GT10 Terminal
User Guide

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Contents

Contents

Contents

Contents

About the GT10 Terminal

GT10 is more than just a next generation time and attendance terminal - it's designed to open up a world of possibilities for wider integration with Human Resources Management Systems (HRMS) and a myriad of potential new applications beyond workforce management.

About this Guide

This User Guide is intended for users who will be responsible for installing and configuring the GT10 terminal.

Related Documents

You should also refer to the following documents, available from Grosvenor Technology:

- Installation Guides –These are provided with the GT10 and option modules.
- GT10 Technical Manual. This document is targeted at software developers writing Android applications for the GT10 terminal.

Technical Support

Technical Support can be obtained from Grosvenor Technology from the following points of contact:

Europe, Middle East and Africa

Phone: +44 (0)1202 627611
E-mail: HCM-EMEAsupport@grosvenortechnology.com
Website: www.grosvenortechnology.com

North America

Phone: +1 800.989.5197
E-mail: HCM-USsupport@grosvenortechnology.com
Website: www.gtclocks.com

Important Note:
Menus and options will vary depending on the hardware options supplied and software version installed. Please refer to additional instructions supplied with your terminal for additional information.

Display

- 10 inch full colour capacitive multi-touch display with toughened glass for use in high traffic environments
- 16:9 aspect ratio, 1280 x 800 pixel resolution

Processor

- Industrial specification ARM Cortex A9 Quad Core 800MHz

Operating System

- Android 6.0

I/O

A choice of optional input/output accessories are available, including:

- Contactless smartcard readers: Mifare, iClass SE
- Proximity card readers: supports a full range of reader types, including HID Prox 125kHz
- Magnetic stripe card reader
- Barcode card reader or external USB scanner: multi-format
- Fingerprint scanner: Lumidigm M series, Suprema*
- 6 internal USB 2.0 ports
- Camera and microphone
- Speakers

Memory

- 2GB RAM

Internal Persistent Storage

- 8GB high performance flash storage
- SD, SDHC and SDXC compatible card slot

Host Connectivity

- Ethernet: 10/100/1000
- Wi-Fi: Intel dual band, dual stream 802.11ac (optional)

Power

- 12VDC ±5%
- Power over Ethernet 802.3at / 802.3af (optional)
- Internal lithium ion battery backup, up to 2 hours

Hardware Specification

Operating Temperature

- 0°C - 45°C (32ºF to 113ºF)

Plug and Play Deployment

- Fast easy installation
- Easy to fit reader modules and peripherals

Integration

- Supports native Android and HTML 5 apps
- Software Developers Kit available

Sound

- 2x Integrated speakers
- Integrated Microphone

Camera

- 5 mega-pixel, wide angle; supports photo and video

Physical Security
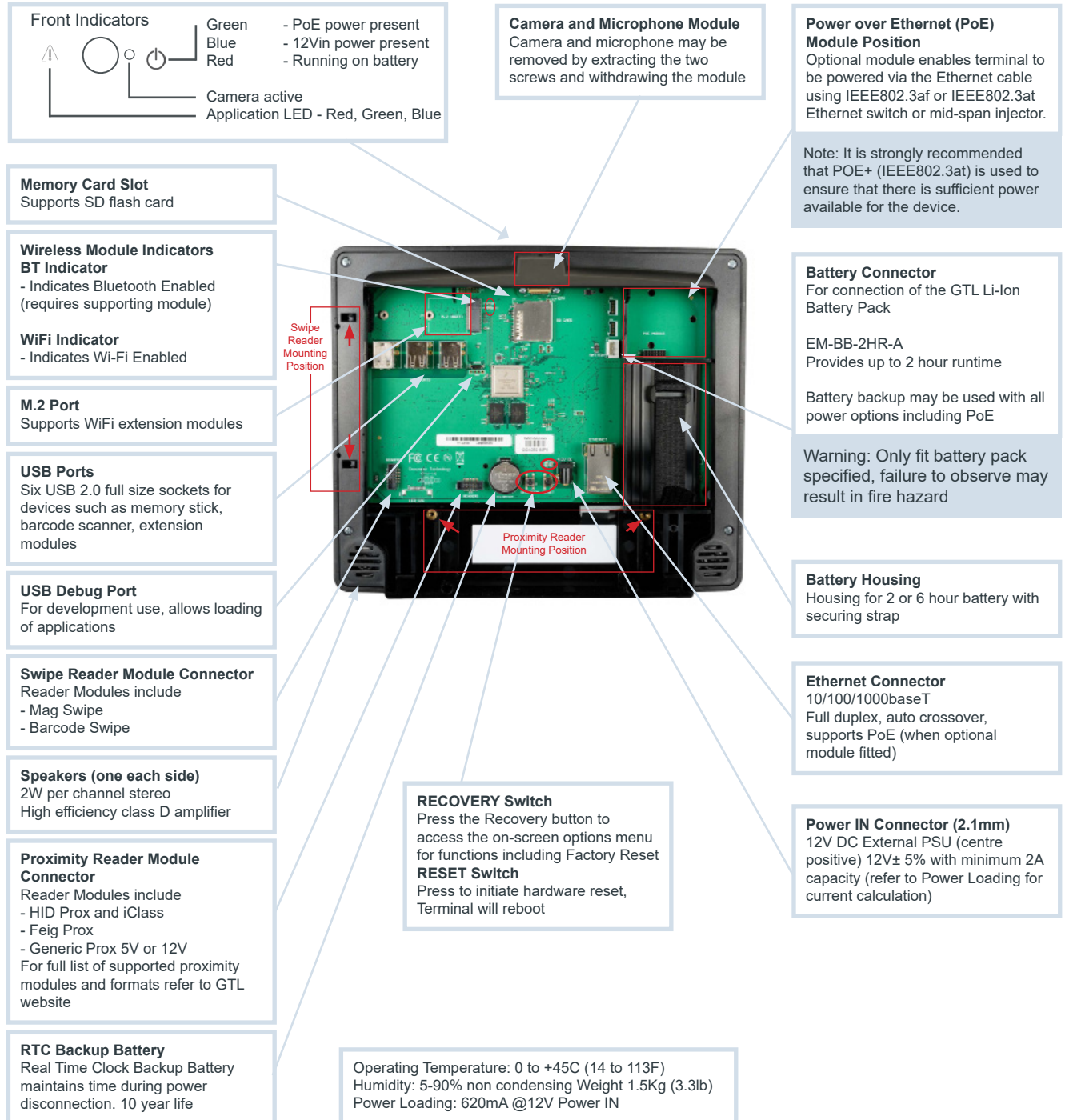
- Lockable case

Certifications

- CE, FCC (Part 15 Class B)

Dimensions (HxWxD)

- 230mm x 275mm x 96mm
- 9.1 inches x 10.8 inches x 3.8 inches
- Height with optional biometric reader: 300mm / 11.8 inches
- Width with optional swipe card reader: 295mm / 11.6 inches

Front Indicators

Green - PoE power present
Blue - 12Vin power present
Red - Running on battery

Camera active
Application LED - Red, Green, Blue

Camera and Microphone Module
Camera and microphone may be removed by extracting the two screws and withdrawing the module

Power over Ethernet (PoE) Module Position
Optional module enables terminal to be powered via the Ethernet cable using IEEE802.3af or IEEE802.3at Ethernet switch or mid-span injector.

