Genus™ G1
Users Manual

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Declarations

Control Module, Inc.

Model: Genus™ G1
Serial: 3010

FCC Compliance

The Control Module Model Genus™ G1 Time and Attendance Terminal conforms to the requirements of FCC PART 15, SUBPART B, CLASS A, 2004 for radiated and conducted emissions without modifications.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Introduction

Welcome to Control Module's Genus™ G1 Data Collection Terminal.

The "Genius of Genus" is that it offers an intelligent Java programming language and enables companies – for the first time – to realize the maximum potential of their workforce management terminals, by using them as a powerful interface to connect highly customized applications and the databases that fuel them. The Genus™ open and modular platform is designed to provide fast, accurate, and reliable data collection for any industrial application. The Genus™ Terminal is ideal for time and attendance, workforce management, employee self-service, shop floor data collection, and access control. Genus™ is the intelligent and affordable decision for any organization.

Congratulations on your purchase!

Genus™ G1 Terminal

Terminal features are labeled in the pictures below for reference. Explanations of terminal features, user interface, hardware specifications and connections follow.

Terminal Front

4X20 Character
Backlit LCD Display

Optional Readers Include:
Biometric
Barcode
Mag Track 1
Mag Track 2
Proximity
Smart card

3X8 Membrane
Keypad
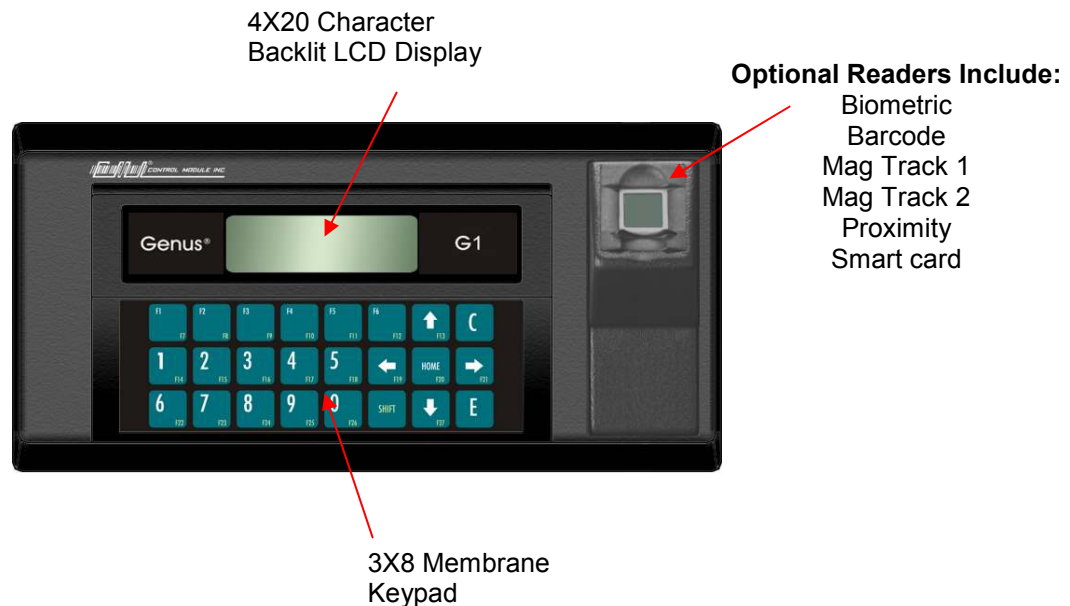
The User Interface

The user interface offers options for data entry into the Genus™ G1 terminal through the keypad and/or internal or external card readers. User output is via a 4 line by 20 character backlit LCD display. The terminal also has the capability to produce different tones to help guide the user.

The Genus™ G1 terminal offers additional display control aside from the ability to write to and clear the entire display. These include the ability to clear a single display line, position the cursor, and select the cursor type (invisible, block, underscore, or blinking underscore).

Terminal Features

Memory Configuration The Terminal is equipped with 32 Mb of dynamic memory, 2 Mb of non-volatile memory for data retention, and 8 Mb of Flash memory for program storage. An additional 32 Mb of Flash memory for user defined long term storage is available as an option.

Programmability The Terminal is designed to be a Java-capable embedded data collection platform. Users may create, load, and execute J2ME Personal Profile 1.1 compliant applications that utilize existing OEM classes for display, keyboard, biometric, barcode, magnetic, proximity, Mifare™, iClass®, and Digital inputs and outputs (DI/DO). A software development kit (SDK) is available separately that provides development documentation, development support, and samples for the use of the OEM classes.

Digital I/O The Terminal provides program control of integrated Digital Outputs for relay control, two (2) Digital Inputs, and includes a Tamper sense.

Host Interface The Terminal comes with a dedicated Ethernet port for connection to 10/100 Ethernet networks. DHCP or static IP address configuration are supported.

Display The Terminal is equipped with a 4 line by 20 character liquid crystal display (LCD) The full alphanumeric character set is supported. LED back-lighting provides viewing in low light conditions. The display has a CMI standard lens.

Keypad The Terminal is equipped with a 3 x 8 membrane keypad, with three horizontal rows of eight keys each. The terminal is available with a CMI Standard Overlay, or a custom overlay created per customer requirements.

Power The configuration uses a 15 VDC 1 amp power pack to power the terminal. The power pack is UL listed and CSA certified.

Audio Annunciator This is programmable with variable tone and duration capability.

Terminal Hardware

Hardware Specifications

Keypad - with local buffering
10 Numeric Keys (0 through 9)
6 Function Keys expandable to 27 using the shift key
Function keys alternately can produce punctuation symbols.
Clear and Enter Keys
Home, Up, Down, Left, and Right arrows
Shift key

Display
4 Line by 20 Character Backlit LCD Display

Media Readers
2 Internal reader ports, 1 External reader port, 1 Barcode wand port
Magnetic Track 1 and 2
Barcode Code 39 and code 39 full ASCII, Interleaved 2of5, Code 128
Proximity allows up to a 99 bit badge (HID, Motorola™)
Smartcard (Mifare™, iClass®)
Biometrics (Fingerprint)

Beeper
Variable duration monotone beep
Variable duration warble beep
Emit a series of beeps

Host Interface
RS232
10/100 Ethernet
Modem option via serial port (PPP)
WiFi option

External Control
Relay Output—30VDC @ 1A

Power Requirements
15 -24VDC

Environment
Operating 0°to 50°C (32° to 122°F)
Storage -40° to 66°C (-40° to 151°F)
Humidity 0 to 90 % non-condensing

File System Specification

The Terminal provides file systems on different hardware devices. Instead of using the common alphabet notation for file system devices ('A:', 'C:'), the Genus™ terminal identifies the file storage devices as:

Storage Device	Memory size	Location
'\flashdisk'	8 Mbytes std. (40Mb optional)	Seldom write, frequent read. Used for firmware, user applications, and application data.
'\ramdisk'	2 Mbytes	High read/write usage. Data is preserved through power loss. Often used for transaction (punch) storage.
'\scratchdisk'	5 Mbytes	High read/write usage. Temporary file storage. Not preserved through power outage.

Relay Configuration

The relay port brings out the three relay connections (common, normally open, normally closed) plus ground. The common can optionally be connected to an internal current source (nominally, 12 volts at 100mA—over-current protected). The internal current source is useful when driving external buzzers, lamps, or other low current, low voltage devices (or a larger external relay for that matter) since it requires no external power source.
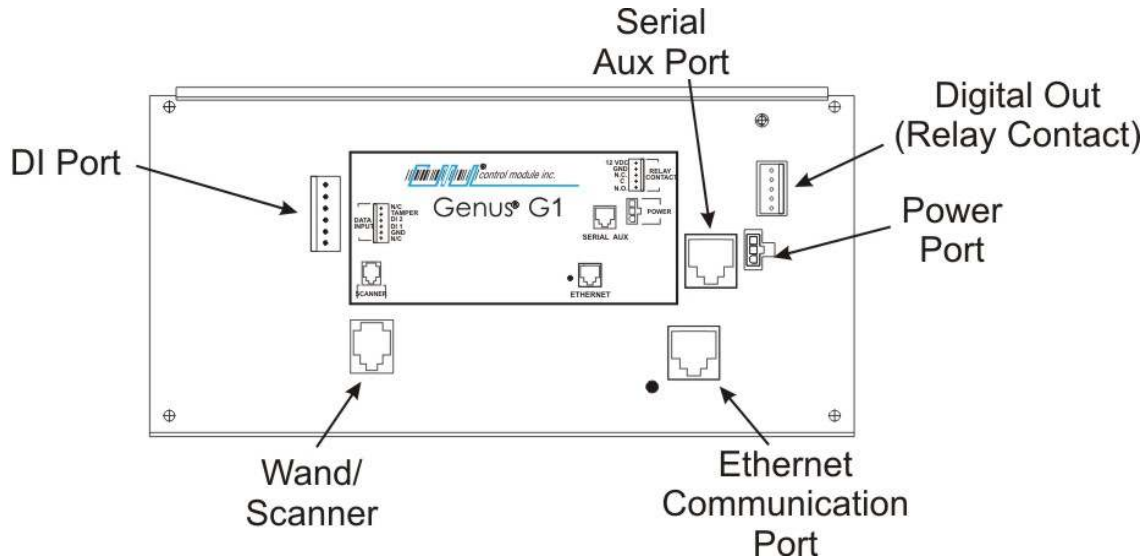
The Digital Output configuration design supports the option for both sourcing and non-sourcing DO. The DO is a Form C contact relay rated for 1 amp @ 30V AC/DC.

