Version 1.8 April 2023

GT8 Clock
User Guide

Disclaimer

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GT CLOCKS
PEOPLE AND DATA MANAGEMENT
gtclocks.com

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Chapter 1:

Preface

Preface

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 clock for additional information.

About the clock

The GT series of data collection clocks has been designed for various applications including Time and Attendance in both the commercial and retail sectors, where low cost, flexibility and ease of installation are essential factors.

The clock incorporates a flexible, modular hardware design which supports different reader technologies such as biometric, proximity, barcode and magnetic as well as enabling power supplies and ancillary input/output modules to be easily added.

The GT series of clocks run an advanced Android operating system offering unsurpassed functionality with flexibility giving a rich user experience for data collection solutions.

The ability to manage the software after deployment is incorporated as a fundamental function of the system. Everything from a complete operating system flash image update to a change in application program parameters can be downloaded over the Internet or uploaded via USB memory stick.

About the GT8 clock

GT8 is more than just a next generation time and attendance clock - 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 GT8 clock.

This Guide was written with the following firmware, application and optional modules installed:

- Firmware: v2.0.0
- Application: GTEasyClock v2.0.0
- RM-SP-SFSLIM-GT8A Fingerprint Reader
- RM-HID-B Prox/card reader
- CM-WIFI-M2-22 Wi-Fi module

Certifications

The GT8 has been certified for use in the following markets:

Europe	CE Certification
UKCA	UK Conformity Assessed
USA	FFC, UL 62368-1

In addition, the clock has been certified to comply with the requirements of the CB certification authority which may meet compliance requirements in their member countries. For further information regarding CB certification please see www.iecee.org/dyn/www/f?p=106:40:0, or discuss with Grosvenor Technology's professional services team.

If the GT8 is intended to be used in countries other than those listed above, please contact Grosvenor Technology's professional services team to discuss how we can assist with certification.

Device maintenance and recommendations

Battery Life (if applicable)

The GT8 is fitted with a Lithium-Ion battery which typically has a service life of between two-three years. In order to ensure the continued reliable operation of the back-up battery function we recommend regularly checking the condition of the battery and replacing it when it has reached the end of its service life.

The GT8 is also fitted with a button cell type battery on the main PCB to maintain the real-time clock (RTC) of the device when power is removed. This battery typically has a service life of around 10 years. The battery should only be replaced by suitably qualified engineers and care should be taken to avoid damage to the PCB caused by ESD (ElectroStatic Discharge). Replacement batteries must be of the same type as the original, and the old battery should be disposed of in accordance with local regulations.

Care should be taken when recycling the clock to ensure that the batteries are removed and recycled in accordance with local regulations/legislation.

Maintenance

The GT8 clock does not require any regular maintenance during its service life.

It is however recommended that periodically, once every six months, the condition of the battery should be checked to see if there are signs that it's reaching the end of its life. Occasionally, the battery may start to swell towards the end of its life, if this is noticed, the battery should be replaced (Part Number: EM-BB-2HR-A).

Cleaning

Cleaning of the outside of the clock can be undertaken at intervals appropriate to the environment that it is being used and the frequency of use. In all cases it is recommended that the surface of the clock is wiped with a lint free cloth that has been dampened with up to 70% isopropyl alcohol. We do not recommend spraying liquids directly onto the surface of the clock as this could potentially cause damage to the electronics. Particular care should be taken when cleaning the display and biometric devices to prevent damage.

Installation Safety

The GT8 clock should be installed in accordance with the instructions documented in this User Guide. The clock should be installed in compliance with any Health and Safety legislation and it is recommended that any electrical or network connections to the clock are undertaken by a suitably qualified engineer.

Care should be taken when installing the clock to ensure that it does not present any possible hazards to people or property within its vicinity. The clock should be installed at a height that ensures compliance with any local disability legislation.

Device operating temperatures

The GT8 clock is designed to be installed indoors only and comply with the following temperature range:

- Minimum operating temperature 0°C (32°F).
- Maximum operating temperature (with battery) 35°C (95°F).
- Maximum operating temperature (without battery) 0°C.

WEEE

In accordance with EN 50419, the clock must be disposed at the end of its life by returning to a designated recycling organization for waste electrical and electronic equipment as defined within the WEEE directive. The clock must not be disposed of in normal domestic waste.

Batteries should be carefully removed from the clock prior to disposal taking care to prevent short-circuits, crushing or damage to the battery housing.

Preface

Related Documents

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

- GT API Reference Manual. This document is targeted at software developers writing Android applications for the GT8 terminal.
- Application User Guide. Relevant to your application.

GT Services

GT Services provides priority end-to-end technical support, and access to our remote data and device management platform: seeing reduced costs, minimal downtime, and a more efficient HCM solution. The options available from Grosvenor Technology included:

- **GTConnect**. A cloud platform which connects your Human Capital Management (HCM) devices and your software, building an integrated network. This allows remote diagnostics and data management across all connected devices in real-time. GTConnect is a subscription service designed to streamline your HCM processes and reduce your technology and data challenges. With GTConnect, your workforce management is simple. For more information, see GTConnect - Grosvenor (grosvenortechnology.com).
- **GTProtect**. Protect your investment. All our devices carry a one year warranty: however, this subscription based service provides you with an extended warranty for the duration of the subscription. Should the hardware fail within that time, an advance exchange replacement device is provided - no questions asked. For smaller issues, we offer immediate Technical Support, whether you need to access our real-time diagnostics tool or to speak with one of our dedicated support team. For more information, see GT Protect - Grosvenor (grosvenortechnology.com).
- **Professional Services**. Our dedicated specialist in-house project team guarantees that you only have a single point of contact throughout your project, from start to finish. We work alongside you during the installation phase, we can ensure that you receive the outstanding service we are known for. From the moment you receive your device until it's running exactly as you need it to, we're on hand to deliver exceptional remote support. For more information, see Professional Services - Grosvenor (grosvenortechnology.com).

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

Chapter 2:

Hardware specification

Hardware specification

Clocks

Front Panel Assembly - Black	FP-GT8-BL
Front Panel Assembly - White	FP-GT8-WH

Display

- 8 inch full color capacitive multi-touch display with toughened glass for use in high traffic environments
- 16:10 aspect ratio, 1280 x 800 pixel resolution
- A separate glass inlay, below the display, provides the capability to customize the clock with backlit corporate branding

Processor

- 1.6GHz Quad Core

Operating System

- Android 10.0

Input/Output

- 4 User Accessible + 2 Internal USB 2.0 ports

Facial recognition

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

- Suprema SFM Slim
- Expanded fingerprint database of 10,000+ using fast matching on clock algorithm
- Contactless smart card readers: Mifare, iClass SE, Feig and Multi-tech readers
- Proximity card reader: supports a range of readers, including HID Prox 125kHz
- Magnetic stripe card reader
- Barcode reader or external scanner: multi-format, Visible and IR
- I/O relay modules

Temperature Screening module

Modules

Temperature Screening module	EM-TM-X
Temperature Module Mounting Kit - GT8	EM-TM-KIT-B

Expansion modules

IO Relay Module	EM-IO-RLY-B
IO External Reader Relay Module	EM-IO-ER-B

Memory

- 3GB

Internal Persistent Storage

- 16GB high performance flash storage

Host Connectivity

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

Power

- 12VDC ±5%
- Power over Ethernet Plus (POE+) 802.3at
- Internal lithium ion battery, up to 2 hours backup

Operating Temperature & Humidity

- Minimum operating temperature 0°C/32°F.
- Maximum operating temperature (with battery) 35°C/95°F.
- 5-90% Non-condensing

Hardware specification

Plug and Play

- Fast easy installation
- Easy to fit reader modules and peripherals
- VESA mount fixings