Note: It is strongly recommended that POE+ (IEEE802.3at) is used to ensure that there is sufficient power available for the device.

Memory Card Slot
Supports SD flash card

**Wireless Module Indicators
BT Indicator**
- Indicates Bluetooth Enabled (requires supporting module)

WiFi Indicator
- Indicates Wi-Fi Enabled

M.2 Port
Supports WiFi extension modules

USB Ports
Six USB 2.0 full size sockets for devices such as memory stick, barcode scanner, extension modules

USB Debug Port
For development use, allows loading of applications

Swipe Reader Module Connector
Reader Modules include
- Mag Swipe
- Barcode Swipe

Speakers (one each side)
2W per channel stereo
High efficiency class D amplifier

Proximity Reader Module Connector
Reader Modules include
- HID Prox and iClass
- Feig Prox
- Generic Prox 5V or 12V
For full list of supported proximity modules and formats refer to GTL website

RTC Backup Battery
Real Time Clock Backup Battery maintains time during power disconnection. 10 year life

Swipe Reader Mounting Position

Proximity Reader Mounting Position

Battery Connector
For connection of the GTL Li-Ion Battery Pack

EM-BB-2HR-A
Provides up to 2 hour runtime

Battery backup may be used with all power options including PoE

Warning: Only fit battery pack specified, failure to observe may result in fire hazard

Battery Housing
Housing for 2 or 6 hour battery with securing strap

Ethernet Connector
10/100/1000baseT
Full duplex, auto crossover, supports PoE (when optional module fitted)

Power IN Connector (2.1mm)
12V DC External PSU (centre positive) 12V± 5% with minimum 2A capacity (refer to Power Loading for current calculation)

RECOVERY Switch
Press the Recovery button to access the on-screen options menu for functions including Factory Reset
RESET Switch
Press to initiate hardware reset, Terminal will reboot

Operating Temperature: 0 to +45C (14 to 113F)
Humidity: 5-90% non condensing Weight 1.5Kg (3.3lb)
Power Loading: 620mA @12V Power IN

Hardware Specification

Opening and fitting Front Panel to Back Panel

1. Insert the key

2. While pressing the key in rotate clockwise

3. Front panel bottom can now be pulled forward

4. When separated, lift front panel to remove

Note:
Key cannot be removed in the unlocked position

The GT10 Terminal can be customised by fitting a range of option modules.

Internal Proximity Reader Modules

For reading credentials including cards and tags

- HID 125KHz Reader Module   RM-HID-IT/RS
- HID iCLASS Reader Module   RM-ICLSE-IT/RS
- KERI Reader Module   RM-KERI-IT/RS
- FEIG 125KHz Reader Module   RM-FEIG-FC-IT/RS
- INDALA Reader Module   RM-IND-IT/RS
- Reader Adapter Module 12V   RMK-12VPRX-IT/RS
- Reader Adapter Module 5V   RMK-5VPRX-IT/RS

Card Swipe Reader Modules

- Barcode Reader Module   RM-BAR-A
- Magnetic Stripe Reader Module   RM-MAG-A

Biometric Modules

- RM-LUM-M320-A

Page 12

- Operating System Android 6.0
- Supports native Android and HTML 5 apps
- Remotely upgradeable/configurable

Before starting the installation consider

■ Which power option is to be used - as this may influence cabling requirements, vicinity to power outlets and accessory modules required (refer to Power Options for GT10)

Fitting the Terminal

Location:

The Terminal should be fixed to a flat surface at a height that is comfortable for users to view and interact with the screen without glare from reflections and in a suitable level of ambient light. Take care to adhere to any local regulations such as disabled access when determining the height of the unit.

Secure to a Vertical Surface:

■ Before mounting the back panel first fit any Biometric Reader options as these need access from the rear of the unit.

■ Bring in any cables through snip-out apertures (A or B). Cables may be routed within the cabling cavity between the back panel and mounting surface (C).

■ For installations in the USA the unit may be mounted over a power outlet with PSU (wall wart) inside the case. For this type of installation snip-out the large aperture (B)

■ Fix the back panel to a flat vertical surface at a height of 1.48m (4' 10") above the floor. (Please observe any national guidelines concerning the height for installation to ensure that users will be able to comfortably see and operate the touch screen). It is recommended to use a minimum of four 4.2mm x 32mm self tapping screws with plugs suitable for the type of wall. The fixings can be made through any of the holes marked (D).

■ Extension Modules e.g. EM-IO-USB-IT may be fitted in the area (E)

4.2mm x 32mm Pan Head PoziDriv® Self Tapping Screw Form C

Metric

⊕ PZ2

8.20   4.2

4.3   3.05   32
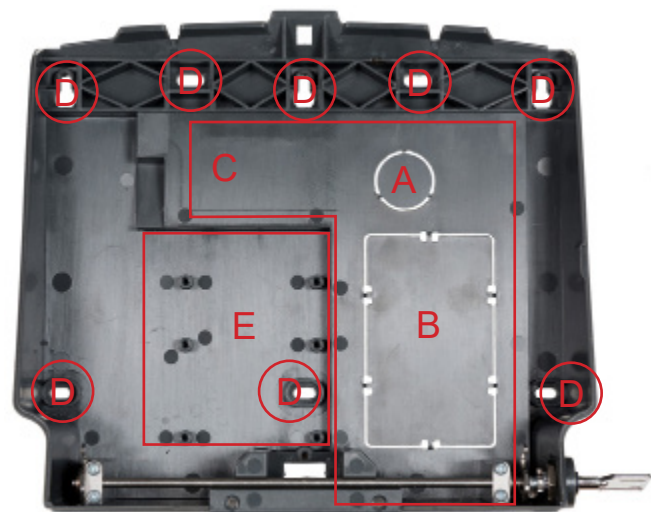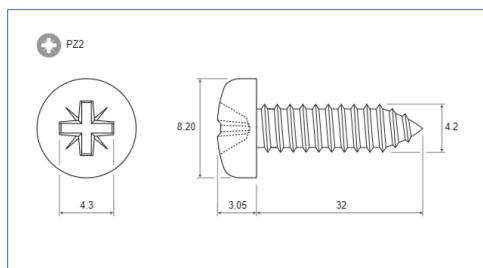
AC 110-240V via Adapter

The Terminal can be powered from an AC power outlet using an optional plug-top or wall wart power supply. Adapters include

- AE-PSU-PT-12VDC universal adapter with UK, Europe, Australia and US interchangeable AC plugs
- AE-PSU-NA-12VDC adapter with US ac plug

Where national codes of practice permit the PSU may be fitted inside the housing.