Relay Port—Internal Power	
Pin	**Function**
1	Normally open contact
2	Common contact
3	Normally closed contact
4	Ground
5	VUNREG

Terminal Connections

Terminal Back

Ethernet Port	
The Ethernet port supports the 10/100BASE-T network connections	Connector: 8 position RJ45. Pinouts: 1 = Receive + 5 = Input Power 2 = Receive – 6 = Transmit – 3 = Transmit + 7 = GND 4 = Input Power 8 = GND

Serial Aux Port	
The Serial Aux port provides a serial connection to interface to serial peripheral devices or for modem communications.	Connector: 8 position RJ45. Pinouts: 1 = DCD 5 = GND 2 = RXD 6 = DSR 3 = TXD 7 = RTS 4 = DTR 8 = CTS

Wand / Scanner Port	
The wand port maintains the standard CMI pinouts with the RJ11 connector.	Connector 6 position RJ11 Pinouts: 1 = Shield 4 = N/C(No Connection) 2 = Ground 5 = Data 3 = +5 VDC 6 = Vunreg

Digital Input

The digital input with tamper switch is included with this terminal configuration. This option detects attempts to interfere with normal operation of the terminal. A pluggable connector is supplied with the terminal.

Connector 6 position Terminal Block
Pinouts:
    1 = No Connection (N/C)
    2 = GND
    3 = DI 1
    4 = DI 2
    5 = DI 3 (TAMPER)
    6 = No Connection (N/C)

Digital Output

The Digital Output configuration design supports the option for both sourcing and non-sourcing DO. The DO is a Form C contact relay rated for 1 amp @ 30V AC/DC. The DO can be used to control or monitor doors, bells, and alarms.

Connector 5 position Terminal Block
Pinouts:
    1 = Normally Open (N.O.)
    2 = Common (C)
    3 = Normally Closed (N.C.)
    4 = Ground
    5 = Vunreg

Power Port

Power is supplied to the terminal via a CMI standard power port on the backplate of the terminal.

Connector 3 position locking
Pinouts:
    1 = Earth Ground
    2 = +15V to 24VDC
    3 = Power Ground

UPS

An optional UPS is available to power the terminal in the event of a main power failure or brownout conditions.

Connector 3 position locking
Pinouts:
    1 = Earth Ground
    2 = +15V to 24VDC
    3 = Power Ground

Module Options

The Genus™ G1 Terminal provides UPS, Modem and WiFi Module Options.

UPS 2050-010

UPS Module. The 2050-010 module provides backup power to the Genus™ G1 terminal and integrated readers and communications options in the event of a main power failure and brownout conditions.

Battery. The 2050-010 module uses a Ni-Cd 8 cell arrangement (9.6V @ 1000 mAh) to provide DC backup power to the processor and I/O modules. It has a wide charging voltage range (+15VDC to +24VDC unregulated). The battery will have a full charge after 20 hours at a trickle charge rate.

Modem 2042-301

Modem Comm Module. The 2042-301 module provides communication level conversion from a standard Telco line to RS232 levels for Genus™ G1.

56K Baud Modem. The modem is a 56K baud Auto Answer/Auto Connect modem which connects via the RJ11 Telco Port (Modem Host). It features Data Mode v.92
(57600 BPS) and supports enhanced "AT" commands.

WiFi 3046-100

WiFi Comm Module. The 3046-100 communications module provides LAN and Internet connectivity with the standard Ethernet interface to applications. The module is interoperable with industry standard 802.11 LAN and Internet connectivity and provides advanced security standards such as WEP and WPA. It provides a complete, reliable transparent wireless connection between a G1 Terminal and a network host via an RF access point.

Installation

The installation process proceeds with the bulleted items below. All installation steps are discussed in the Installation Guide for Genus™ G1 (3010-IG-0001), however, follow only those that apply to your installation requirements.

- Wall Mount Installation & Recommended Height
- Grounding the G1 Terminal
- Wand / Scanner and Ethernet Connections
- Serial Aux Port Connection
- Digital Input Connection
- Digital Output Connection
- Power and UPS Connections
- Modules
- WiFi Antenna
- WiFi Module Connections
- Modem Module Connections
- Close & lock the Terminal and Store the Key

Power-Up

Several displays with the following messages appear in sequence during the normal G1 Terminal power-up process. In addition, during power-up, the Genus G1 terminal also executes an internal firmware test.

G1 Loader splash screen displays program and version numbers

> **Loader G1**
> **Control Module Inc.**
> **Program: 342-001**
> **VX.XX.XX**

Followed by "**Loading Genus**"

> **Loading Genus**

Genus splash screen displays program and version numbers

> **Genus**
> **Control Module Inc.**
> **Program: 341-001**
> **VX.XX.XX**

Initializing Network displays the default IP of the terminal

> **Initalizing:**
> **Network**
>
> **IP: 192.168.0.62**

Initializing Flash displays, and IP address remains for reference

> **Initalizing:**
> **Flash**
>
> **IP: 192.168.0.62**

Initializing RTC

> **Initalizing:**
> **RTC**
>
> **IP: 192.168.0.62**

Initializing System Files

> **Initalizing:**
> **System Files**
>
> **IP: 192.168.0.62**

Initializing Java VM

> **Initalizing:**
> **Java VM**
>
> **IP: 192.168.0.62**

Online Mode

Following installation and power-up the G1 Terminal has completed the boot process and transitions to a Java application that begins its functionality and data collection as defined by the user.

Starting:
   <user's app>

If no user defined program has been loaded the terminal will display the CMI reader setup application.

See *Loading a Customer Defined Java Application* in the Reference section of this document.

Offline Mode

The offline mode is utilized during installation and setup, when the functionality of the Genus™ G1 terminal needs to be tested or if the communications setup requires a change. To accomplish this, the Terminal must be placed in Offline Mode.

Keypad Layout:

Entering Offline

Offline Mode for the G1 Terminal Setup Mode is entered during power-up as the Terminal initializes. Press the **C** and **E** keys simultaneously from the keypad during the second set of power-on beeps. The second set of power-on beeps occur just after the following message.

> **Initalizing:**
> **Java VM**
>
> **IP: 192.168.0.62**

At this point as the Terminal beeps it transitions to the online application, unless the **C** and **E** keys are pressed.

(note: CMIApp name may differ depending on what application is in the terminal).

> **Starting:**
> **CMIApp**

When the **C** and **E** keys are pressed the display changes to the following message. Indicating the terminal has entered offline mode.

> **Starting:**
> **Setup**

The Genus™ G1 terminal stops and waits at the 'Terminal Info' prompt for keypad entry, as shown below, unless a PIN number has been setup then the terminal will request a PIN:

No PIN set

```
TERMINAL INFO?


              <UP><DWN><E>
```

PIN previously set

```
ENTER PIN:


                         <E-C>
```
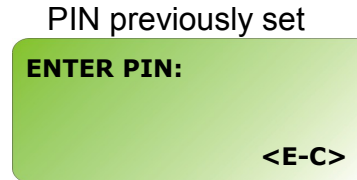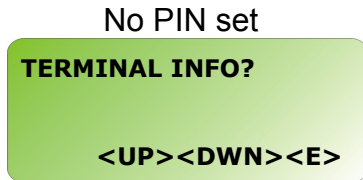
Note: Enter PIN prompt will only appear if PIN number has been setup in "SETUP PIN" from main menu during a previous offline session.