Integration

- Supports native Android and HTML 5 Apps
- Software Development Kit available

Sound

- Integrated stereo speakers
- Integrated microphone

Camera

- 5 Megapixel with front illumination; supports photo and video

Physical Security

- Metal wall-mount bracket with optional security fixing
- Optical tamper detection

Dimensions

- 216mm (H) x 206mm (W) x 78mm (D)
- 8.5 inches (H) x 8.1 inches (W) x 3.8 inches (D)
- Weight: 1.5Kg (3.3Lbs)

Sustainability

- 7-year design life
- Minimal footprint with industry-leading aesthetics

Hardware specification

The GT8 clock can be customised by fitting a range of optional modules

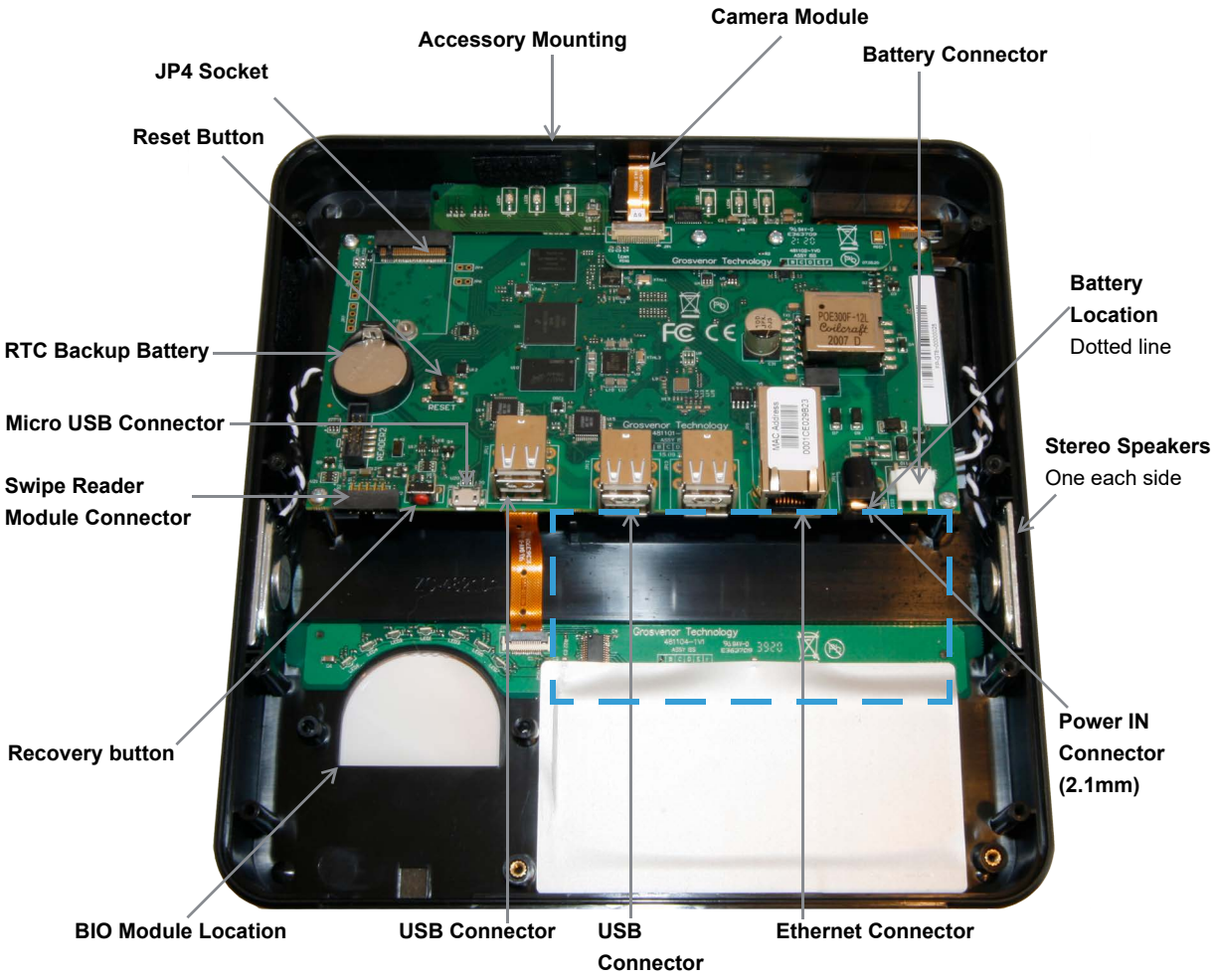
Reader modules

Barcode Reader Module Infra Red	RM-BAR-B
Barcode Reader Module Visible	RM-BARV-B
Feig Fixed Code Reader Module	RM-FEIG-FC-B
Feig HiTag Reader Module	RM-FEIG-HI-B
HID 125kHz Reader Module	RM-HID-B
HID iClass SE Reader Module (incl. Mifare)	RM-ICLSE-B
Extended Fingerprint Capacity Module	RM-IDENT-10K
Lumidigm Reader Module	RM-LUM-M320-GT8
Magnetic Reader Module	RM-MAG-B
Suprema SFSlim Fingerprint Reader Module	RM-SP-SFSLIM-GT8A

Hardware specification

125KHz Reader Module	RM-HID-B
iClass SE Reader Module	RM-ICLSE-B
Elatec MultiTech Reader Module	RM-ELATEC-B
Feig HI Reader Module	RM-FEIG-HI-B
Feig FC Reader Module	RM-FEIG-FC-B
Barcode Visible Red Reader Module	RM-BARV-B
Barcode Infra Red Reader Module	RM-BAR-B
Magnetic Stripe Reader Module	RM-MAG-B
RFIdeas MultiTech Reader Module	RM-RFID-B

Hardware specification



- **JP4 Socket**. Supports WiFi extension modules
- **Reset button**. Initiates hardware reset, clock will reboot. Accessible via hole in back cover (using straightened paper clip or similar)
- **RTC Backup**. Real Time Clock Backup Battery maintains time during power disconnection, 10 year life
- **Micro USB Connector**. Debug/ADB port
- **Swipe Reader Module Connector**. Reader modules include:
  - Mag Swipe
  - Barcode Swipe
- **RECOVERY button**. Press the button down when the device is powered on, to access the on-screen options menu for functions, including Factory Reset.
- **Bio module location**. SF Slim.

- **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

  Note: units are shipped with battery disconnected. Please connect battery before first use (tuck wires into space at side of battery to avoid obscuring Power IN Connector

  WARNING: only fit battery pack specified, failure to observe may result in fire hazard
- **Battery location**. Dotted line.
- **Power IN Connector (2.1mm)**. 12V DC External PSU (center positive) 12 V ± 5% with minimum 2A capacity (refer to Power Loading for current calculation)
- **Ethernet Connector**. 10/100/1000baseT Full duplex, auto crossover, supports PoE+
- **USB Connector**. USB2 x 4, for connecting external I/O devices
- **USB Connector**. USB2 x 2, for connecting internal modules

Comms modules

WiFi Comms Module	CM-WIFI-M2-22

Biometric module

Suprema SF Slim Reader Module	RM-SP-SFSLIM-GT8A

Chapter 3:

Installation

Installation

Before starting the installation, consider which power option is to be used, as this may influence cabling requirement, vicinity to power outlets and accessory modules required: for more information, see Chapter 4: “Power options” .