DC 12V

The Terminal can be powered from a suitable 12Vdc power supply with 2.1mm DC plug centre positive connected to the '+12V DC' power in jack. The supply should have a stabilised voltage output of 12VDC ±5% with minimum 2A capacity. The power supply should incorporate suitable overload protection.

The GT10 power indicator will show green when power is supplied via the 12V power jack either with direct DC connection or with ac power adapter.

Power over Ethernet PoE

By fitting optional module CM-POE-HC-IT the GT10 may be powered via the Ethernet cable with suitable upstream PoE switch or injector. Supported standards

- IEEE 802.3af (PoE) injector provides Terminal with 1000mA @12V
- IE EE 802.3at (PoE+) injector provides Terminal with 2000mA @12V

When the GT10 is running from PoE the power indicator on the front of the Terminal will show blue.

Power Options

Battery Backup

The GT10 has a backup battery to run the terminal should the normal power supply fail. The standard battery pack is EM-BB-2HR-A which provides up to 2-hours runtime

When the battery pack is installed the Terminal will continue to run when power is removed until the battery charge level reaches its lower threshold. The terminal may be shut down prior to battery exhaustion by using the 'Shutdown' option accessible through the launcher. Once shutdown the Terminal will remain off until power is restored. When in the shutdown state there is very little draw on the battery and it can remain in this state for extended periods. For optimum battery life it is recommended that the battery is charged a minimum of every six months if the unit is in shutdown for prolonged periods by applying power to the Terminal.

Charging of the EM-BB-2HR-A battery pack is managed by the GT10 and depending on power source typical recharge time from 0% to 100% will range from 3 hours to 12 hours. Charging times will be extended in elevated ambient temperatures to protect the battery.

When the GT10 is running from battery the power indicator on the front of the Terminal will show red.

The EM-BB-2HR-A battery pack comprises a rechargeable li-Ion battery along with protection circuitry to prevent safety hazards caused by overload, over-charging or over-discharge.

WARNING - ONLY FIT BATTERY PACK SPECIFIED, FAILURE TO OBSERVE MAY RESULT IN FIRE HAZARD

A battery service life of 5-years is possible, although this can be affected by a number of factors, including: a prolonged period of storage prior to use, the number of charge/discharge cycles, and the battery operating/charging temperature. Grosvenor Technology recommend that batteries are inspected regularly for any signs of swelling which may indicate the battery has reached its useful life expectancy and should be replaced. We recommend that batteries are replaced every 3-years as regular maintenance and to ensure hassle free operation and a visual inspection of every battery at least once annually [as a minimum]. It is also recommended that hardware should utilise the latest firmware available as this may also contain the ability to improve battery performance.
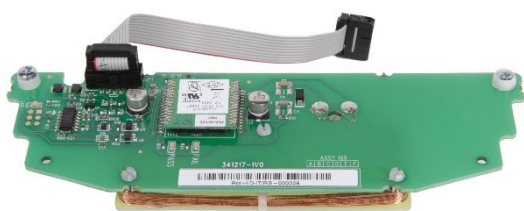
Front Panel Fitted Options:

When fitting any option modules prepare the Terminal by removing the front panel and placing it face down on a clean flat surface that will not scratch the glass front.

Fitting Internal Proximity Reader Modules

Internal proximity reader modules fit in the position shown below and are secured using the two screws supplied with the module.

Proximity Reader Mounting Position

1. Connect the reader module ribbon cable to the GT10 READER 1 connector observing polarity indicated by keyway

2. Fix screws in module to threaded bushes in front panel with cable tucked under module

3. Tighten screws until module is firmly fixed but take care to not over tighten

Fitting Card Swipe Reader Modules

- ■ Barcode Reader Module   RM-BAR-A
- ■ Magnetic Stripe Reader Module   RM-MAG-A

The fitting position for a swipe module is indicated by the box below.

Swipe Reader Mounting Position

1. Insert the tabs on the reader module into the front panel pressing down until the tabs are fully inserted then slide the module so there is no gap between the side of the module and the front panel bezel

2. Screw down the two fixing screws to secure the module. Screw tension should be sufficient to hold module firmly but avoid over tightening

3. Connect module by fitting the ribbon cable connector to the Front Panel observing polarising bump position

Fitting the Battery Pack

The battery pack fits into the compartment outlined below and connects to the BATTERY connector arrowed.
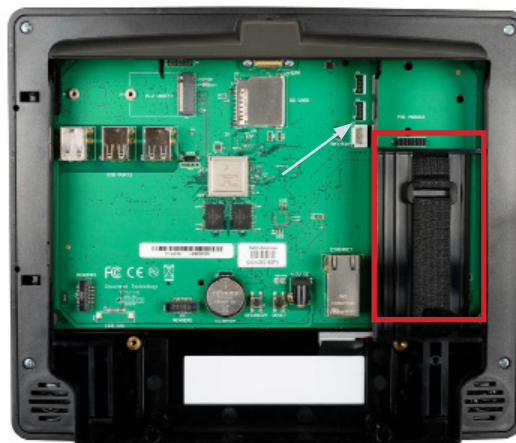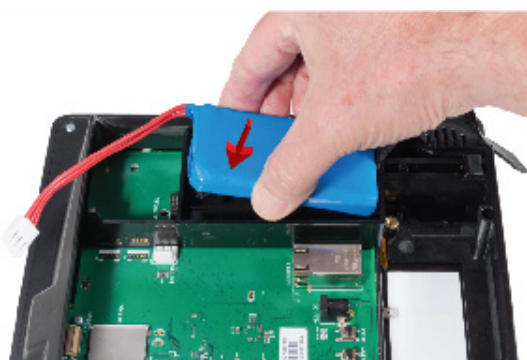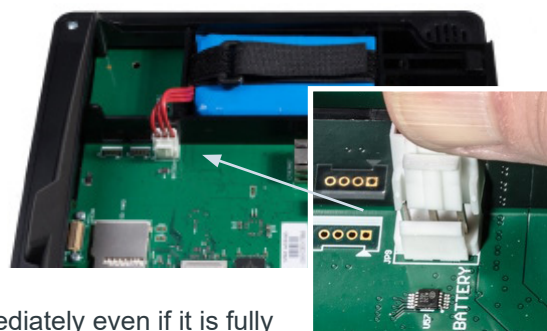

1. Release the hook and loop strap

3. Loop the strap through the eye and pull the strap then secure the hook and loop. The strap should be a loose fit around the battery to allow for some expansion.