Menu Options in Offline Setup Mode

TERMINAL INFORMATION
CLEAR RAM
CLEAR FLASH
NETWORK SETUP
WIFI NETWORK SETUP
WIFI NETWORK INFO
QUICK CHECK
COMM TEST
READER SETUP
SETUP PIN
SETUP TIME ZONE
DIAL-UP NETWORK
TADMIN SETUP
EXIT SETUP

Use the arrow direction keys for ⬇ and ⬆ to scroll through the main menu. Press Enter E to select an option from the main menu and follow the key directions displayed.

Offline Mode – User Operational Displays

TERMINAL INFO
Provides basic terminal hardware information.

Press Enter 　E　 to select.

> **TERMINAL INFO?**
>
> **<UP><DWN><E>**

The ↓ or ↑ keys scroll through terminal information such as:

> **TERMINAL INFO?**
> **<UP><DWN><H>**
> **MACHINE NAME:**
> **GENUS408300**

Machine Name	Terminal name assigned
MAC Addr	Displays terminal's MAC Address
Hardware Version	For CMI reference
API	Classes/API Version
Program Info	Genus/System version
Serial No	Provides service information (Note: may not match terminal serial #)
MFGR Date	For CMI reference

Press **HOME** to return to main menu options.

Use the ↓ key to scroll to next item on menu.

CLEAR RAM

Clears the '\ramdisk' on the terminal, typically erasing transaction data. See the File System Specification for more detail on the data cleared.

Press [E] to select.

> **CLEAR RAM?**
>
> **<UP><DWN><E>**

CLEAR RAMDISK

Press [E] to CLEAR RAMDISK.

Press **HOME** to abort.

> **CLEAR RAM?**
> **<E><H>**
> **CLEAR RAMDISK?**
> **'E'=YES 'H'=ABORT**

If [E] is selected, a warning message will appear, as shown.

> **CLEAR RAM?**
> **<E><H>**
> **DATA WILL BE LOST!**
> **'E'=YES 'H'=ABORT**

User is required to press [E] again to CLEAR RAMDISK or press HOME to abort.

CLEAR FLASH

Clear Flash will clear the '\flashdisk' on the terminal erasing everything except Classes.jar, App.jar, and Genus App.

Note: This does not clear firmware or the user application.

Press [E] to select.

CLEAR FLASH

Press [E] to CLEAR FLASH

Press **HOME** to abort.

If [E] is selected, a warning message will appear, as shown.

User is required to press [E] again to CLEAR FLASH or press HOME to abort.

Display 1:
```
CLEAR FLASH?

      <UP><DWN><E>
```

Display 2:
```
CLEAR FLASH
            <E><H>
CLEAR FLASH?
'E'=YES  'H'=ABORT
```

Display 3:
```
CLEAR FLASH
            <E><H>
DATA WILL BE LOST!
'E'=YES  'H'=ABORT
```

NETWORK SETUP

Network Setup provides the ability to configure the terminal's network parameters, including DHCP, IP address, gateway, subnet mask, DNS servers, and telnet menu.

Press [E] to select.

> **NETWORK SETUP?**
>
> **<UP><DWN><E>**

ENABLE DHCP

This turns on the terminal's ability to obtain an IP address automatically from a DHCP server on the local network.

Use the [↓] or [↑] key to set to Yes or No.

Press [E] to enter choice and advance to next network setup option.

> **NETWORK SETUP**
> **<UP><DWN><E><H>**
> **ENABLE DHCP**
> **N**

Note: If Y is selected, next network setup will advance to ENABLE TELNET.

TERMINAL IP

Specify a static IP address. This screen will not appear if DHCP is enabled.

If DHCP is not enabled, then, use 0-9 and the [→] or [←] keys to advance or return through fields.

> **NETWORK SETUP**
>   **<0-9><E><H>**
> **TERMINAL IP:**
> **192.168.000.064**

Press [E] to enter choice and advance to next network setup option.

SUBNET MASK
Specify a subnet mask for the terminal. This screen will not appear if DHCP is enabled.

Use the ⬇ or ⬆ to scroll up or down through valid subnet mask numbers.

Press E to enter choice and advance to next network set-up option.

```
NETWORK SETUP
 <UP><DWN><E><H>
SUBNET MASK
255.255.255.255
```

GATEWAY IP
Specify a gateway address for the terminal. This entry is optional if the terminal does not need to communicate with devices outside the immediate subnet. This screen will not appear if DHCP is enabled.

Use 0-9 and the ➡ or ⬅ keys to advance or return through fields.

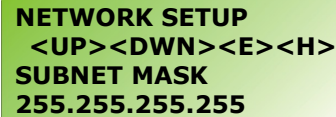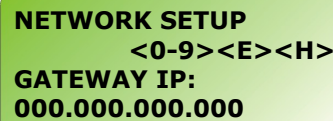Press E to enter choice and advance to next network setup option.

```
NETWORK SETUP
       <0-9><E><H>
GATEWAY IP:
000.000.000.000
```

PRIMARY DNS
Specify a primary Domain Name Server (DNS). This entry is optional if the terminal does not need access to DNS services. This screen will not appear if DHCP is enabled.

Use the ➡ or ⬅ keys to advance or return through fields.

Press E to enter choice and advance to next network setup option.

```
NETWORK SETUP
       <0-9><E><H>
PRIMARY DNS:
000.000.000.000
```

SECONDARY DNS

Specify a secondary Domain Name Server (DNS). This entry is optional if the terminal does not need access to DNS services. This screen will not appear if DHCP is enabled.

Use the ➡ or ⬅ keys to advance or return through fields.

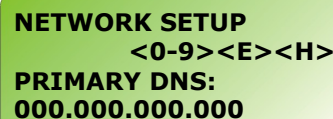Press E to enter choice and advance to next network setup option.

```
NETWORK SETUP
        <0-9><E><H>
SECONDARY DNS:
000.000.000.000
```

ENABLE TELNET

Enables the telnet interface to the terminal.

Use the ⬇ or ⬆ keys to set to Yes or No.

Press E to enter choice and advance to next network setup option.

```
NETWORK SETUP
 <UP><DWN><E><H>
ENABLE TELNET:
Y
```

TELNET PORT

Select a port to listen on for telnet configuration. This screen will not appear if the telnet interface is disabled.

Pressing C will zero out the Telnet port settings.

Use 0-9 and the ➡ and ⬅ keys to advance and return.

Press E to enter choice and advance to next network setup option.

```
NETWORK SETUP
    <0-9><E><C><H>
TELNET PORT:
09999
```

TELNET PIN

Sets up a password for the telnet configuration. This screen will not appear if the telnet interface is disabled. **Note:** This PIN differs from the Offline mode PIN.

Use 0-9 and the ➡ and ⬅ keys to advance and return.

Press **E** to enter choice and advance to next network setup option.
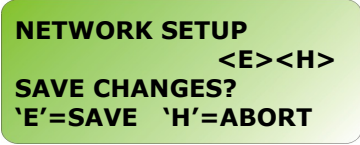
```
NETWORK SETUP
    <0-9><E><C><H>
TELNET PIN:
█
```

SAVE CHANGES

Saves all of the network changes made.

Press **E** to save and HOME to abort any changes.

```
NETWORK SETUP
         <E><H>
SAVE CHANGES?
'E'=SAVE  'H'=ABORT
```

WIFI NETWORK SETUP

This is explained in the WiFi section of this document.

Press [E] to enter the WiFi setup.

> **WIFI NETWORK SETUP?**
>
> **<UP><DWN><E>**

Note: If an invalid IP address has been assigned the following message may occur for the WiFi Network Setup and the WiFi Network Info.

> **WIFI NETWORK SETUP?**
>
> **Make sure Genus has a valid IP address**

WIFI NETWORK INFO

WiFi information provides a resource for firmware and version releases and Link connectivity status.

Press [E] to enter the WiFi information

> **WIFI NETWORK INFO?**
>
> **<UP><DWN><E>**

Use the [↓] or [↑] keys to scroll through WiFi information.

> **WIFI NETWORK INFO?**
> **<UP><DWN><H>**
> **MODULE FIRMWARE:**
> **4.0.7.1**

> **WIFI NETWORK INFO?**
> **<UP><DWN><H>**
> **RADIO FIRMWARE:**
> **1.1.1.111.8.4.0.145**

> **WIFI NETWORK INFO?**
> **<UP><DWN><H>**
> **VERSION:**
> **PS00352**

> **WIFI NETWORK INFO?**
> **<UP><DWN><H>**
> **LINK STATUS:**
> **Association Incomp.**

QUICK CHECK

While in Quick Check mode the internal readers and wands attached to the wand port can be tested. If there are values currently displayed, once a read takes place from a card or wand the values in the display are replaced by the values from the card or wand read.

