,-553,579,628, -505,-553,604,637, -514,-540,620,657
36,40.029,41.135, -503,-549,590,704, -503,-549,590,704, -503,-549,590,704, -503,-549,619,709, -510,-550,637,702
37,41.159,42.265, -536,-650,681,742, -536,-650,681,742, -536,-650,681,742, -536,-650,696,743, -536,-598,691,722
38,42.289,43.396, -573,-647,663,717, -573,-647,663,717, -573,-647,663,717, -573,-647,689,723, -564,-601,708,738
39,43.419,44.526, -565,-599,661,710, -565,-599,661,710, -565,-599,661,710, -565,-599,692,724, -578,-615,719,743
40,44.549,45.633, -578,-629,675,728, -578,-629,675,728, -578,-629,675,728, -578,-629,700,730, -562,-594,659,724
41,45.656,46.245, -305,-619,-11,715, -305,-619,-11,715, -305,-619,-11,715, -305,-619,-11,716, -275,-563,-10,681
[B][Bin Position] [ RunTime Profile] [ RunTime Profile ][ RunTime Backup  ][ Last Programmed ][ First Programmed]
               [   "In Memory"  ] [    "In Flash"   ][    "In Flash"   ][    "In Flash"   ][    "In Flash"   ]

Max Current: 756mA (Bins 1 - 40)                // Max current is always reported as a positive value.
```

References

pwd	Requires a minimum user level of "Installer"
epro	Allows erasing and swapping profiles. Requires "Developer" user level.
maxc	Command displays the maximum current without using the "dpro" command.
c fpcl	Optional, secondary friction profile hard limit for instantaneous faults. Default is disabled.
c fpce	Sets the "Friction Profile Envelope Limit" in mA used in the friction fault algo for "Soft Touch"
c fpthr	Sets the "Friction Profile Fault Count Limit" used in the friction fault algo for "Soft Touch"

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Supported User Levels	
☒	User
☑	Installer
☑	Developer
☑	Factory

rst (Reset [menu])

Syntax:	rst [VALUE]
Abbreviation:	'r'
Range/Units:	0 - 4
Default:	n/a

IMPORTANT:

- **When moving a <u>programmed</u> G3 controller to a <u>different door or job</u> it MUST be factory reset to remove the "First Programmed Friction Profile" properly. See Factory Reset Option 4 below…**
- **All G3's, prior shipment are "factory reset" to remove all traces of the testing performed during the manufacturing process.**

Command Description

The "**rst**" or Reset command is used for several reset functions from simple reboots to a complete wipe of the controller for a "Factory Reset". The "**rst**" or "**r**" command requires a numeric parameter and when that is not provided, it displays a menu for reference. Options will vary depending on the user level.

User Level	Description
Installer	Menu Opts: 0: Reboot, 1: Reset Features, 2: Wipe for Reprogram
Developer	Adds options 3: Profile Wipe, and 4: Factory RESET to the Installer's

Reset Options:

Various reset option. All options reboot the controller.

RST Options	Description
rst 0	Performs a reboot of the controller only. Functionally equivalent to a wall switch reboot.
rst 1	Special Features are disabled, and feature options are all reset to defaults. After the controller reboots, it will still be 100% functional and will NOT require reprogramming. Any changes to special feature defaults will need to be reprogrammed.
rst 2	If an installer needs to reset to reprogram this is the preferred selection. Resets all features, AND parameters **except** for the Pulley Diameter, "**pdia**". Runtime profiles are also cleared. After this reset the door must be reprogrammed. Highest level allowed for an "**Installer**" user level.
rst 3	Erases the current runtime and runtime backup friction profiles. Use of this option has been <u>deprecated</u> with this version of the firmware. If executed, the door must be cycled, full open + close for at least 3 times. Only available with "**Developer**" or "**Factory**" user levels.
rst 4	Erases all profiles, configuration and feature options including the Pulley Diameter "**pdia**". Only available with "**Developer**" or "**Factory**" user levels. This must be done if programmed for 1 door and later the controller is moved to a different door / job.

Factory Reset Option 4:

When a door is programmed for the very first time, the 1st friction profile is saved and never updated again. Normally this profile is used as reference to help determine mechanical age, wear and tear, etc over time. However, the G3 command, Erase/Swap Friction Profiles command "epro" allows the installer to overwrite the runtime profile with the First Programmed Profile(FPP). If the FPP contains the profile for a different door and is swapped with the Current Profile(CP), the current door is not going to work properly.

Option 2 is the preferred method for installers to perform a clean reprogram of the G3 unless they are moving the controller to a different physical door. Then Option 4, "**rst 4**" should be used.

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Option 2 is also preferred because it does not change the pulley diameter, "pdia" parameter back to factory defaults like Option 4 does. The use of 3rd party motor pulleys is supported by the G3 and provides dealers with options for more torque by trading speed, etc. However, if the "pdia" setting is incorrect for the physical pulley on the motor, subtle issues with full closure, torque and "Soft Touch" can occur. These issues may go unnoticed or present weird behavior's that will be difficult to diagnose for the installer.

To avoid all this, follow these simple rules:

- Prior to doing any reset, issue an "**info**" command to report all critical setting to the terminal "just in case". If you need a setting that was just cleared, they should be available if you scroll the terminal window up a bit.
- Use "**rst 2**" exclusively when you just want to wipe clean a G3 and give it a fresh reprogram.
- If a controller is moved from 1 door to another door, ALWAYS perform a factory reset with "**rst 4**".
- When an installation is in bad shape, requires 40+lbs of pull to open, rails are worn out, jamb is not square / plumb AND you fix it then it is best to do a factory reset. After all the fixes, this is basically a different door. None of the stored profiles are going to work with its newfound functionality, so treat it like a <u>new door</u> and run the "**rst 4**" command.

Terminal Output