2. Fit the battery pack into the compartment

4. With the battery secured the battery cable can be connected observing polarisation on the connector

Connecting the battery pack will not power-up the unit immediately even if it is fully charged. Battery backup will be enabled when power has been applied to the unit.
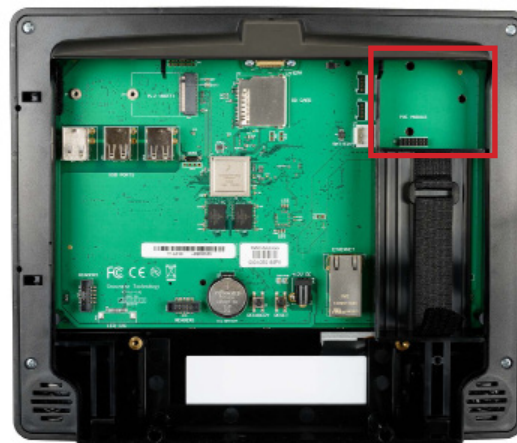
To remove the battery, disconnect the cable by squeezing the tab on the connector before pulling. Release the hook and loop strap then withdraw the battery.

Installing Option Modules

Fitting the Power Over Ethernet Module

The fitting position for the PoE module is indicated by the box shown.

1. Manoeuvre the module into position as shown

2. Press the module down until it clicks into place on the three mounting pillars

Removing the PoE Module

■ Use a flat blade screwdriver to lever the module as shown to release the top fixing

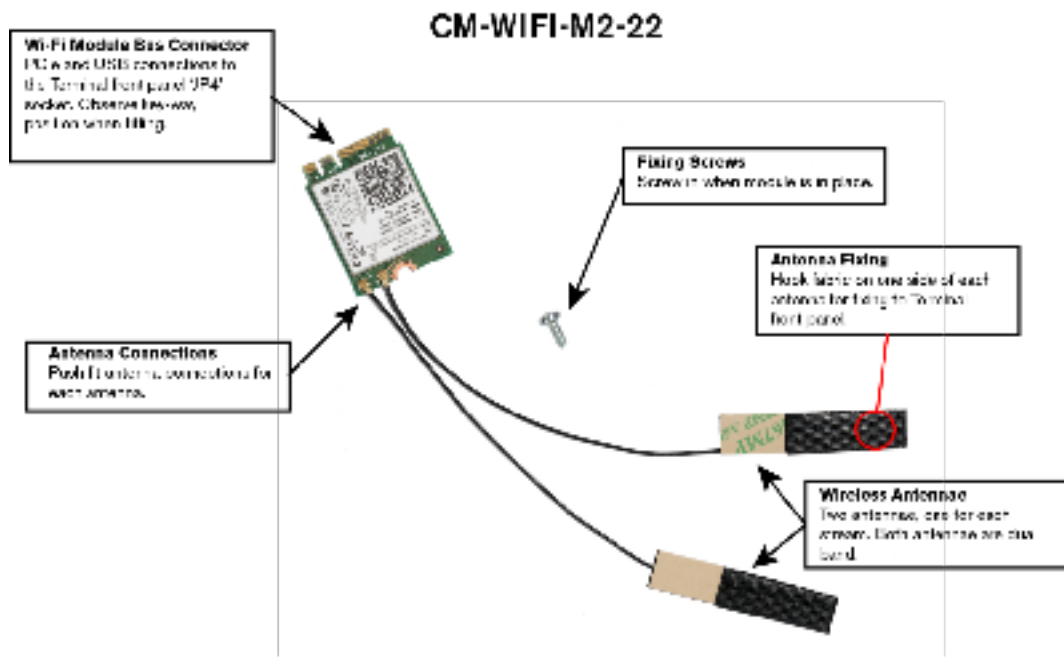■ Reposition the screwdriver and fully release the module.
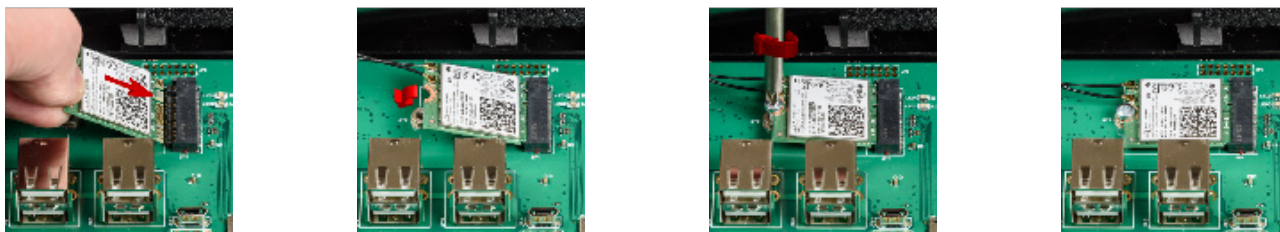
Fitting the Wi-Fi Module

The fitting position for Wi-Fi module and antennae is illustrated below.

Installing Option Modules

Fit the module as illustrated below to socket JP4 and secure with screws.

Fit the two antennae to the case.

These are secured with loop and hook fastening, the loop part is fitted to the front panel during manufacture in the two antenna locations. The hook part is on the back of each antenna. Locate each antenna as shown below observing the orientation so that the hook fabric engages the loop fabric and apply light pressure to secure.

When the system is powered on, a bootloader runs which loads the Android operating system. This runs start-up scripts to set up and configure the terminal and to start enabled services.

When an application is installed, once the unit is fully booted, the initial screen gives you the opportunity to enter the Terminal Setup by pressing the cog icon on the launcher start-up screen as shown below:

The terminal will otherwise automatically proceed to run the installed application. If no application is configured to auto-start the Terminal will stay on the launcher start-up screen.

Terminal Shutdown

When powering off the GT10 it is advisable to perform a shutdown operation. The shutdown utility will stop all processes and perform a graceful shutdown allowing power to be safely removed. If power remains on the unit it will re-start after a delay.

When the GT10 has the battery backup option installed the unit will continue to run following a power failure until the battery capacity reaches a low threshold where the graceful shutdown will be triggered. The unit will be powered off at the end of the process.

When a battery backup pack is installed the shutdown utility allows the GT10 to be powered off without exhausting the battery. To power down the unit run the utility until the unit has completed its shutdown then remove the power. If power is left connected the unit will re-start after a delay.