To enter Quick Check Press [E] to select.

```
QUICK CHECK?


        <UP><DWN><E>
```

```
QUICK CHECK?
    <0-9><E><C><H>
```

At this point, all key-presses except the [E] key will be echoed on the screen. Up to 40 characters can be entered encompassing the lower two lines of the display. The top two lines of the display are reserved for terminal messaging while in offline mode. Data is displayed from the lower right-hand corner and scrolls left. The data wraps from the beginning of line 4 to the end of line 3. In this way, the most recently pressed key is always displayed in the last character position on the screen.

COMM TEST

Tests the Serial Aux port, which is used to connect to serial devices such as a modem or a serial printer. This test requires special test equipment. Contact CMI Technical Support for additional information.

Press [E] to select.

```
COMM TEST?


       <UP><DWN><E>
```

```
COMM TEST
<F1=MODEM><E=PRT><H>
```

Note: Modem parameter configuration can be found in the Genus API documentation.

READER SETUP

Sets up the reader connected to the internal reader port.

Press [E] to select.

SELECT READER TYPE

Use the [↓] or [↑] key to scroll through reader types: PROXIMITY, MAGNETIC, BARCODE, BIOMETRIC, or NONE.

Press [E] to save settings and to return to MAIN MENU.

```
READER SETUP?


       <UP><DWN><E>
```

```
READER SETUP?
 <UP><DWN><E><H>
SELECT READER TYPE:
PROXIMITY
```

SETUP PIN
Personal Identification Number (PIN) that is used for security to prevent unauthorized entry into the setup mode.

Press [E] to select.

```
SETUP PIN?
```

Use 0-9 to enter pin. Use the [C] key to

Press [E] to save settings and to return to
MAIN MENU.

```
SETUP PIN
    <0-9><E><H>
ENTER SETUP PIN:
    <UP><DWN><E>
```

Note: To remove the SETUP PIN after it is assigned and saved the user must know

the PIN to return to this screen. Press the clear key to remove the PIN,

and [E] to save.

DIAL-UP NETWORK

Sets up the information associated with the modem connections. Modem parameter configuration can be found in the Genus API Documentation.

Use the [↓] or [↑] keys to scroll through dial-up network aliases that were created during a previous session.

```
DIAL-UP NETWORK
<UP><DWN><H><E><C>
NEW CONNECTION?
'E' = ADD NEW
```

To add a new connection press [E].

```
NEW CONNECTION
<UP><DWN><0-9><E><H>
ALIAS:
```

To enter a new Alias, use the [↓] or [↑] keys to scroll for alpha and special characters. Use 0 through 9 numeric keys for values.

```
NEW CONNECTION
<UP><DWN><0-9><E><H>
LOGIN:
```

Press [E] to accept the new Alias.

```
NEW CONNECTION
<UP><DWN><0-9><E><H>
PASSWORD:
```

The Alias setting is followed by Login, Password, and Phone number settings.

```
NEW CONNECTION
<UP><DWN><0-9><E><H>
PHONE:
```

All settings are immediately saved to the Terminal when [E] is pressed.

H HOME returns to Terminal Info.
C Delete will delete an existing Alias and associated settings.
E Edits an existing Alias and associated settings.
F1 Tests the modem connection.

```
DIAL-UP NETWORK
<UP><DWN><H><E><C>
ALIASNAME 'F1'=TST
'E'=EDIT      'C'=DELETE
```

SETUP TIME ZONE
Sets the time zone that the terminal resides in.

Press [E] to select.

```
SETUP TIME ZONE?


    <UP><DWN><E>
```

Use the [↓] or [↑] key to scroll through time zones.

```
SETUP TIME ZONE?
 <UP><DWN><E><H>
SELECT TIME ZONE:
EST
```

Press [E] to save settings and to return to MAIN MENU.

TADMIN SETUP
Terminal Administration is used to configure host side software and communication connections. This is only required when working with CMI's TAdmin host software.

Press [E] to select.

```
TADMIN SETUP?


    <UP><DWN><E>
```

Use the [↓] or [↑] key to enable (Y) or disable (N) TAdmin.

```
TADMIN SETUP?
 <UP><DWN><E><H>
ENABLE TADMIN:
Y
```

Press [E] to enable and enter TAdmin settings for Server IP, Server Port, and Local Port.

```
TADMIN SETUP?
        <0-9><E><H>
SERVER IP:
000.000.000.000
```

Values 0 through 9 are entered via the keypad for the TAdmin settings.

H HOME returns to Terminal Info.
C Clear zeros the current value for the Server Port and Local Port settings.
E Saves TAdmin changes

```
TADMIN SETUP?
    <0-9><E><C><H>
SERVER PORT:
00000
```

```
TADMIN SETUP?
    <0-9><E><C><H>
LOCAL PORT:
02001
```

```
TADMIN SETUP?
        <E><H>
SAVE CHANGES?
'E'=SAVE 'H'=ABORT
```

EXIT SETUP
Exits offline mode and returns to the power up sequence.

The user is prompted whether or not they wish to exit Setup in Offline Mode.

Pressing the [E] key reboots the terminal and cycles through the power-up sequence.

> **EXIT SETUP?**
>
> **<UP><DWN><E>**

Genus™ WiFi Installation

Introduction

The 3046 WiFi Module provides wireless network connectivity for the CMI Genus™ series terminals. The WiFi Module functions as an Ethernet to Wireless LAN bridge and connects to the Genus™ terminal's RJ-45 Ethernet port. The WiFi Module will provide a seamless connection to an 802.11b compliant Access Point (AP) that is within range. This WiFi Module is compliant with the IEEE 802.11b standard and provides security and encryption functions for a secure and reliable network.

This document describes the Genus™ WiFi installation and setup. It also provides troubleshooting information and a Code 39 barcode table to assist in the setup of the Module using a digital barcode wand. This provides easy access to special characters that are not available on the Genus™ terminal keypad, but may be required for SSID, WEP Keys, and other security parameters.

Please note that the WiFi Module may be referred to as "Module" within this section of the document.

WiFi Module

Status LEDs Comm, Link, Power
Antenna Cable Connection
Power LED
Power Port
ON/OFF Switch
RJ45 Connection to G1 Terminal
Ethernet Cable (Supplied)
Base Mounting Bracket
Antenna
Antenna Base
Mounting Screws (Supplied)
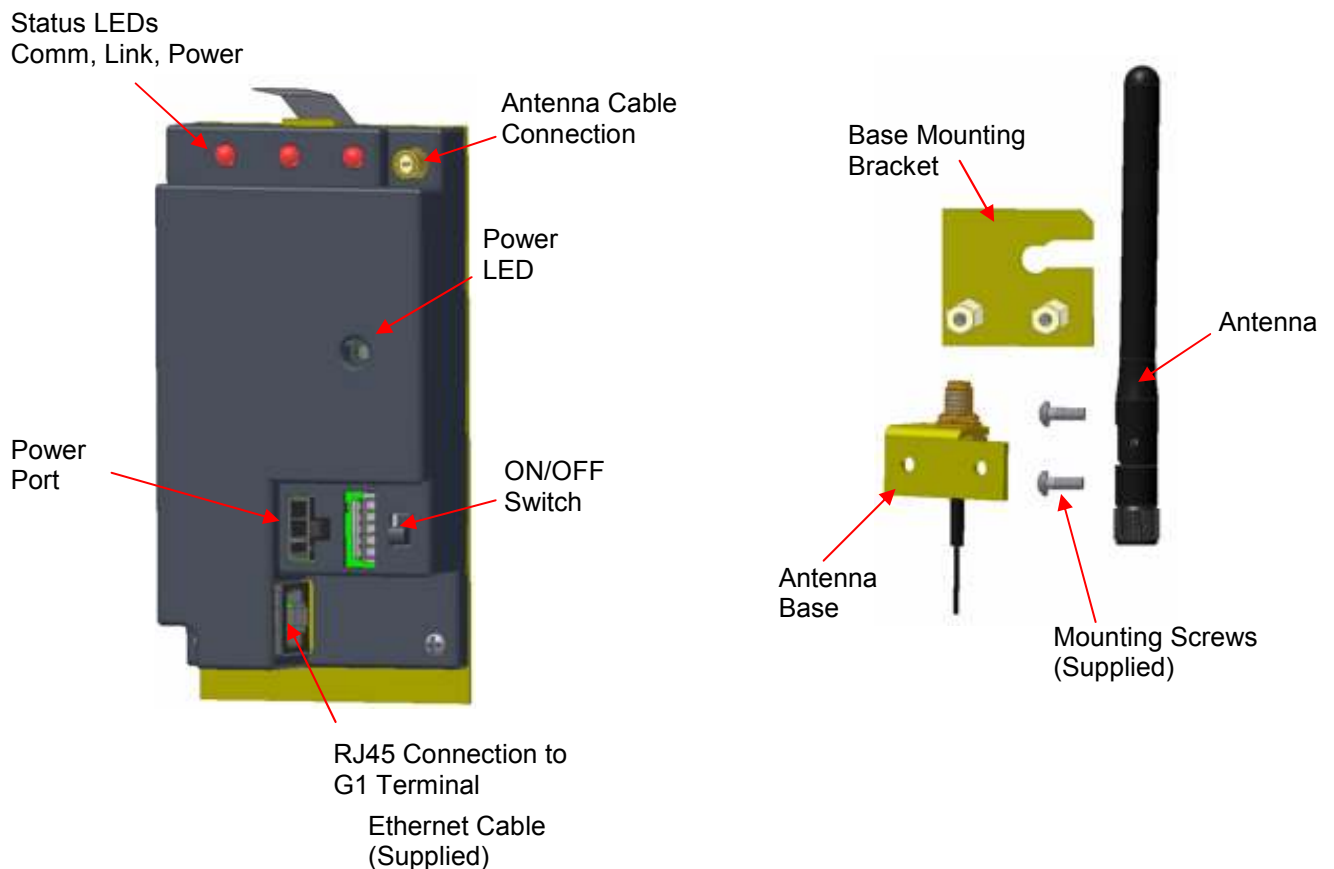
Hardware Installation