Fitting the clock

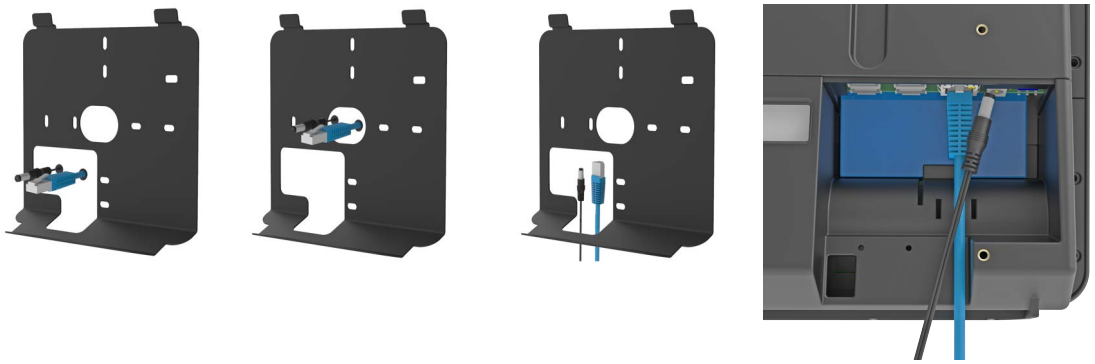
Location

The clock 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. The recommended installation heights for the clocks are for the top of the clock to be positioned so that the center of the camera is at a height of 148cm above the floor

Note: before fitting, please check local regulations such as disabled access when determining the height of the unit

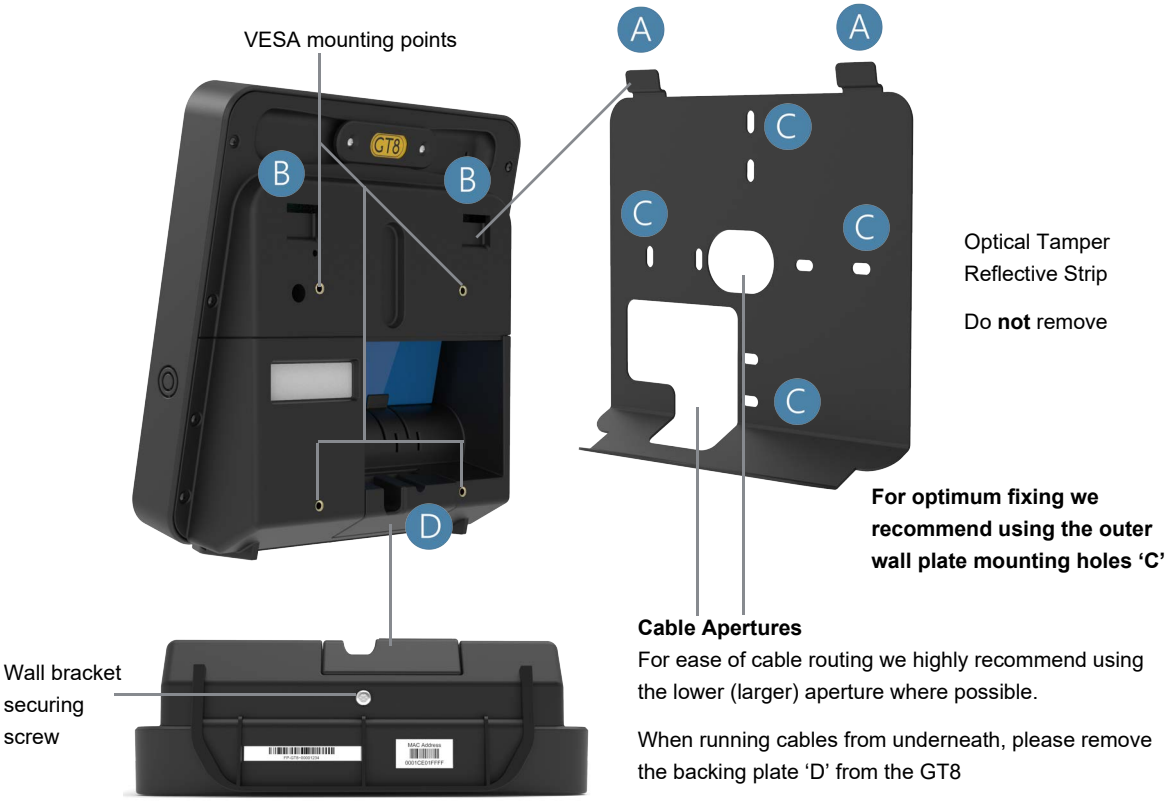
Cable routing

The GT8 provides a number of cable routing options, as displayed below. For ease of cable routing, we highly recommend using the lower (larger) aperture, where possible.



Fitting GT8 to wall bracket

1. Remove wall bracket securing screw to release wall bracket from GT8.
2. With the wall bracket against the wall, mark the 4 screw mount fixing points (C) and the preferred cable routing position.
3. Drill holes in the wall and mount the wall bracket with screws taking care to feed the cables through the bracket aperture.
4. Offer the GT8 unit close to the wall bracket and connect Ethernet and/or power cables.
5. Position the GT8 unit slightly above the wall bracket with its back parallel with the wall and make sure all cables are free to move.
6. Centralize the GT8 unit against the wall bracket and slowly lower the clock by sliding it down the wall until metal tangs ‘A’ engage into slots ‘B’.
7. With the clock fully down until it stops against the wall bracket re-fit the M4 screw in the base making sure to press the lower portion of the clock into the wall to make sure it sits snug against the wall.



Face recognition

Note: face recognition is only available if your application supports it.

The face recognition application recognises enrolled employees using facial recognition algorithms that allow the detection and recognition of individuals using facial characteristics: such as measurements of eyes, nose, mouth and ears.

Our facial recognition is also compatible with Mask Detection and prevents payroll fraud or 'buddy punching'. When recognition or detection has taken place, actions can then be performed based on your specific needs. This can help ensure compliance and helps reduce the risk of illness spreading in the workplace. Face recognition can also be used as part of a Workforce Management sequence, blocking the user from clocking in and recording results against employee records.

Note: the guidelines in this section are based on the current release of gtEasyClock v2.0.0).

Face recognition installation considerations

There are a number of factors which need to be considered when installing and using face recognition; these are outlined below. However, for more details, please refer to the Best Practices Guide and the Face recognition Addendum.

- **Installation heights**. The recommended installation heights for the clocks are for the top of the clock to be positioned so that the camera is positioned 148cm above the floor. This allows the clock to detect subjects who are standing approximately 30cm from the clock who are between 165cm (approx. 5' 5") and 175cm (approx. 5' 9") in height.

  However, consideration needs to be given for taller/shorter individuals and those who are in a wheelchair. For more information, refer to the Best Practices Guide.

- **Anti-spoof**. This feature is intended to deter users from attempting to fool the system by recording an image of any suspected spoof attempts using photos or a phone. The anti-spoof function uses AI technology to identify foreign objects within the image. Whilst the technology will not catch all attempts, it can eliminate the majority. By taking action against those caught attempting to undertake fraud and time theft the practise is then eliminated. These attempts can be recorded locally and reviewed by a supervisor retrospectively or transmitted to your HCM system, if supported.

- **Location of clock to Minimize Ambient Light Variations**. The clock should be located in a position which is not subject to significant variations in lighting conditions which could affect the performance and accuracy. Particularly avoid places where there is strong direct light behind the subject.

- **User identification range**. When detecting a face, the clock ensures the image is of the correct quality for facial recognition by measuring the pixel count between the eyes. This effectively dictates the range of the detection, but ensures the correct balance between accuracy and the omission of walk-by detections. This setting has been carefully calibrated for best performance and is currently not configurable.

- **Employee consent**. To maintain compliance with data protection legislation, when capturing Personally Identifiable Information (PII) the clock includes a consent statement that requires each employee to agree to the capture and storage of biometric data within the clock for a defined retention period.