To trigger the shutdown process or perform a re-boot access the Terminal setup **Apps** menu and select **Shutdown**. To access the Terminal setup Apps menu A PIN is required, the default is 1905
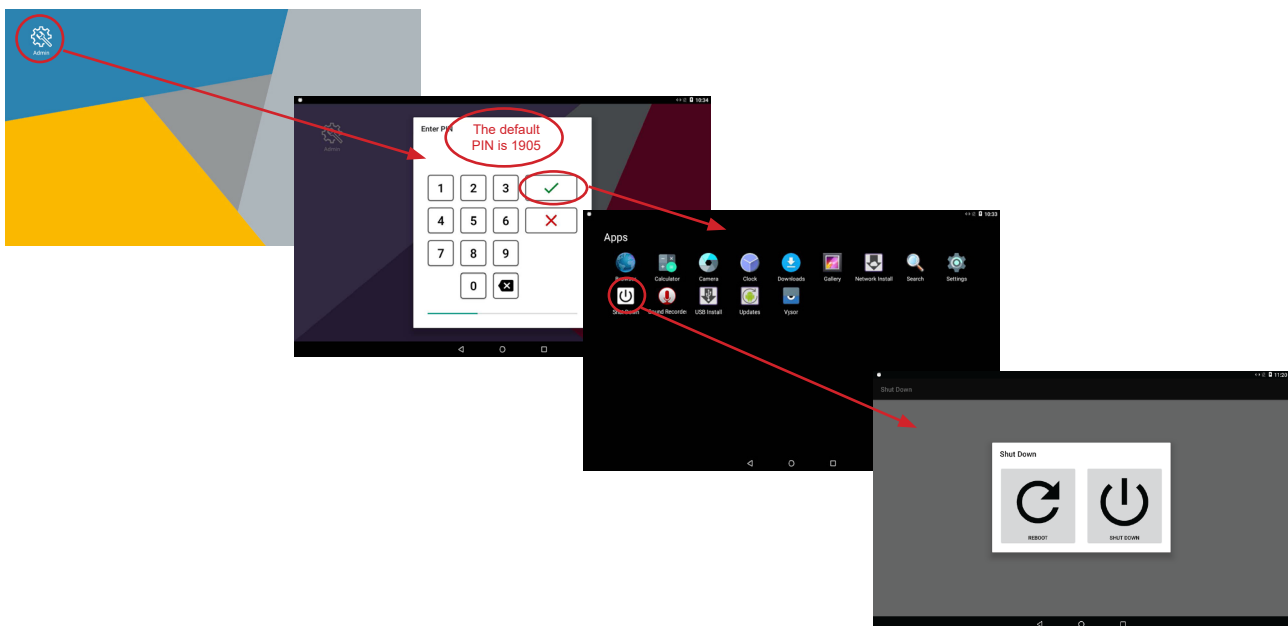
Software Reset

Android provides a mechanism for the user to remove installed packages and data from the device. This is found under "Settings->Backup & reset->Factory data reset" menu.

Recovery Menu

The recovery menu can be accessed by pressing and holding the button marked "RECOVERY" whilst the terminal is powering up. When the Droid is displayed on the screen release, then press and release (long press) the button again to display the menu. Once displayed the menu can be navigated by short and long presses on the recovery button.

- Reboot system now
- Wipe cache partition
- Wipe data/factory reset

The recovery button is found near the bottom edge of the main PCB circled below.
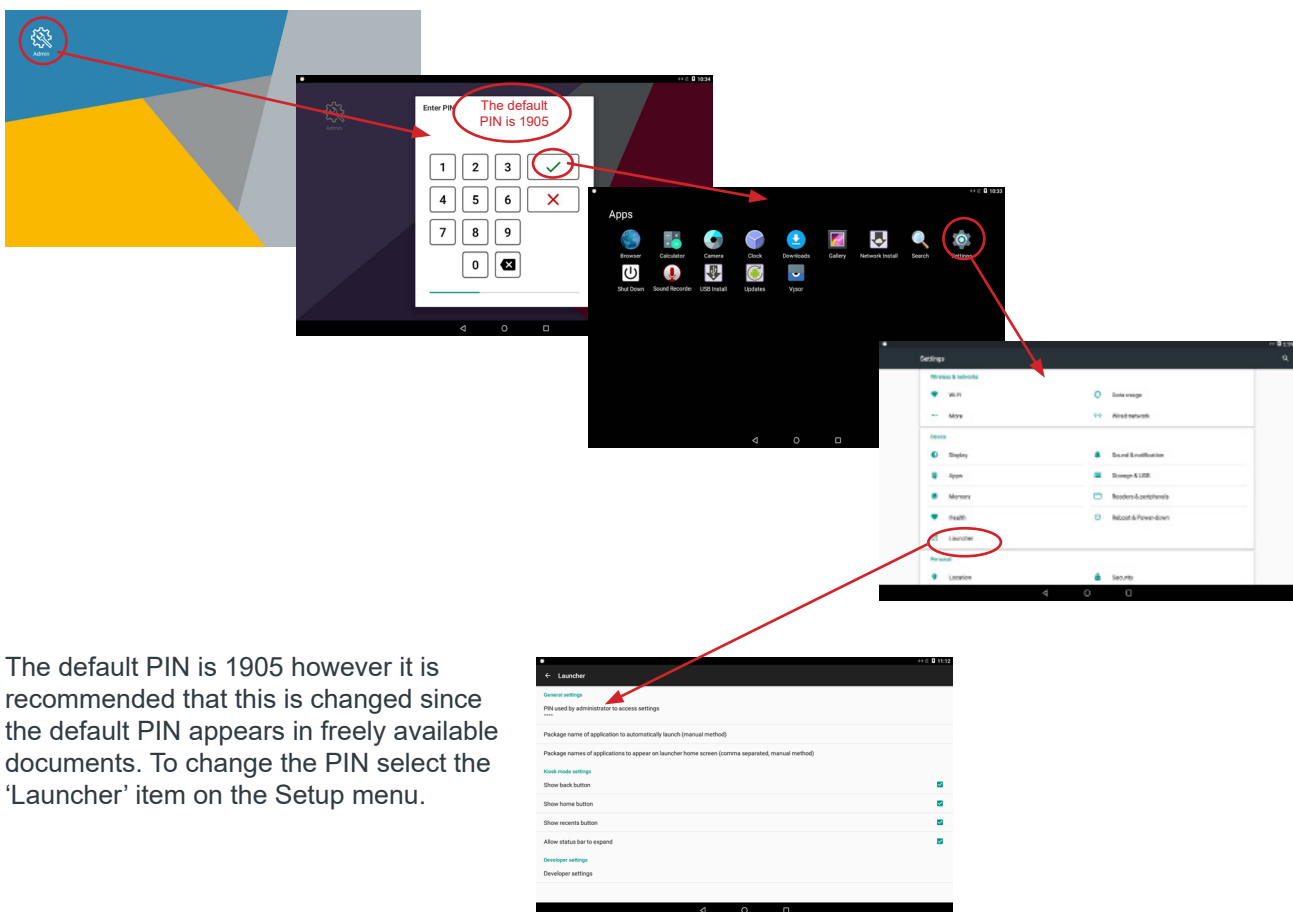
Terminal Setup

The set-up menus allow the terminal configuration to be changed at the terminal.