Antenna and bracket assembly to the G1 Base

The antenna assembly is mounted directly to the G1 Base.
- Make sure the knockout for the antenna has been removed from the base.
- Loosen the top right base screw to fit this bracket.
- The Mounting Bracket (Figure 1) slides under the base screw at the top right corner.
- Re-tighten the base mounting screw.
- The Antenna (Figure 2) can be tightened down to the Antenna Base (Figure 3).

Note: The Antenna Nut should be tightened enough so that when the antenna is rotated the nut does not loosen.

- The Antenna portion of the assembly fits through the knockout at the top of the base.
- Two supplied screws secure the antenna assembly to the base mounting bracket.

Antenna knockout
position - Top of base.

Loosen this
mounting screw.
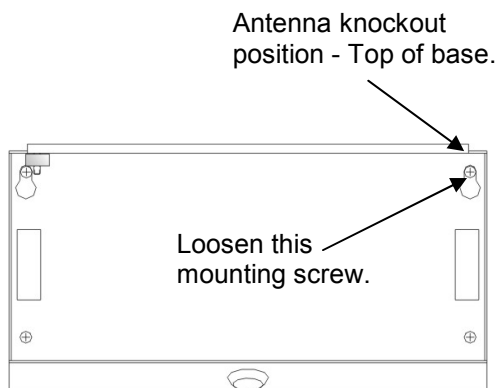
Figure 1
Base mounting Bracket

Figure 2
Antenna

Figure 3
Antenna Base

Adding the WiFi Module

- The 3046 WiFi Module has a spring tab that must make contact with the ground bar inside the top of the base.
- Press the 3046 WiFi Module into the base until it snaps securely in place.

Spring Tab
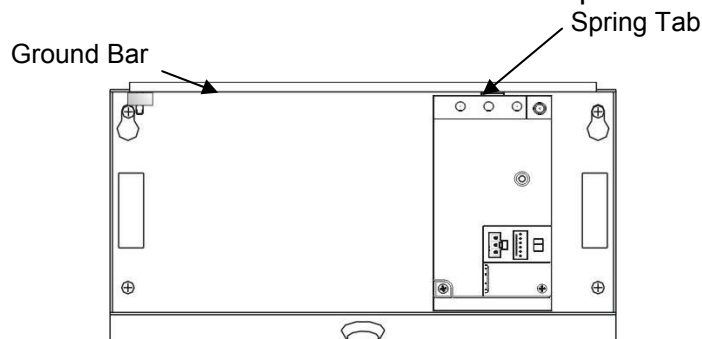
Ground Bar

Adding the UPS (Option)

- The 2050 UPS has a spring tab that must make contact with the ground bar inside the top of the base.
- Press the 2050 UPS into the base to the left of the WiFi Module until it snaps securely in place.
- Momentarily depress the disconnect switch on the 2050 UPS, to ensure the battery is disconnected. Should the yellow LED be lit the disconnect switch must be pressed again.

Note: New Battery modules are shipped in the discharged mode and must be powered to attain full capacity, 1000 mAh require 20 hours to be fully charged.
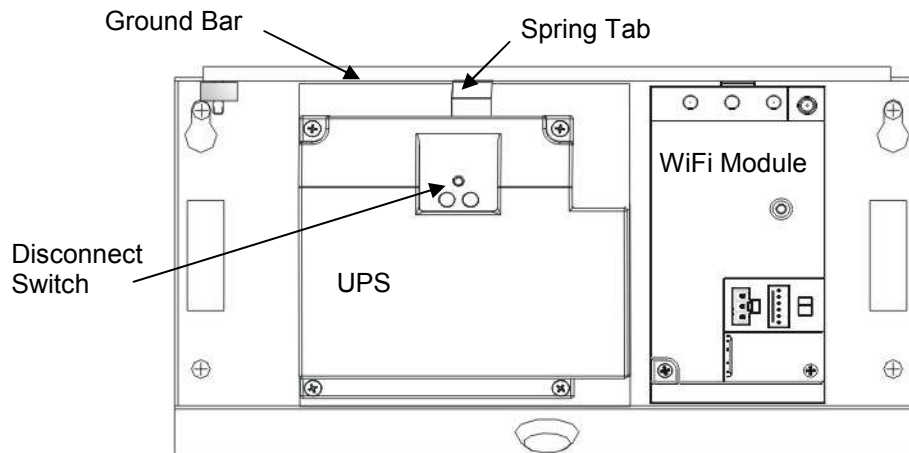
G1 WiFi Connections – Without UPS

- Ensure the WiFi Module power switch is off.
- Connect Antenna cable to WiFi Module, secure onto the Module.
- Connect Ethernet cable from WiFi Module to the G1 Terminal, RJ45 connections.
- G1 Y-Cable connection for power.
  - Connect the 3-position connector from the power Module to the Y-Cable
  - Connect one end of the Y-Cable to the WiFi Module and the other to the G1 Terminal.

  Note: To make these connections, the Y-Cable and the Ethernet cable are shipped with the WiFi Module.