```
cmd>rst
Reset Controller
----------------
 0. Reboot
 1. Reset Features+Reboot
 2. Wipe for Reprogram+Reboot
 3. Profile+Reboot
 4. Factory RESET+Reboot
```

References

pwd	Requires a minimum user level of "Installer"
dprof	Dump Profiles command reports out the actual friction profile tables used for "Soft Touch"
info	Reports out all critical programming parameters + all special feature parameters
c pdia	Pulley diameter setting used when a non-OEM motor pulley is installed on the 500 motor.

Supported User Levels	
☒	**User**
☑	**Installer**
☑	**Developer**
☑	**Factory**

acdc (Set Acceleration & Deceleration)

Syntax:	acdc [VALUE] [VALUE] **(Firmware v0.7.2 and later)**	
Abbreviation:	ac	
Range/Units:	0.5 – 30.0s	
Default:	n/a	

Command Description

The set acceleration/deceleration command, "acdc" is a shortcut allowing the installer to set the 4 accleration/deceleration parameters using a single command.

When passed a single parameter, it sets "acco, "accc", "deco" and "decc" to that value. When passed 2 parameters its sets "acco" and "accc" to first value passed while setting "deco" and "decc" to the second value passed.

As with all "help" parameters, "acdc" is not saved in flash, however the acceleration/deceleration parameters it affects are saved.

The reset option, available for most "config" commands is not supported by the "acdc" help command. To revert any or all the accel/decel parameters back to their factory defaults, each must be reset individually.

Terminal Output

```
cmd>acdc 5.0                                          // Set all accel/decel params to 5.0000s
acco: Set to 5.0000s
accc: Set to 5.0000s
deco: Set to 5.0000s
decc: Set to 5.0000s

cmd>acdc 5.0 4.6                                      // Set accel params to 5.0000s, decels to 4.6000
acco: Set to 5.0000s
accc: Set to 5.0000s
deco: Set to 4.6000s
decc: Set to 4.6000s