Accessing the Terminal Setup

To access the Terminal setup Settings menu allow the Terminal to boot then select 'Admin' . A PIN is required to enter setup mode, the default is 1905. From the Apps menu select 'settings' as shown below:


The default PIN is 1905 however it is recommended that this is changed since the default PIN appears in freely available documents. To change the PIN select the 'Launcher' item on the Setup menu.

Configuring Network Settings

Wired network and Wi-Fi are configured through the Settings menu. Selecting one of these items will open a further dialogue where the settings can be entered.

When selecting Wi-Fi, the wireless must be enabled to see available networks.
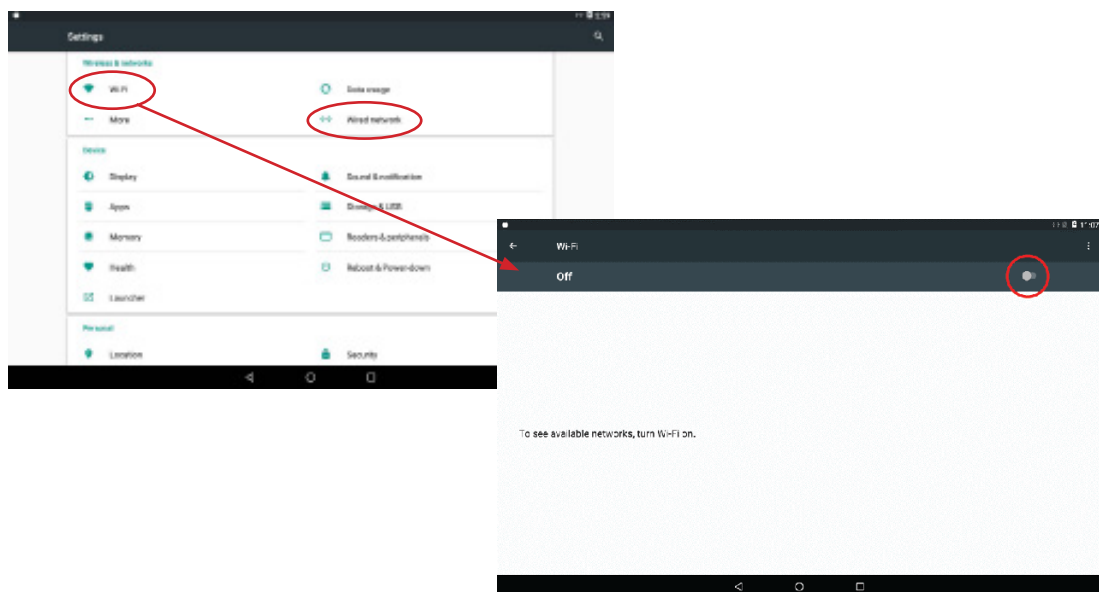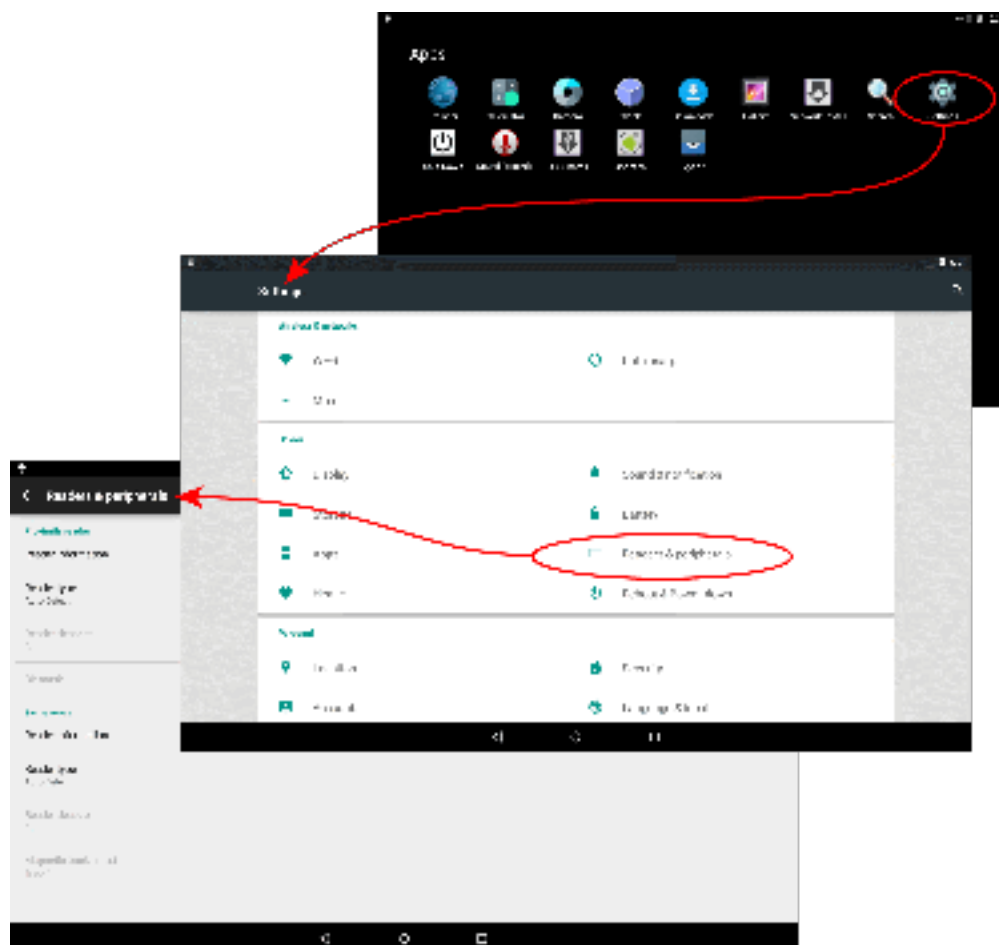
Configuring Readers

The GT10 can accommodate a wide range of reader types and credential format. Setting up a reader has two elements.

1. Reader Type – this relates to the reader hardware and its connection to the system e.g. proximity, Wiegand, magstripe etc.
2. Decoder – this setting determines how the data is to be interpreted. This includes integral decoders that will present the application with the decoded card number or a 'rawbits' option to pass the raw data to the application which can then apply its own decode.

Both the reader type and the decoder can be auto detected and this is the default configuration. In most instances this will give satisfactory results however these can be manually configured if required.

Readers are configured through the 'Settings' menu requiring PIN entry described above in 'Accessing the Terminal Setup'.