If an individual employee is not willing to provide consent, then it is possible for employees to be identified using either a Keypad ID or badge, without the benefits of biometric evidence (depending upon the clock configuration). The method used for clocking is determined as part of the enrollment process on the clock.

- **Preventative maintenance procedures**. It is important to ensure that the camera window is regularly inspected and cleaned to prevent a build-up of dirt, dust or fingerprints around the camera lens which may obscure the camera resulting in poor quality image capture.

  The clock may be cleaned as often as necessary with any proprietary computer screen janitorial material.

  - Pre-impregnated micro-fiber 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 clock case.
  - For a smear-free finish, polish with a dry, clean, lint-free cloth.
  - DO NOT use any other janitorial products, such as: acids, solvents, polishes or abrasives.

Enrollment

When the GT8 has been installed, employees then need to have their image taken and enrolled.

During enrollment the employee must ensure that the image taken:

- Contains no other people or objects
- Sufficient front lighting on the subject's face
- They are facing towards and looking directly into the camera at the top of the clock:
  - With their face and neck fully visible and not obscured by PPE, mask, scarf, hat, and so on
  - With their eyes open and visible
  - With their head positioned within the provided guide
  - Avoid having hair covering parts of their face and/or eyes
  - Not have any bright light or shadows on your face or around the vicinity of your face which may obscure the employee's facial features
  - Sufficient front lighting on the subject's face: background color is dissimilar to subject's hair color
  - For employees wearing glasses position their head accordingly to minimize glare and reflections in lenses
  - Center face within frame of ellipse as displayed below:

Supporting Information and FAQs

Q. Should an employee who wears glasses enroll with or without them on?

A. If the employee wears glasses, for best results, we would recommend enrolling with glasses on. Employees should do their best to prevent glare on the glasses during the enrollment process

Q. If an employee grows facial hair, should they re-enroll?

A.We always recommend the enrollment photo matching closely as possible to the employee at any given time. The facial recognition looks for relative distance of specific points on the face, if the facial hair starts to change these points, we recommend the employee to re-enroll with the newly grown facial hair

Q. What happens if an employee chooses not to enroll their face? For example, they decline the biometric consent form during enrollment.

A.Other options of identification and verification can be configured specifically against an employee record. Depending on the hardware available in the clock, other identification/ verification options are as follows:

- Keypad ID
- Card (Hardware Dependent)
- Finger (Hardware Dependent)

For more information, see the Best Practices Guide.

Chapter 4:

Power options

Power options

AC 110-240V via adapter

The GT8 clock 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

DC 12V

The clock 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 stabilized voltage output of 12VDC ±5% with minimum 2A capacity. The power supply should incorporate suitable overload protection.

The GT8 power indicator will show blue when power is supplied via the 12V power jack either with direct DC connection or with an AC power adapter.

Power over Ethernet PoE

The GT8 may be powered via the Ethernet cable with suitable upstream PoE+ switch or injector.

Supported standards

- IEEE 802.3at (PoE+) injector provides clock with 2000mA @12V

Note: PoE+ is recommended to ensure there is sufficient power available to support different configuration of the clock.

When the GT8 is running from PoE the power indicator on the front of the clock will show green.

Battery backup

As standard the GT8 is fitted with a backup battery (EM-BB-2HR-A) to run the clock should the normal power supply fail, providing up to 2-hours runtime.

When the battery pack is installed the clock will continue to run when power is removed until the battery charge level reaches its lower threshold. The clock may be shut down prior to battery exhaustion by using the 'Shut Down' option accessible through the launcher menu. Once shut down the clock will remain off until power is restored. When in the shut down 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 shut down for prolonged periods by applying power to the clock.

Charging of the EM-BB-2HR-A battery pack is managed by the GT8 clock and depending on power source typical recharge time from 0% to 100% will range from three hours to 12 hours. Charging times will be extended in elevated ambient temperatures to protect the battery.

When the GT8 is running from battery the power indicator on the front of the clock will show red.

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

WARNING: ONLY FIT THE BATTERY PACK SPECIFIED. FAILURE TO OBSERVE MAY RESULT IN FIRE HAZARD

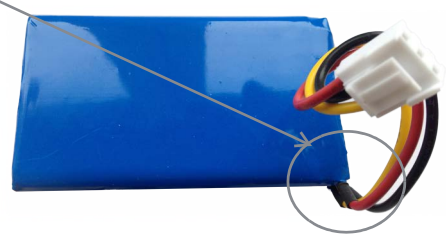
Service life of the EM-BB-2HR-A battery pack is typically two-three years, depending on conditions and regular replacement is recommended. The battery may become swollen towards the end of its service life. If swelling is observed the battery should be replaced.

Power options

Battery Connector
For connection of the GTL Li-Ion Battery Pack EM-BB-2HR-A
Provides up to 2 hour run time
Battery backup may be used with all power options including PoE

Note: units are shipped with battery disconnected. Please connect battery before first use (tuck wires into space at side of battery to avoid obscuring Power IN Connector)

WARNING: only fit battery pack specified. failure to observe may result in fire hazard



Note: battery cable connections

Battery Retaining Clip
Ensure the retaining clip pops out to secure the battery

Chapter 5:

Installing optional modules

Installing optional modules

When fitting any optional modules place the clock face down on a clean flat surface that will not scratch the glass front and remove the lower and upper rear covers. Remove battery, this is optional but generally makes the fitting of modules easier. Once the chosen modules have been fitted, refit the upper rear cover first, ensuring no cables are trapped, followed by the lower cover.

Note: you may find it easier to refit the lower cover with the battery removed and then fit the battery afterwards, ensuring the battery retaining clip pops out to secure the battery in place.

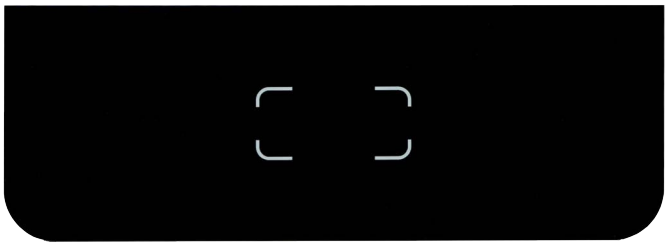
For information on how to fit the Temperatures Screening module, refer to the Temperature Screening module User Guide.

Front plate

Depending on the option chosen the GT8 lower glass front plate may be either.

With fingerprint aperture.

Without fingerprint aperture.



Both versions may be (optionally) customized to include a company logo, etc

WARNING: once secured the lower glass front plate cannot be removed without damaging it.

Reader module options

The GT8 is compatible with the following Reader modules, each of which is described in this chapter:

Reader Module name	Reader module code	Page reference
Barcode Reader Module Infra Red	RM-BAR-B	page 5-4
Barcode Reader Module Visible GT8	RM-BARV-B	page 5-4
Feig Fixed Code Reader Module GT8	RM-FEIG-HI-B	
Feig HiTag Reader Module	RM-FEIG-H-B	
HID 125kHz Reader Module GT8	RM-HID-B	page 5-5
HID iClass SE Reader Module (incl. Mifare) GT8	RM-ICLSE-B	page 5-5
Extended Fingerprint Capacity Module	RM-IDENT-10K	
Lumidigm Reader Module GT8	RM-LUM-M320-GT8	
Magnetic Reader Module GT8	RM-MAG-B	page 5-4
Suprema SFSlim Fingerprint Reader Module GT8	RM-SP-SFSLIM-GT8A	page 5-3

Installing optional modules

Fitting internal fingerprint reader module

RM-SP-SFSLIM-GT8

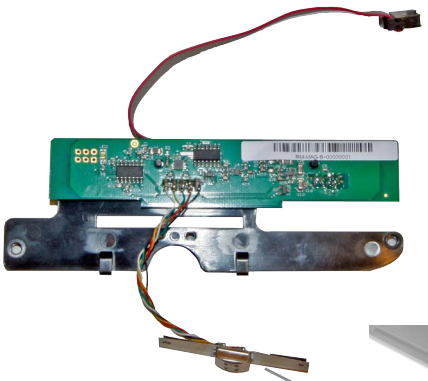
Note: the fingerprint reader module is normally a factory fit option only

1. Remover lower cover.
2. Slide fingerprint reader module under the PCBA, ensuring ribbon cable does not detach.
3. Secure with screws provided (do not over tighten).
4. Connect USB cable to one of the left-hand ports.
5. Replace lower cover (do not over tighten screws).