cmd>c acco reset                                      // Resetting params to factory default
2.5000
cmd>c accc reset
2.5000
cmd>c deco reset
3.0000
cmd>c decc reset
3.0000
```

Highlighted line items are new for firmware v0.7.2 and later

References

pwd	Requires a minimum user level of "Installer"
acco	Open acceleration in seconds
accc	Close acceleration in seconds
deco	Open deceleration in seconds
decc	Close deceleration in seconds
spl	Limits both open & close speeds. (Firmware v0.7.2 and later)
hfi	Sets various params to help address "high friction installations" (Firmware v0.7.2 and later)
Tech Brief	TLE Mitigation

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<table>
<tr><td>Supported User Levels</td></tr>
<tr><td>☒ User</td></tr>
<tr><td>☑ Installer</td></tr>
<tr><td>☑ Developer</td></tr>
<tr><td>☑ Factory</td></tr>
</table>

hfi (Set High Friction Installation Parameters)

Syntax:	hfi [VALUE] **(Firmware v0.7.2 and later)**	
Abbreviation:	hf	
Range/Units:	0 – 5	
Default:	0	

Command Description

The set High Friction Installation "hfi" command is another shortcut command that affect multiple configuration commands. It is used when a door installation has a particularly heavy pull requirement due to poor installation, poor manufacturer quality or excessive weather strip OR any time the CLI indicates "**TLE Over-current**" or "**TLE Over-temperature**" warnings. If a panel requires more than 40 -50lbs of pull to move the panel it can be considered a "hfi" candidate.

WARNING: Prior to using this, or any other command to overcome a high friction door installation, **every attempt should be made to reduce the panels high friction issues**. That includes replacing wheels, weather stripping, panels if warped, head/floor track, etc. *Failure to do so will result in premature mechanical and/or failure the controller due to the overload.*

The "hfi" command takes 1 parameter from 0 to 5. A value of 0, resets all affected parameters back to factory defaults. Values from 1 to 5 set the relative high friction installation level. A level of **1** is a "*somewhat heavy pull*" (around 40lbs) while **5** is a "*very heavy*" pull of 70lbs or more.

The "hfi" command sets known values for "osp", "csp", "acco", "accc", "deco" & "decc" documented by the factory that specifically address "TLE Over-current/temperature" issues. The "hfi" value setting, is reported by the "hfi" command itself, when used without a value, "ver" and "info" commands. If any of the 6 affected parameters are changed from factory defaults, the reported "hfi" value is "?" indicating a *custom* setting.

Each time "hfi" is executed, the 6 parameters are set AND the controller is RESET and will require reprograming. The reset is required so that the controller can re-learn its current limits and remain within its UL 325 safety parameters while using the new "hfi" settings.

HFI and Previous G3 Firmware Releases

Since "hfi" modifies parameters that are present in all previous G3 firmware releases, the notion of "hfi" can be applied to earlier firmware versions as well. The only difference being typing a single "hfi X" command versus entering 8 commands to set the same parameters.

```
HFI     OSP  CSP  ACCO  ACCC  DECO  DECC  Description
------  ---  ---  ----  ----  ----  ----  ----------------------
hfi 0   4.0  4.0   2.5   2.5   3.0   3.0  Sets factory defaults
hfi 1   6.0  6.0  12.0  12.0  12.0  12.0  For heavy panels
hfi 2   6.0  6.0  15.0  15.0  15.0  15.0
hfi 3   5.0  5.0  15.0  15.0  15.0  15.0
hfi 4   4.5  4.5  15.0  15.0  15.0  15.0
hfi 5   4.0  4.0  15.0  15.0  15.0  15.0  For the heaviest panels
```

For example to set "hfi 4"…

```
Firmware v0.7.1 and earlier (without HFI support)
cmd>p IMxxxx       // Developer password req'd
cmd>r 4            // Reset to clear profiles
cmd>osp 4.5        // Set open speed
cmd>csp 4.5        // Set close speed
cmd>acco 15        // Set open acceleration
cmd>accc 15        // Set close acceleration
cmd>deco 15        // Set open deceleration
cmd>decc 15        // Set close decleration
                   //   then re-program
```