Reader Configuration

Depending on the reader type the options will vary. Readers are categorised as Proximity or Swipe, with subsections within each category for individual reader types. The example below shows a selection under the Proximity Reader heading where the reader type and decoder can be chosen.


Manual Reader Configuration
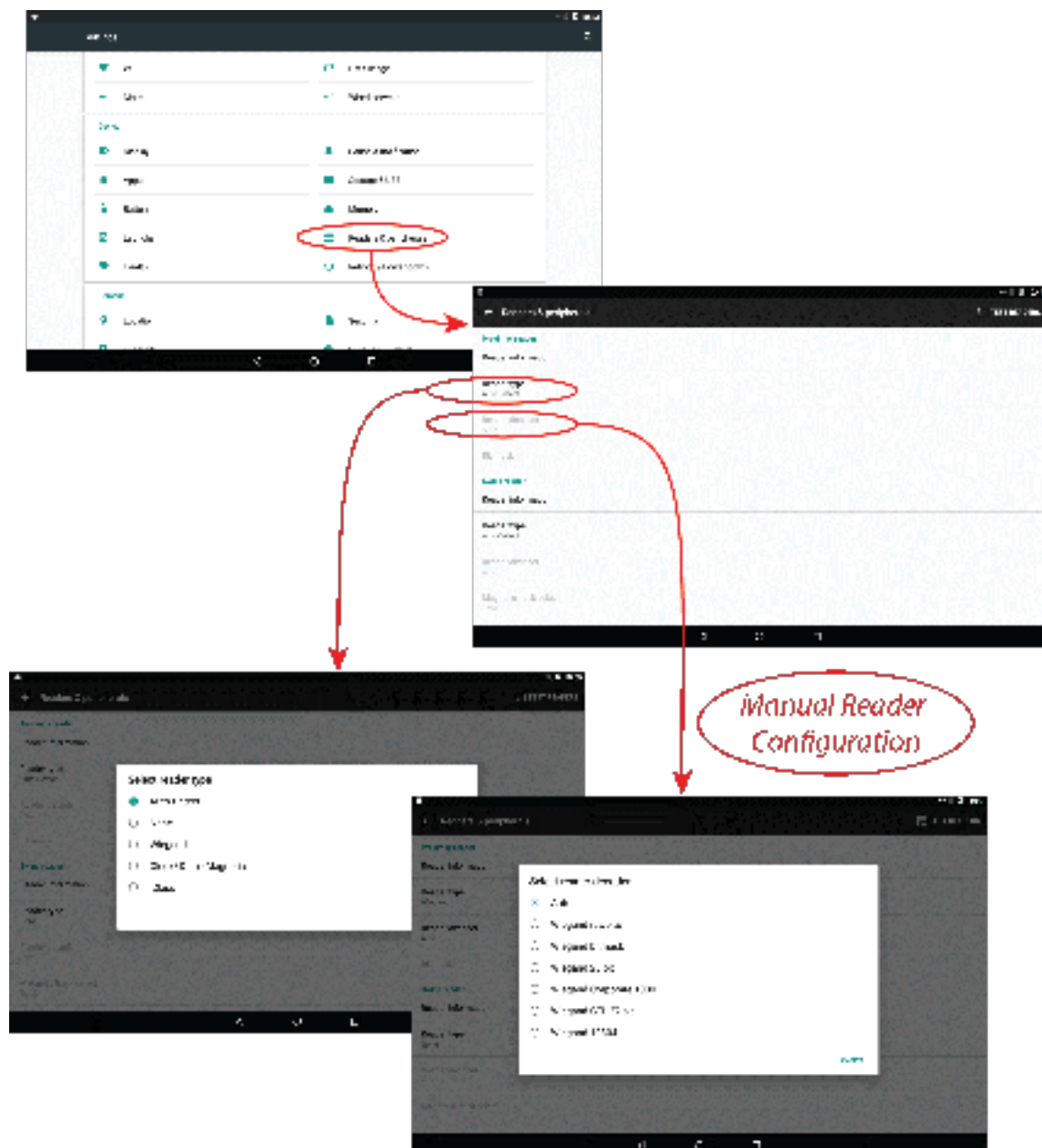
Wiegand Bitmask

In addition to the standard fixed decodes for reader data a configurable bit mask can be applied to create custom decodes. Selecting 'Wiegand bitmask' as the decoder type will open a dialogue for the bitmask to be entered.

The following letters are defined for bitmasks

Mask char	Description
S	Site code (MSB first)
B	Badge code (MSB first)
s	Site code (LSB first)
b	Badge code (LSB first)
0	0 expected
1	1 expected
p	Signifies parity bit (ignored here)
.	Bit is ignored
X	Bit is ignored

The letters P, . and X are all ignored when parsing bitmasks.

As the length of the bitmask has to match the number of bits, it is sometimes useful to be able to specify more than one bitmask. Also, Wiegand formats often contain parity information to validate the data. The bitmask decoder supports the following syntax for configuring multiple bitmasks with parity checking:
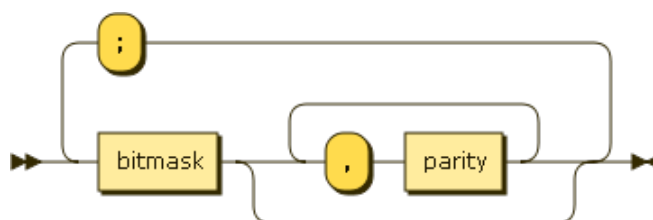
Parity mask

The parity mask must have the same length as the bitmask. If more than one parity mask is specified, all have to pass for the decoder to be successful.

The following letters are defined for parity masks

Mask char	Description
.	Bit is ignored
X	Bit to be counted for parity
E	Even parity bit
O	Odd parity bit

X is used to count bits that are set (e.g. 1). E is used to specify the bit that should make the bit count even and O is used to specify the bit that should make the count odd. It does usually not make sense to have more than one E or O per parity mask.