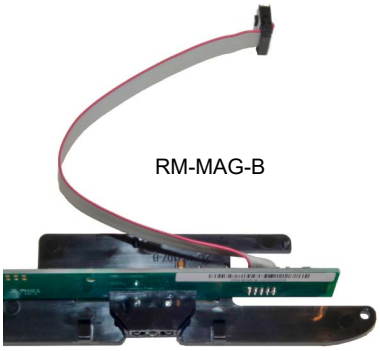
Fitting Swipe Reader Modules

Note: proximity and card swipe readers use the same mounting location, only one internal module may be fitted to the GT8 at the same time. When fitting swipe card readers, ensure the reader head is located correctly in the aperture at the bottom of the GT8 before fully securing using the screws supplied.

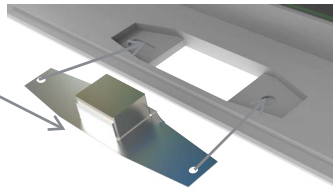
RM-MAG-B, RM-BAR-B or RM-BARV-B reader modules



RM-MAG-B, **RM-BAR-B** or **RM-BARV-B** reader modules

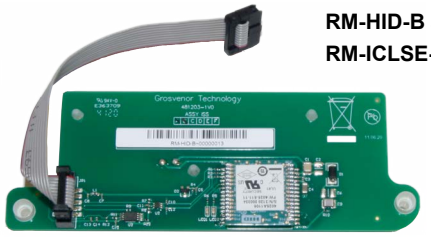


RM-MAG-B



Note: for correct operation ensure the slot and hole in RM-MAG-B correspond to mounting location

Fitting Proximity Reader Modules RM-HID-B and RM-ICLSE-B



RM-HID-B and
RM-ICLSE-B

Proximity Reader & card swipe mounting position

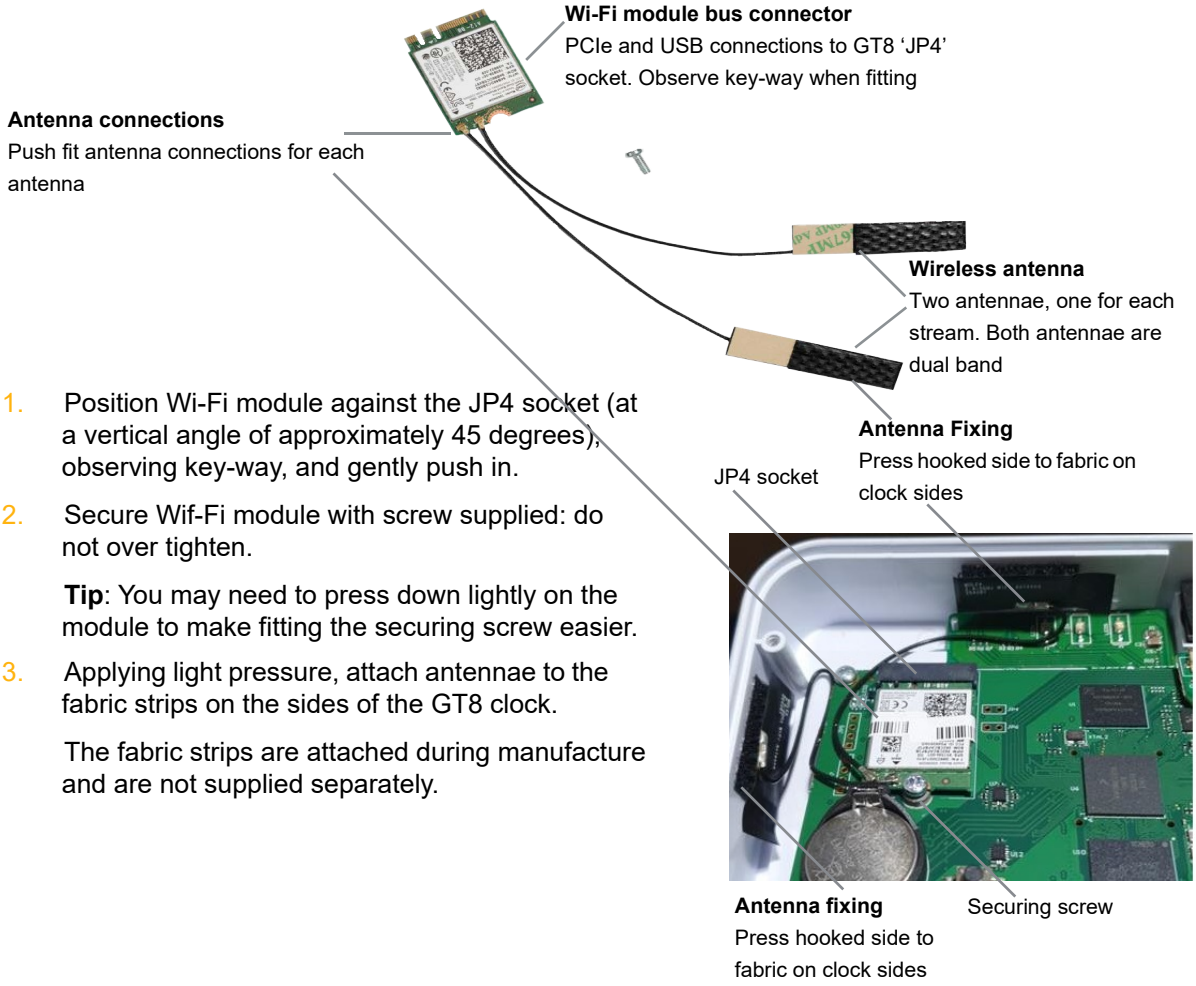
1. Remove lower cover.
2. Position proximity/card swipe module and secure with screws provided (do not over tighten).
3. Connect ribbon cable to connector on PCBA, circled in the diagram on the right.
4. Replace lower cover: do not over tighten screws.

   Note: to avoid undue stress on the cables, the ribbon cable should pass underneath the fingerprint USB cable, when fitted.

Fixing screws

Fitting the Wi-Fi module

CM-WIFI-M2-22



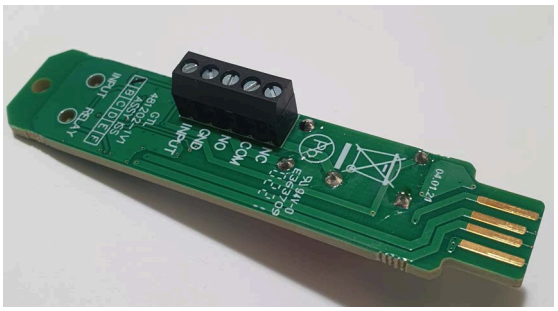
1. Position Wi-Fi module against the JP4 socket (at a vertical angle of approximately 45 degrees), observing key-way, and gently push in.
2. Secure Wif-Fi module with screw supplied: do not over tighten.

   Tip: You may need to press down lightly on the module to make fitting the securing screw easier.
3. Applying light pressure, attach antennae to the fabric strips on the sides of the GT8 clock.