```
Firmware v0.7.2 or later (with HFI support)
cmd>p pwdxxxx      // Installer or Developer pw req'd
cmd>hfi 4          // All 6 parameters auto set
                   //   then re-program
```

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Terminal Output

```
cmd>hfi 4                                              // Apply hfi 4
 - All Profiles Erased:      Success                   // Profiles are cleared automatically
 - Configuration Erased:     Success                   // Configuration reset to factory defaults
 - Configuration Init:       Success
 - Pulley Diameter Preserved
osp:  Set to 4.5000in/s                                // Open speed automatically set
csp:  Set to 4.5000in/s                                // Close speed automatically set
acco: Set to 15.0000s                                  // Open acceleration automatically set
accc: Set to 15.0000s                                  // Close acceleration automatically set
deco: Set to 15.0000s                                  // Open deceleration automatically set
decc: Set to 15.0000s                                  // Close deceleration automatically set
000.000: TLE9201SG init OK, rev 1

Caldwell Generation 3 Controller                       // Controller automatically reboots
Fw:  v0.7.2 [REL_K12]
Type 'help' for valid commands.
cmd>001.784:

****************************************
001.790: <<<  INSTALLATION REQUIRED  >>>
001.794:
001.794:  Controller must be programmed
001.800:   prior to use by a qualified
001.804:             installer
001.808:
001.808:     Wall Switch Commands:
001.812: ------------------------------
001.816: To Program:    STOP(15s)
001.820: Toggle Brake: RELEASE(1s)
001.824: Reboot:       STOP+RELEASE(10s)
001.830:
001.830:    www.caldwellmfgco.com
****************************************                // Re-programming is required here…
                                                       // After reprogramming…
cmd>hfi
hfi: 4                                                  // HFI value reported with HFI command

cmd>ver
Caldwell Generation 3 Controller
Fw:  v0.7.2 [REL_K12]
Sn:  28C0016D2 K12 20041600167
HFI: 4 (High Friction Install)                         // HFI level is reported
Bn:  0a4dc1c

cmd>info
. . .                                                  // Abbreviated "info" report
Settings
--------
High Frict Inst:  hfi**  4                             // HFI level under "Settings"
```

References

pwd	Requires a minimum user level of "Installer"
osp	Open speed in inches / second
csp	Close speed in inches / second
acco	Open acceleration in seconds
accc	Close acceleration in seconds
deco	Open deceleration in seconds
decc	Close deceleration in seconds
info	The "hfi" setting is shown in the "info" report with firmware v0.7.2 and later
ver	The version command will report the "hfi" setting with firmware v0.7.2 and later
Tech Brief	TLE Mitigation

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cyct (Cycle Test)

Syntax:	cyct [VALUE]
Abbreviation:	t
Range/Units:	1 - 1000000
Default:	n/a

Command Description

The "**cyct**" or "**t**" command, initiates, updates or reports the status of a cycle test already running. It can be used by installers during their final test, while tuning "Soft Touch", or dealer/customer demonstrations. The test can be commanded to exercise an G3 automation system to open and close a door between 1 and 1,000,000 times.

Starting a Cycle Test (cT)

To execute a test, 2 commands are required:

- "t 3"   Initializes the cT for 3 open + close cycles. Door does not move
- "b c"   Button Close is used to "start" the test. Door begins to move and testing begins.
    - *   If the door was already closing when the "t" setting was issued, the 2nd command "b c" is not required. Testing will begin after the door closes.

Terminal Output