- Ensure the WiFi Module power switch is **on** prior to Terminal power-up.
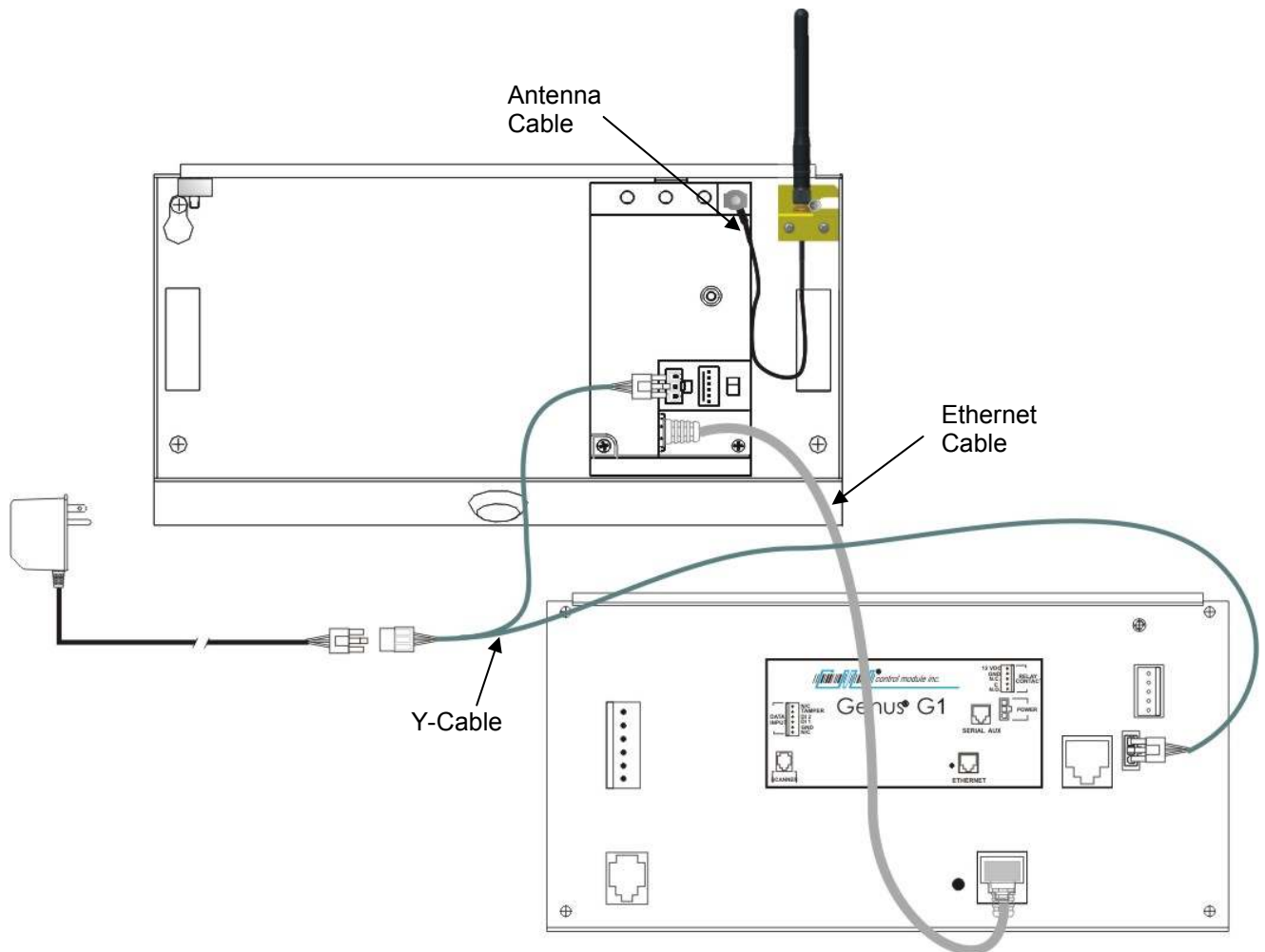
G1 WiFi with UPS Connections

- Ensure the WiFi Module power switch is off.
- Connect Antenna cable to WiFi Module, secure onto the Module
- Connect Ethernet cable from WiFi Module to the G1 Terminal, RJ45 connections.
- Connect the power Module to the UPS.
- G1 Y-Cable connection for power.
    - Ensure the UPS disconnect switch has been pressed.
    - Connect one end of the Y-Cable to the WiFi Module and the other to the G1 Terminal.
    - Connect the 2050 UPS cable to the Y-Cable.

- Ensure the WiFi Module power switch is **on** prior to Terminal power-up.
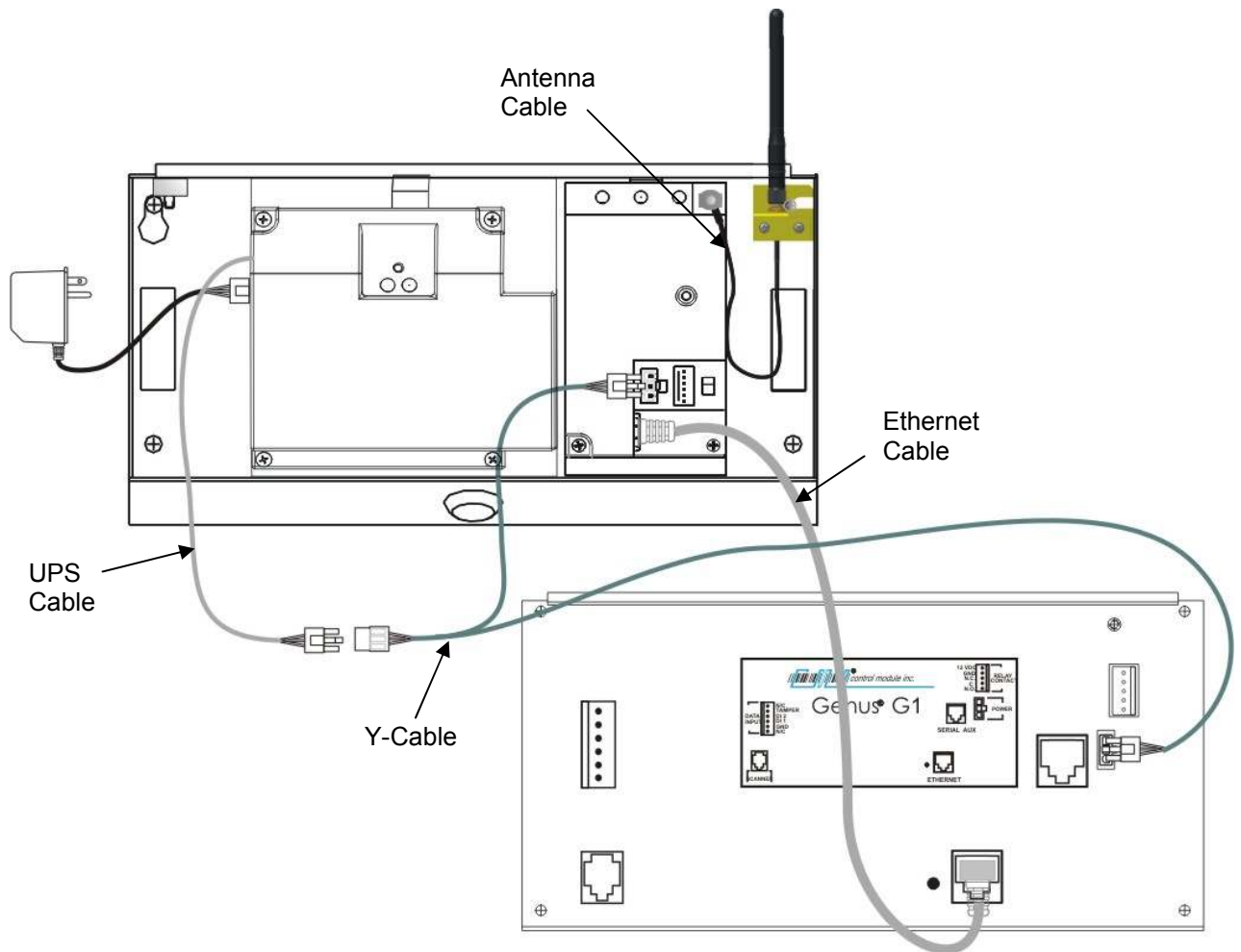
Genus™ WiFi Configuration/Setup

WiFi Module

The WiFi Modules are shipped with DHCP disabled, and all security modes turned off. If the Module successfully associates with an access point, the Link and Power LEDs will be green. If the Module is unable to associate with an access point, the Link LED will blink red and the Power LED will be green in color.

WiFi Module - Fallback

If DHCP is enabled and the WiFi Module has been powered up for 60 seconds without being able to associate with an access point, the Module will fallback to the following settings:

IP address:	192.168.0.68
Subnet Mask:	255.255.255.0
Gateway IP:	0.0.0.0

When the Module reaches the 60 second timeout, it will revert back to the fallback settings. The Power LED will change from amber to green and the Link LED will continue to blink red.

Genus™ Terminal

The Genus™ terminal must also have a valid IP address (Terminal DHCP turned off) in which the first three octets are 192.168.0.XXX, otherwise the Terminal will not be able to communicate with the WiFi Module installed.

DHCP and WiFi Module setup

Upon entering setup mode the user is given the option to enable (Yes) or disable (No) DHCP for the WiFi Module. If DHCP is disabled, the Terminal will prompt the user to enter network settings for the Module. These settings are stored by the Terminal allowing it to be able to go back into setup again as needed. If DHCP is enabled, and the Module is assigned an IP address by the DHCP server, the Terminal will not know the Module's IP setting and will not be able to go into setup.

However, the need to go back into setup once the Module associates with an access point and is running is unlikely. If there is a need to go into setup, the access point would have to be powered down or the Terminal would have to be moved out of range. After 60 seconds, the WiFi Module will revert back to its fallback settings and the user will be able to go into setup.

WiFi Module Setup screens

The Genus™ terminal needs to be in the Offline mode to get to the WiFi setup.