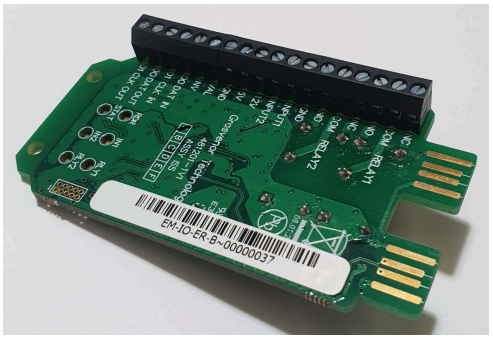
   The fabric strips are attached during manufacture and are not supplied separately.

GT8 IO Relay boards

EM-IO-RLY-B	EM-IO-ER-B



Occupies a single USB port



Occupies two USB ports
Note: due to the size of the EM-IO-ER-B module when this is fitted it is not possible to use the other two USB ports.

The GT8 clock has optional I/O relay modules that can be installed via the USB ports in the back of the clock. There are two modules available offering either a single relay output/single input or a dual relay output/dual input module, which also provides Wiegand and external reader connections. The I/O modules can be used for activating external bells/klaxons or for access control functionality.

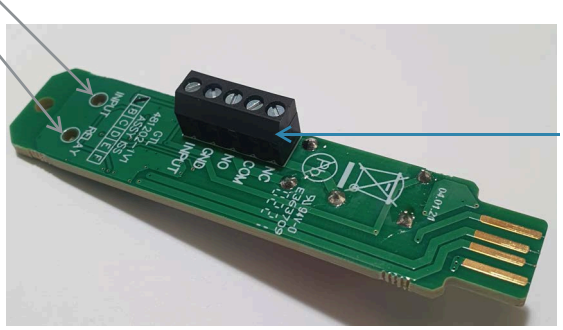
The table below displays a summary of the functionality for each module:

GT8	Relay Outputs	Inputs	External reader	Weigand Out
EM-IO-RLY-B	Volt-free Single Pole NO and NC Contacts Max current: 3A Max Voltage: 30V (AC or DC)	Non-isolated DC inputs 5V pullup (2k2) Max: 12V in	No	No
EM-IO-ER-B	Volt-free Single Pole NO and NC Contacts Max current: 3A Max Voltage: 30V (AC or DC	Non-isolated DC inputs 5V pullup (2k2) Max: 12V in	Yes	Yes

The EM-IO-RLY-B Relay board

Status Indicator LEDs

IP1 Input 1 ON LED
RLY1 Output 2 Relay Energised LED



Relay Out - 3A max

1 Common 1
2 Normally Open 1
3 Normally Closed 1

NC
COM
NO

The EM-IO-RLY-B is an expansion module which provides relay outputs and auxiliary inputs:

- Single relay output.
- Single input.

The EM-IO-RLY-B is located in the back panel and connects to the USB port.

Relay Output Rating - 3A ac or dc 30V max

Power Loading - 70mA @12V Power IN.

Installing and testing the EM-IO-RLY-B Relay board

To install and test the EM-IO-RLY-B Relay board, do the following:

1. Unscrew and remove the lower cover.

Rubber foot

2. If a rubber foot has been attached to the clock, remove it.

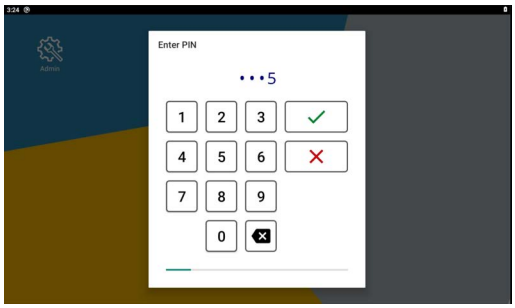
3. Insert the Relay board in one of the bottom two USB ports.

4. Replace the lower cover. **Note**: the rubber foot should not be stuck back on. If cable entry is from below the cover, it can be left off and the screw can be fitted to secure the end of the IO PCB.

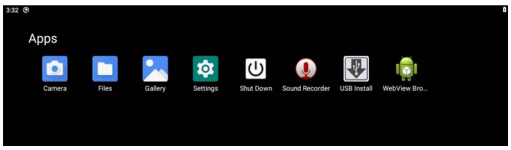
5. To test the Relay board, from the GT8 clock, do the following:

- From the **Home** screen, click 

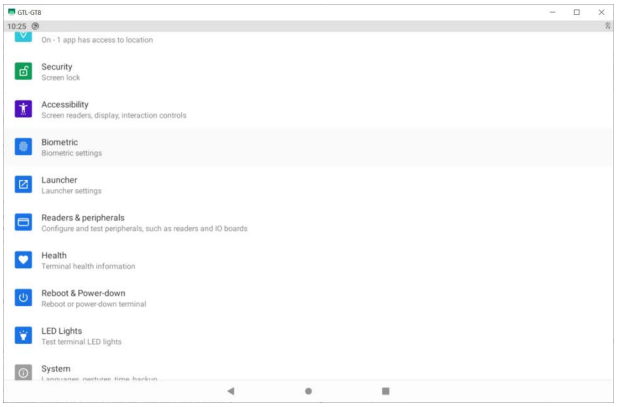
Admin.



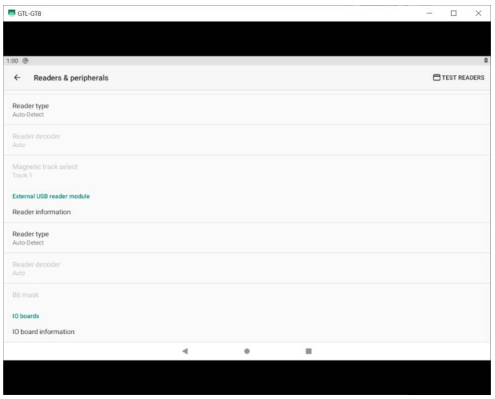
- Enter PIN (the default is 1905) and click  .



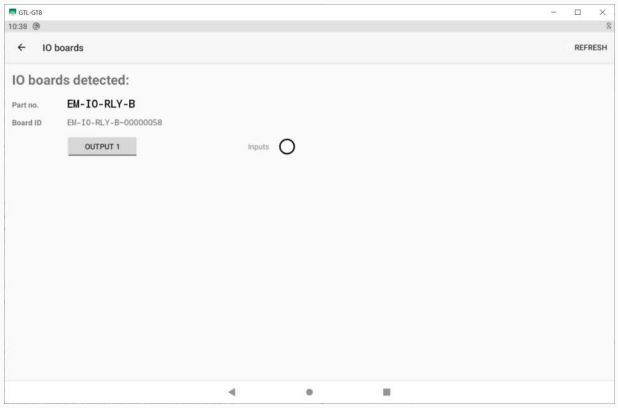
From the **Apps** screen, click **Settings**.



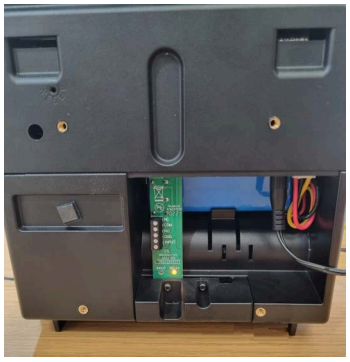
Click **Readers & peripherals**.



Click **IO board information**.



Click	Result
Output 1	The relay LED on board lights up



The orange light denotes the relay is energised.

6. If you short the Input to ground, the Input LED is illuminated,

GT8 clock display	IO Relay board
	The relay LED on board lights up 

7. Replace the lower cover. **Note**: the rubber foot should not be stuck back on.
8. Replace the screws, which will go through the PCB board. Take care not to over tighten the screws.