Testing Readers

The GT10 includes a utility to display the output of a reader to validate correct functioning and setup for readers. The utility is accessed from the 'Readers & peripherals' dialogue as illustrated below:

Swipe badge and see output
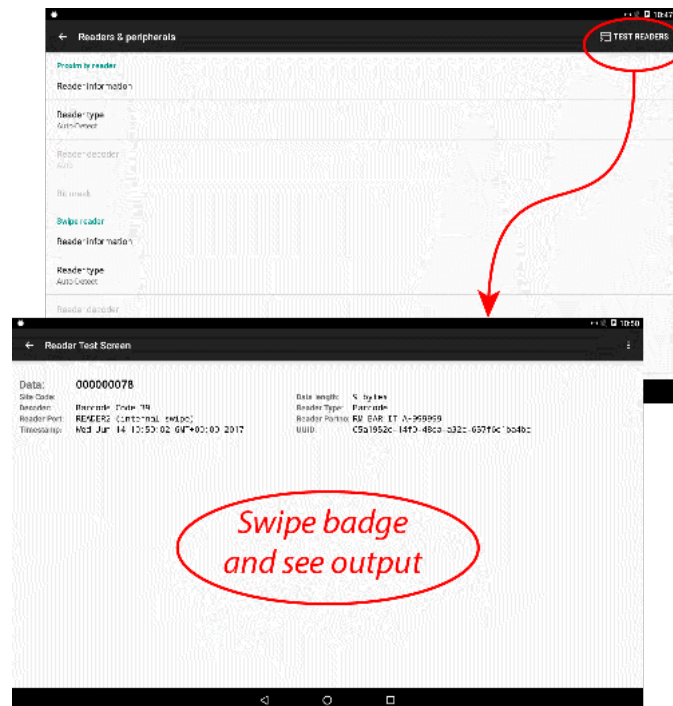
Terminal Health Information

The GT10 monitors key elements of the system and can display their status, accessed by selecting health from the 'Settings' menu:
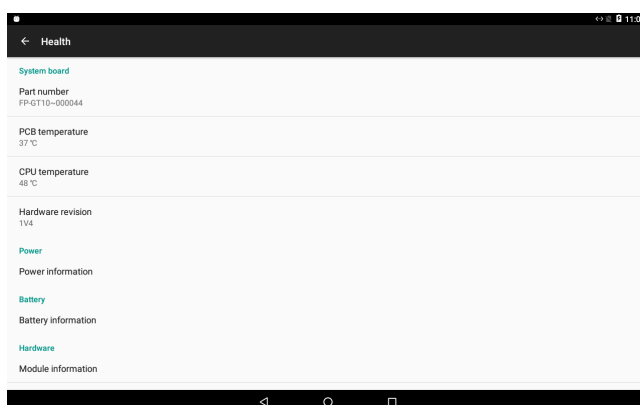
From the health screen selecting the items shows further information including voltages, currents and detailed status information for the hardware that is installed in the unit.

Testing the Camera

Selecting the Camera icon will enable the GT10's camera and a live picture will appear on the terminal display. There is a camera active indicator to the right of the camera which is lit when the camera is operating.
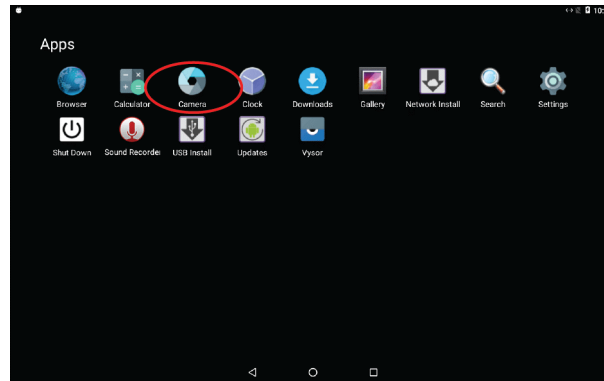
The firmware and packages can be updated automatically, based on policy, etc. or via the software updates application.

The service also provides methods for easy provisioning and deployment via network or USB.

For detailed information regarding the Software Update Service please contact Grosvenor Technology.

The Software Update Service Application

At the terminal the Software Update Service application can be run, this allows an administrator to:

■ View the available updates for installed packages which have newer version(s) available in the remote repository.

■ View all packages and versions available in the remote repository using the 'Show all' menu option.

■ Install packages from USB (see USB deployment).

■ Install packages from network (see Network deployment).

■ Configure the update settings.

Configuring the Software Update Service

The update policy options can be configured including:

■ Enable or disable automatic updates.

■ Automatic update selection of bug fixes, minor updates or major updates.

■ The daily time window when updates checks are mode, avoiding busy periods at the terminal.

■ The repositories used by the automatic updates and the on demand updates can also be configured, see Repository.

Repository

The software update service accesses remote software repositories for updating packages, either via the provided user interface or for the automatic update.

There are different scenarios in which a remote repository can be implemented to make the way software is updated more flexible. The software update service can be configured to use two remote repositories and one additional network install repository.

The software update service imports information about available packages and uses this to show available updates and update packages automatically via the auto-update feature according to the update policy. Multiple repositories allow to configure a global repository for firmware bugfixes and an additional local or project specific repository for updates of application packages.

The auto-update feature of the service can check for updates periodically and only install available updates within a configurable time interval (e.g. between 1:00 AM and 3:00 AM).

The auto-update feature also operates with an update policy, that enumerates which type of updates it can install (e.g. bug-fixes only, minor changes or always the latest).

For details of the repository file format please contact Grosvenor Technology.

Software Update Service

Deployment

Deployment is the process of configuring an unconfigured terminal with all required application packages and settings.

The deployment process can also be used to install provision information (see Provisioning) and update the firmware.

Note: The deployment process will not downgrade already installed Android packages, provisioning data or firmware versions. For example, a firmware file on the USB device will be ignored, if the terminal is already running a newer firmware version.

Deployment from USB memory device

A memory stick formatted as FAT32 is required and prepared with the Provisioning File loaded. For details of the memory stick preparation please contact Grosvenor Technology.

Start the "USB Install" utility (from the Apps screen) on the terminal and insert the memory stick in one of the free USB connectors. This will automatically detect the memory stick and display an "Install" button. Click "Install" to complete the process.

Deployment from network

Deployment from network allows to easily configure a specific software update repository (see Repository) and install all packages from it. The user only needs to enter an ID and PIN which is combined with the base URL to access the repository.

One of the major differences between network deployment and USB deployment is that network deployment uses a repository. As part of the network install process the ID and PIN is added to the Network Install repository settings in the software update service at the terminal. This means that if the packages in the network install folder on the server are updated and "Check for updates" is run from the terminal either as scheduled updates or on demand by the user the new packages will be automatically downloaded and installed from the network repository.

It is also possible to apply configuration settings as part of the Network Install process.

Start the "Network Install" utility (from the Apps screen) on the terminal. Enter the ID and PIN when prompted and click "Install" to complete the process.

It is important to follow these instructions carefully in order to prolong the life of the unit.

Maintenance Instructions

The terminal may be cleaned as often as necessary with any proprietary computer screen cleaning material.

- Pre-impregnated micro-fibre cloths or tissues are preferable. If spray products are used, take care to avoid run-off and do not allow any liquid to enter the terminal case.

- For a smear-free finish, polish with a dry, clean, lint-free cloth.

- DO NOT use any other janitorial products, acids, solvents, polishes or abrasives.

As long as the care instructions for the GT10 are followed, there is no need for regular maintenance of the device (other than the battery).

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Page 34