> **WIFI NETWORK SETUP?**
>
> **<UP><DWN><E>**

Enable DHCP: No – disables DHCP and requires the user to enter network parameters. Yes – enables DHCP and the network parameters are assigned by the DHCP server.

> **WIFI NETWORK SETUP**
> **<UP><DWN><E><H>**
> **ENABLE DHCP**
> **No**

With DHCP disabled the Terminal will prompt for network settings.

IP:

> **WIFI NETWORK SETUP**
> **<0-9><E>**
> **WIFI MODULE IP:**
> **192.168.000.068**

Subnet Mask:

> **WIFI NETWORK SETUP**
> **<UP><DWN><E>**
> **SUBNET MASK:**
> **255.255.255.0**

Gateway IP:

> **WIFI NETWORK SETUP**
> **<0-9><E>**
> **GATEWAY IP:**
> **000.000.000.000**

Primary DNS:

> **WIFI NETWORK SETUP**
> **<0-9><E>**
> **PRIMARY DNS:**
> **192.168.000.001**

Secondary DNS:

> **WIFI NETWORK SETUP**
> **<0-9><E>**
> **SECONDARY DNS:**
> **000.000.000.000**

SSID: The default value for the SSID is "any". The SSID can be up to 31 characters. This controls which AP the Module connects to. If using a digital wand refer to the Code 39 Programming Table in this document.

```
WIFI NETWORK SETUP
<UP><DWN><0-9><E>
SSID:
any
```

Security Type: The default is set to disabled. However, the Module provides, wep64, wep128, wpa-psk, options. See WiFi Module Security Settings, in this manual.

```
WIFI NETWORK SETUP
     <UP><DWN><E>
SECURITY TYPE:
disable
```

Save Changes? Changes saved by 'E' will be saved to the WiFi Module. 'H' aborts the setup changes placing the user at the first prompt for DHCP enable/disable.

```
WIFI NETWORK SETUP
          <E><H>
SAVE CHANGES?
'E'=SAVE 'H'=ABORT
```

WiFi Module Fallback Settings

Fallback mode can occur when the WiFi module is unable to associate with an access point after 60 seconds. The Terminal recognizes these settings and will allow a setup session. The LEDs on the Module revert to the Power LED changing from amber to green and the Link LED will continue to blink red.

Enable DHCP: Yes while in setup will bring up the Fallback settings prompt.

```
WIFI NETWORK SETUP
 <UP><DWN><E><H>
ENABLE DHCP
Yes
```

If "Yes" is entered the fallback settings from the Module become available to change. If "No" is entered the Module returns to the SSID prompt.

```
WIFI NETWORK SETUP
     <UP><DWN><E>
FALLBACK SETTINGS:
Yes
```

Fallback IP: Default is 192.168.000.068.

```
WIFI NETWORK SETUP
         <0-9><E>
FALLBACK IP:
192.168.000.068
```

Fallback Subnet: Default is 255.255.255.0.

```
WIFI NETWORK SETUP
    <UP><DWN><E>
FALLBACK SUBNET:
255.255.255.0
```

Fallback Gateway: Default is 000.000.000.000.

```
WIFI NETWORK SETUP
        <0-9><E>
FALLBACK GATEWAY:
000.000.000.000
```

WiFi Module Security Settings

The WiFi Module provides security setting options. With the default set to disabled each security field is available to enter settings as needed depending on the security chose.

Scroll through the security types, wep64, wep128, wpa-psk, and disable. Press 'E' to choose.

> WIFI NETWORK SETUP
> <UP><DWN><E>
> SECURITY TYPE:
> disable

> WIFI NETWORK SETUP
> <UP><DWN><E>
> SECURITY TYPE:
> wep64

> WIFI NETWORK SETUP
> <UP><DWN><E>
> SECURITY TYPE:
> wep128

> WIFI NETWORK SETUP
> <UP><DWN><E>
> SECURITY TYPE:
> wpa-psk

WPA-PSK refers to Pre-Shared Key used in Authentication.

> WIFI NETWORK SETUP
> <UP><DWN><0-9><E>
> SECURITY TYPE:
> wpa-psk

This is a shared key between the station and the access point (AP) and is entered as a passphrase. Input is 8 to 63 ASCII characters or 64 hex characters that cannot contain spaces. The passphrase must match the passphrase on the AP.

> WIFI NETWORK SETUP
> <UP><DWN><0-9><E>
> WPA PASSPHRASE
> ■

When the passphrase has been entered use either 'E' to Save or 'H' to Abort.

> WIFI NETWORK SETUP
> <E><H>
> SAVE CHANGES?
> 'E'=SAVE 'H'=ABORT

If using a digital wand, refer to the Code 39 Programming Table in this document.

Note: The G1 Terminal requires the exact number of hex characters for Passphrase and WEPkey values to advance to the next parameter setting.

WEP64 refers to 64-bit key length assigned to the WiFi Module that must match the access point on the network.

WIFI NETWORK SETUP
<UP><DWN><0-9><E>
SECURITY TYPE:
wep64

The WEP **Authentication** type can be configured for auto, open or shared. **Auto** is the default and will automatically detect the authentication. **Open** authenticates using open Key algorithm, and will communicate the key across the network. **Shared** authenticates using Shared Key algorithm, and will allow communication only with devices with identical WEP settings.

WIFI NETWORK SETUP
<UP><DWN><E>
AUTHENTICATION:
auto

The **Default Key** option must match the key index configured on the Access Point. The options are 1, 2, 3, 4, with the default set to 1.

WIFI NETWORK SETUP
<UP><DWN><E>
DEFAULT KEY:
1

There are four WEP Key input areas to add the ASCII HEX values. These correspond to the numbers as chosen through the default key above. WEP 64 requires 10 hex digits. Default is shown.

WIFI NETWORK SETUP
<UP><DWN><0-9><E>
WEP KEY 1:
0

Acceptable characters include only 0-9, and A-F, in upper case.

If using a digital wand refer to the Code 39 Programming Table in this document.

WIFI NETWORK SETUP
<UP><DWN><0-9><E>
WEP KEY 2:

WIFI NETWORK SETUP
<UP><DWN><0-9><E>
WEP KEY 3:

WIFI NETWORK SETUP
<UP><DWN><0-9><E>
WEP KEY 4:

When desired changes have been entered use either 'E' to Save or 'H' to Abort.

> **WIFI NETWORK SETUP**
> **<E><H>**
> **SAVE CHANGES?**
> **'E'=SAVE 'H'=ABORT**

WEP128 refers to 128-bit key length assigned to the WiFi Module that must match the access point on the network.

Wep128 works the same as wep64 described above with a requirement of 26 ASCII HEX digits that must be entered in the Wep Key areas 1-4.

> **WIFI NETWORK SETUP**
> **<UP><DWN><0-9><E>**
> **SECURITY TYPE:**
> **wep128**

Troubleshooting Genus™ WiFi

Troubleshooting Suggestions Table

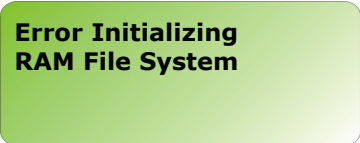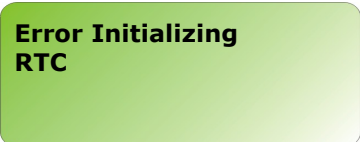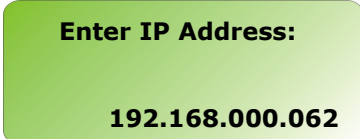| Issue	Resolution
The WiFi Module cannot find the Access Point.	Verify that the **Link** LED is solid green. If it isn't, refer to "LED Troubleshooting" table.
The AP (Access Point) cannot find the WiFi Module.	Click the Refresh button in your Access Point's configuration application. If the problem remains, check the WiFi Module's physical connections. Then power-down the WiFi Module, power it up, and check the LED status. The "WiFi LED Description" table defines the various LED status indications. Make sure that there is not another AP in the area that may be interfering with your AP. If the problem remains, contact CMI.
The WiFi Module cannot associate with an Access Point.	Change the location of the WiFi Module to improve reception. If that does not help, go into the WiFi configuration and be sure the SSID matches that of the Access Point (remember the SSID is case sensitive). Also verify that the security settings such as WEP keys or WPA PASSPHRASE match the AP exactly.
The Genus™ terminal cannot access the WiFi Module for setup purposes	Most likely the Terminal does not know the IP address of the WiFi Module. This will happen if the Module is set for DHCP and the Module obtains an IP from the server. The Terminal will be able to access the Module by using the WiFi Module's fallback IP address. **The WiFi Module will revert back to the fallback Ethernet settings after 60 seconds if it is moved out of range of the AP or if the AP is powered down.** Fallback mode is indicated when the Power LED changes from amber to green and the Link LED is blinking red. **Default Fallback Ethernet Settings** IP address: 192.168.0.68 Subnet Mask: 255.255.255.0 Gateway IP: 0.0.0.0 DHCP must be turned off in the Genus™ terminal and fixed address settings entered that match the above values. The first three octets of the Terminal must match the address above. **The last octet must be something other than 68.**
The Genus™ terminal still cannot access the WiFi Module after "fallback" has occurred.	The fallback Ethernet settings have been changed to something other than the default values. The default values can be restored to the WiFi Module by turning the Module on while holding the reset button momentarily. All user changed values will be defaulted.