The EM-IO-ER-B Relay board

The EM-IO-ER-B is an expansion module which provides additional facilities to the basic GT8 front panel:

- Connection for External Card Reader (Wiegand or Clock and Data)
- Two Auxiliary inputs
- Two relay outputs (3 Amp capability)
- Wiegand out

External Reader port

Wiegand or Clock/Data readers may be connected via the screw-clock connector. This connector also includes Power OUT to power the reader (5V or 12) and drivers for LED indication on the reader.

Valid and Invalid output

Two Auxiliary inputs

Two Auxiliary volt free outputs

The EM-IO-ER-B is located in the back panel and connects to the USB connection.

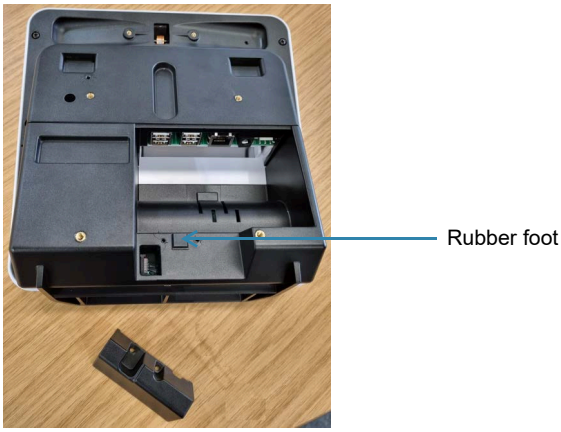
Relay Output Rating - 3A ac or dc 30V max

Power Loading - 115mA @12V Power IN.

Installing and testing the EM-IO-ER-B Relay board

To install and test the EM-IO-ER-B Relay board, do the following:

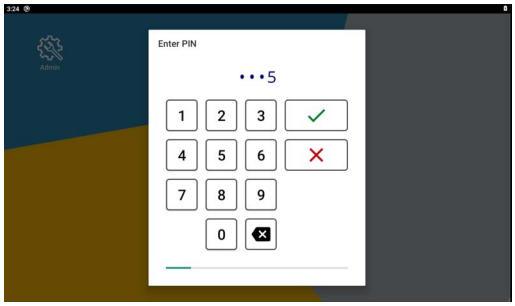
1. Unscrew and remove the lower cover.



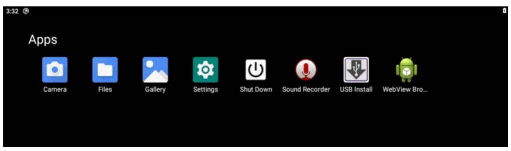
2. If a rubber foot has been attached to the clock, remove it.
3. Insert the Relay board into two USB ports.

4. To test the Relay board, from the GT8 clock, do the following:

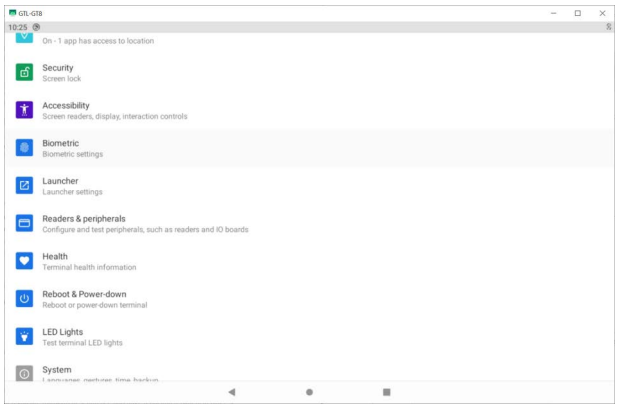
- From the **Home** screen, click Admin **Admin**.



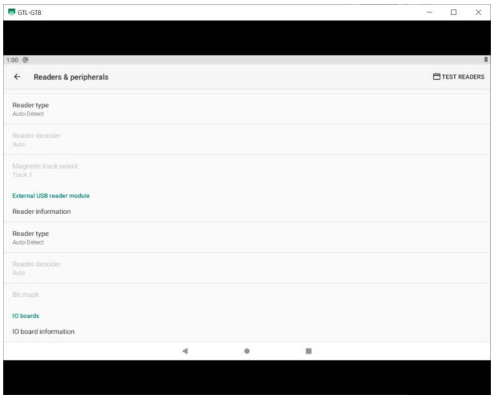
- Enter PIN (the default is 1905) and click ✓.



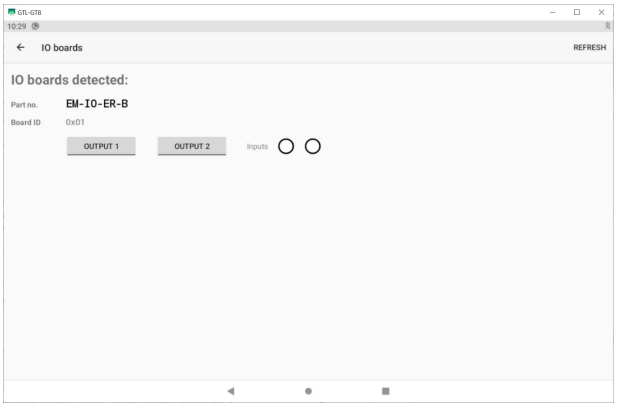
- From the **Apps** screen, click **Settings**.



- Click **Readers & peripherals**.



- Click **IO board information**.



Click	Result
Output 1	 The **RLY1** orange LED is lit up to denote the relay is energised.
Output 2	The green **STAT** LED flashes  The RLY 1 and RLY 2 orange LEDs are lit to denote the relays are energised.

5. If you short the Input 1 or 2 to ground, the corresponding Input LED is illuminated,

GT8 clock display	IO Relay board
	The relay LED on board lights up 

6. Replace the lower cover. **Note**: the rubber foot should not be stuck back on. If cable entry is from below the cover, it can be left off and the screw can be fitted to secure the end of the IO PCB.
7. Replace the screws, which will go through the PCB board. Take care not to over tighten the screws.

Temperature screening

The Temperature Screening module (part number EM-TM-X) provides the ability to measure an individual's temperature using a fast non-contact thermal camera in order to identify whether an individual exhibits an elevated temperature. The Temperature Screening module can be installed on either an Android GT8 or GT10 and connects via the USB, using the appropriate kit.

The Temperature Screening module is available as a production and post production add-on. For post-production customers, please refer to the Temperature Screening module Guide for complete installation instructions.

The temperature measurement works in conjunction with the GT8/GT10's facial detection/ recognition capability to ensure the accurate and consistent measurement of an individual's temperature from the correct point of the face.

The application supports the ability to define a threshold temperature, above which the clock can be configured to send a notification and also operate a relay output to control an external third-party device.

About the Temperature Screening module

The key benefits of the Temperature Screening module are:

- Fully integrated face recognition and Temperature Screening module.
- Temperature screening improves employee safety by identifying employees with elevated temperatures.
- Configurable workflows can be setup using an XML file and includes the option to provide health screening questionnaire.

The Temperature Screening module requires at least the following firmware, application versions and optional modules installed.

- **Firmware**:
  - v2.1.0
- **Application**:
  - GtEasyClock v2.1.0

Installing optional modules

Cleaning

Note: the window on the Temperature Screening module should only be cleaned when strictly necessary as the Anti Reflective coatings on it are easily scratched

Cleaning of the outside of the Temperature Screening module can be undertaken at intervals appropriate to the environment that it is being used and the frequency of use. In all cases it is recommended that the surface of the module is wiped with a lint free cloth that has been dampened with up to 70% isopropyl alcohol. We do not recommend spraying liquids directly onto the surface of the module as this could potentially cause damage to the electronics.