```
Cmd>t 15                    // Cycle test, for 15 cycles is requested

Cycle Test
----------
Status          READY       // Status is "Ready" to start.  Door does NOT move yet...
  Progress:     0.00%
  Oneway Travel: 0.00 ft
  Cycle Time:   TBD         // Time for 1 open + close cycle. Updates after 1st cycle.
  Time Remaining: TBD       // Estimated time to completion in sec, min, hours, days, months and years
Cycle Info      Opening     // Current operation, either Opening or Closing
  Current Cycle: 0
  Total Cycles:  3          // Total cycles requested.  Can be changed with "t VALUE" while running
On Open                     // Friction & Motion Faults during Open
  Friction Faults: 0
  Motion Signals:  0
On Close                    // Friction & Motion fault counts during Close
  Friction Faults: 0
  Motion Signals:  0
Cycle Faults:   0/5         // Cycle fault count down, Current/Maximum, before the test errors out

cmd>b c                     // Starts the test and the cT status changes to "Running".  Movement starts.
```

TLE Warning:

Prior to running a cycle test verify the controller does not indicate "TLE" events in the CLI. Running a cycle test on a controller that is experiencing TLE Over-temperature faults will damage the controller's motor driver chip after approximately 100 events. Refer to the TLE Mitigation Tech Brief for information on preventing TLE faults if you wish to cycle test a system on a high friction installation.

References

pwd	Requires a minimum user level of "Installer"
c ctfl	Cycle Count Fault Limit sets the maximum friction faults per open/close cycle before failure
c fsat	Disabling "Span Adjust" will decrease the cycle time by ~5s / cycle.
Tech Brief	Cycle Testing
Tech Brief	TLE Mitigation

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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

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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. • "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. **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. • 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.

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G3 Advanced Programming Guide

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

Terms Used in this Document

List of terms, definitions and equivalent terminology that will be used interchangeably throughout this document

Terms	Definition & Equivalent Terms
90 Degree	Installation where panels meet in a corner and open 90 from each other
Bi-Part	Installation where panels part in the middle and go left and right
CLI	Command Line Interface. Configuration method use by the G3
Clutch	Connects or disconnects motor from the G3 belt drive system
Config Commands	CLI persistent settings that affect the function, options, or behavior of a G3
cT	Short for the Cycle Test function
Developer	Same as Installer but with access to more technical CLI commands
Egress Mode	"Close Behind Mode"
Encoder	Digital count used by the G3 to determine panel position in the span
Factory	INMOTION support personnel for the G3 & G3 Accessories
Flashing	Act of installing the "code" that runs inside a G3 or G3 accessory.
Friction Fault	Same as "Soft Touch" or over-current
Friction Profile	Recorded motor power measurements across a door span
G1	INMOTION's first Generation (544/545) Single & Dual Motor Controllers
G2	INMOTION's previous Generation 2 (561) Single Motor Controller
G3	INMOTION's Generation 3 Controller or *this* controller
Help Commands	CLI informative commands that do not persist system changes after a reboot
High Friction Install	HFI refers to an installation that has a high friction load (very heavy pull required)
Installer	Trained or Untrained technician servicing a G3 automation system
Jam	Position where panel 1 is closed with fully engaged weatherstrip
Mag Brake	Magnetic brake that holds panel positions using an electro-magnet
Move Assist	Eq: "Motion Assist Mode" Powered move upon a slight manual panel movement
Normal Mode	Normal runtime mode when no special features such as Egress are enabled
One Button Operation	"Simplicity Mode", "ADA Mode". Single button for Open, Close & Stop
One-Way	Installation where panels open left to right or right to left only
Operator	Homeowner/End User or Installer when operating or testing a G3 system
Partial Move	A mid-span panel move. Moves that do not start at the programmed open or close
Party Mode	Open on motion. "Entertainment Mode"
Persistent	Refers to parameters that are saved and restored after a power loss or reboot
Programming	Act of configuring a G3 Controller for a particular door frame or installation
Reboot	Restarting or power cycling a G3 or component. A form of "reset"
Soft Touch	Stopping the door when movement is impeded by object or person for safety
Span Adjust	Option to change the full or programmed open position of a door
Special Features	"Lifestyle Modes" or modes other than Normal runtime mode.
Tech Briefs	Short, topic specific, sections published from this document
Terminal	Wired or wireless display used to display the G3 configuration data & options
TLE	Indicates a motor controller fault either Over-temperature or Over-current
UL325	UL Safety Standard for automatic doors & windows

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