Indicator LED Troubleshooting Table

If the...	Perform These Tasks...
Power LED does not turn **On**.	Check power connector is properly inserted.
Power LED turns **Red**.	Remove power and re-apply. If the Power LED remains Red, contact CMI.
Power LED is **Amber**.	WiFi Module has not established an IP address either through DHCP or Static methods.
	If DHCP is enabled, your network must have a DHCP server available when the WiFi Module is powered-up. Most AP/Routers have a DHCP server built-in.
	Enable your DHCP server and re-start the Module.
Link LED continues to **Blink Red**.	WiFi Module has not found an Access Point with which to associate. Be sure the Access Point you want to use is turned on and has WEP disabled (you can enable WEP after the WiFi Module has been configured).
	If this does not help, be sure there are no nearby devices causing interference. If there are, either turn off or move the device causing the interference or move the WiFi Module and Access Point to another location.
Comm LED is **Off** or **Amber**.	Be sure the Genus™ terminal is connected to the WiFi Module and that the device is turned on.
Comm LED is **Red** and **Link** LED is **Green** but you are unable to pass data.	Check the Ethernet settings of the Genus™ terminal. Except for the last octet of the IP address, all settings should match those of the WiFi Module. If the Terminal is set for DHCP, your network must have a DHCP server available when the Genus™ Terminal is powered-up.

WiFi LED Description

LED	LED Color	Function
Comm	Off	No power, or no wireless TCP session is established and no Ethernet physical connection is detected.
	Red	No wireless TCP session is established; an Ethernet physical connection is detected.
	Blinking Red	An Ethernet physical connection was detected and there is Ethernet traffic present on that connection, but no wireless TCP session is established.
	Amber	A wireless TCP connection is established but no physical Ethernet connection is detected (i.e., no Ethernet cable is attached to the Module).
	Blinking Amber	A wireless TCP session is established, a physical Ethernet connection is detected, and the Module is transmitting or receiving data across the wired Ethernet port.
	Green	A wireless TCP session is established, a physical Ethernet connection is detected, but there is no active data movement across the wired Ethernet port.
Link	Off	Module is not receiving power.
	Blinking Red	Module is searching for an Access Point.
	Green	Wireless network and MAC have associated with an Access Point.
Power	Off	Module is not receiving power.
	Red	Module failed its Power On Self Test (POST) and is not configured for wireless communication.
	Amber	Module passed its POST but is not configured for wireless communication.
	Green	Module passed its POST and is configured for wireless communication.

Troubleshooting Terminal Issues

Terminal Issue	Possible Causes	Resolution
Terminal does not power on	No Power to the terminal.	Verify power cable is connected to terminal. If a UPS is included verify power is connected to the UPS and the power cable from the UPS is connected to the Terminal.
Loader screen does not show; only the copyright screen then it goes blank Copyright© 2005 by Control Module Inc. Program: PS00344 Released: 04/09/05	Loader is missing or has become corrupt.	Refer to the *Service and Technical Support* section in this document.
Default loads all the time after Loader Loading Default	Genus executable has become corrupt or needs to be programmed.	Reload Genus to the terminal. Refer to *Steps to Re-Program Genus Firmware* section in this document.
Terminal stops at "Initializing network"	Terminal is searching for DHCP and/or Network connection is not available.	Wait at least 3 minutes. Make sure your network cable and switch are connected and working properly.
Terminal shows "Serial Loader Mode"	Terminal does not have a usable copy of Genus or Default.	Refer to the *Service and Technical Support* section in this document.

Terminal Issue	Possible Causes	Resolution
Terminal shows "Error opening Classes.jar" **Error Opening Classes.jar**	Terminal does not have the Classes (or API) loaded.	Reload Classes to the terminal. Refer to *Steps to Re-Program Genus Firmware* section in this document.
Terminal shows "Error opening App.jar" **Error Opening App.jar**	Terminal does not have an application loaded.	Load Application to the terminal. Refer to *Loading a Customer Defined Java Application* section in this document.
Terminal shows "Error initializing RAM File System" **Error Initializing RAM File System**	The SRAM on the memory board could be failing.	Refer to the *Service and Technical Support* section in this document.
Terminal shows "Error initializing RTC" **Error Initializing RTC**	The Real Time Clock is not functioning.	Refer to the *Service and Technical Support* section in this document.
Terminal starts up and displays "Enter IP Address:" **Enter IP Address:** **192.168.000.062**	A device could be connected to the tamper.	Remove any connection to the tamper.

Reference

Steps to Re-Program Genus™ Firmware:

In the event an update becomes available for the Genus terminal, the firmware can be updated in the field.

The following items are required to (re-)program Genus firmware:

- Data terminal to be programmed, connected to the network
- the IP address of the Genus terminal
- computer / laptop connected to the network and able to PING the data terminal
- Genus firmware

Genus ("System") file update:
The Genus terminal application makes use of CMI Java classes and interfaces in the CMI Genus API.

tftp –i PUT *<ip address>* Genus \flashdisk\Genus

(Note: Genus file name may be versioned (e.g. g2_3_3_12)

Classes (API) update:
The classes file is specific to your terminal type (G1 or G2). Check the release notes or other documentation provided with the updated files to confirm the name of Classes.jar (may be GI.jar or GII.jar).

tftp –i PUT *<ip address>* Classes.jar \flashdisk\Classes.jar

Note: The terminal will reboot after replacing the Genus or Classes files

Wait until the terminal reboots before sending additional files.

Confirming Updates:

To confirm that the Genus and/or Classes update(s) took place, follow the steps below:

1) Place the terminal in Offline mode
2) Locate the "Terminal Information" screen
3) Check "API:" to find Classes version.
4) Scroll to "Program Version:" to locate Genus Version.

Loading A Customer Defined Java Application

This application runs on the terminal and handles both a user interface and any backend processing or communication. This is created by the user of the terminal, a value added Reseller, or CMI.

tftp -i PUT *<ip address>* <myapp.jar> \flashdisk\App.jar

where <myapp.jar> is the local name of the user created Java application.

Important Note: The terminal will reboot after sending the file above.

See the Genus Software Development Kit (SDK) for more information on creating terminal applications.

Programming Table (Code 39)

This table provides Code 39 barcode access to special characters that are not available on the Genus™ terminal keypad. By using a digital barcode wand, these individual characters can be entered into the network setup parameters prompted by the Terminal.

0	1	2	3	4
5	6	7	8	9
A	B	C	D	E
F	G	H	I	J
K	L	M	N	O
P	Q	R	S	T
U	V	W	X	Y
Z				
a	b	c	d	e
f	g	h	i	j
k	l	m	n	o
p	q	r	s	t
u	v	w	x	y
z				

!	"	#	$	%
&	'	(	)	*
+	`	.	/	:
;	<	=	>	?
–	@	[	\	]
^	_	`	{	|
}	~			

Service & Technical Support

If you are an End User that has been working with one of our Value Added Resellers, please call your VAR as the first point of contact prior to calling direct to CMI's Service Department. Customers with Support Contracts should contact CMI Service at the number listed below.

PLEASE HAVE THE FOLLOWING INFORMATION AVAILABLE WHEN CALLING SERVICE.

Customer Number:		Phone #	
Customer P.O.#		Fax #	
Contact:		E-mail:	
Company:			
Address:			
City/State/Zip			
Ship To:			
Model #	Serial #	Quantity:	
Problem			

Several Time & Material plans are available to choose from and will be explained by a CMI Representative when you call in for service.

Our Service numbers: 1-800-527-4998, CT customers please use 1-860-741-2830
Our Technical Support Number: 888-753-8222
Hours of Operation: M-F, 8:00 A.M. – 4:30 P.M. EST excluding holidays