Installation Safety

The Temperature Screening module should be installed in accordance with the instructions documented in the Temperature Screening module User Guide. The GT8 Temperature Screening module should be installed in compliance with any Health and Safety legislation and it is recommended that any electrical or network connections to the clock are undertaken by a suitably qualified engineer.

The Temperature Screening module is designed to be installed indoors only with a normal ambient operating temperature between 15-34°C (60-90 °F).

Care should be taken when installing the clock to ensure that it does not present any possible hazards to people or property within its vicinity. The clock should be installed at a height that ensures compliance with any local disability legislation.

Temperature Screening module performance specifications

Feature	Specification
Camera	Micro thermal imaging device
Temperature accuracy	+/- 0.5°C
Interface	USB
Ambient light	Device should be positioned so that it is not exposed to direct sunlight which may affect the operation of the sensor
Ambient temperature	Normal ambient operating temperature should be between 15-34°C (60-90°F)
Location	Device is only intended for use indoors within a normal office environment
Measurement distance	The distance between the device and the subject should be 50 cm
Measurement conditions	Subject body temperature should be normalised for ambient conditions (raised temperature due to exercise or subject to hot or cold temperature extremes can cause abnormal readings). Clothing covering the head may also result in abnormal readings: for example, coming straight in from the cold or after physical exercise
Dimensions	Width: 100 mm/3.94” Height: 28 mm/1.10” Depth: 26 mm/1.02”

When the Temperature Screening module has been attached you **must** then:

- Vaildate the Temperature Screening module. Supervisors need to test the module’s functionality before it is calibrated and used.
- Calibrate the Temperature Screening module. This can be done either the setup application or using the **Buttons.xml** file to modify the **thermal.calibrate** action.

When the Temperature Screening module has been calibrated, the following functionality is then possible to:

- Set up the Temperature Screening workflow.
- Set up the Temperature Screening options.
- Allowing individuals to bypass a temperature screening check.

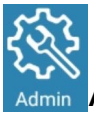
For details on how to do this, see the Temperature Screening module User Guide.

Chapter 6:

System start-up

System start-up

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 clock and to start enabled services.

Once the unit is fully booted, the initial **Launch** screen gives you the opportunity to enter the **Terminal Setup**. To do this, click 

Admin.

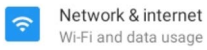
After a short delay the clock will automatically proceed to run the installed application. If no application is configured to auto-start the clock will stay on the **Launcher** start-up screen.

Note: if an application is installed, but not configured, the clock continues to switch between the initial screen and the application set-up screen

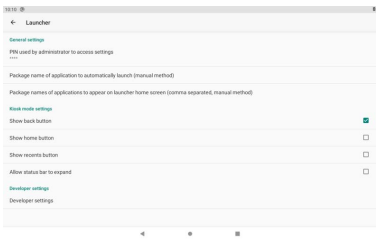
Clock setup navigation

Navigation using the touch screen.

- Touch icon to open menu.



- This opens the item options menu e.g:



- To activate/deactivate a toggle switch touch it.

- To go back touch the back arrow displayed at the top left or bottom centre (location varies depending on menu item opened).

- To return to initial screen (from any screen) touch the circle button on the bottom menu.

  Note: the square button, in the bottom menu, is reserved for future functionality and is currently inactive.

- Touch and drag your finger across/down/ up the screen to scroll left/right or up/ down to view hidden content.

Chapter 7:

Clock shut down

Clock shut down

When powering off the GT8, it is advisable to perform a shut down operation. The shut down utility will stop all processes and perform a graceful shut down, allowing power to be safely removed.

Note: if power remains on the unit it will re-start after a delay.

Note: the battery backup will continue to run the GT8 following a power failure until the battery capacity reaches its lower threshold, when the graceful shut down will be triggered. The unit will be powered off at the end of the process.

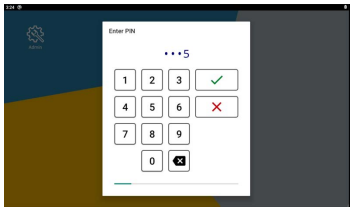
Note: the shut down utility allows the GT8 to be powered off without exhausting the battery. To power down the unit, run the utility until the unit has completed its shut down, then remove the power. If power is left connected the unit will re-start after a delay.

To trigger the shut down process or perform a re-boot:

1. Enter terminal set up, click 

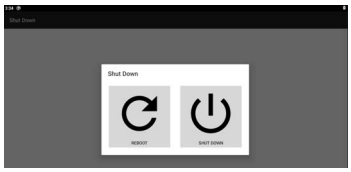
Admin.

2. Enter PIN, the default is **1905**.



3. Select shut down.

4. Select shut down or reboot, as required.



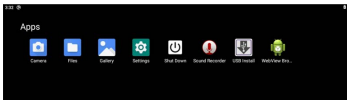
Note: to completely power off the clock, disconnect the power supply once the clock has shut down (PSU and/or POE+).

Note: clock will not boot/reboot if running on battery only.

Software reset

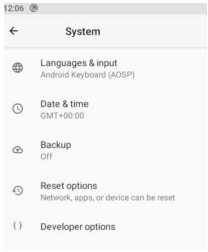
Android provides a mechanism for the user to remove installed packages and data from the device.

1. Click **Settings**.

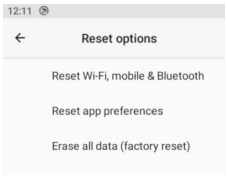


2. Click System.

3. Click **Reset Options**.

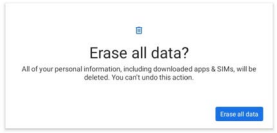


4. Click **Erase all data (factory reset)**.



5. Click **Erase all data**.

6. Click **Erase all data** to confirm deletion.



7. Clock will restart after a few minutes with its factory settings and data erased.

Recovery menu

The **Recovery** menu can be accessed by pressing and holding the **Recovery** button, whilst the clock is powering up. When the **Droid** logo is displayed on the screen, release the **Recovery** button, 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 the system now.
- Wipe cache partition.
- Wipe data/factory reset.

The **Recovery** button is found near the bottom edge of the main PCB, under the bottom rear cover.

Chapter 8:

Clock setup

Clock setup

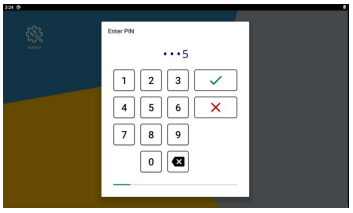
Accessing the clock setup

Allow theclock to boot and click **Admin**. A PIN is required to enter setup mode: the default is **1905**. From the **Apps** menu, click **Settings**, as displayed below:

1. Click 

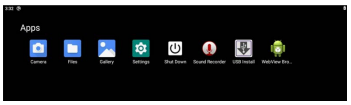
Admin.

2. Enter PIN: the default is **1905**.

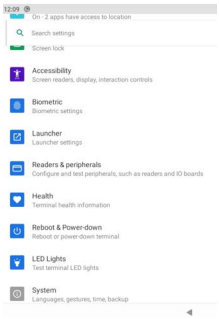


Note: the default PIN is **1905**: however, it is recommended that this is changed, since the default PIN appears in freely available documents. To change the PIN, select the **Launcher** item on the **Setup** menu.

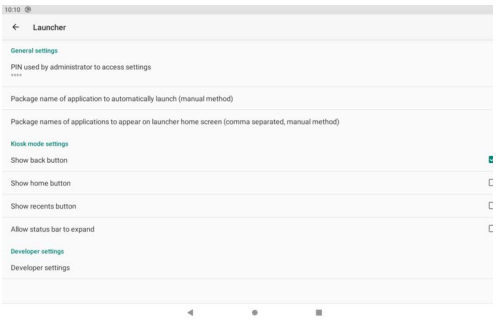
3. Click **Settings**.



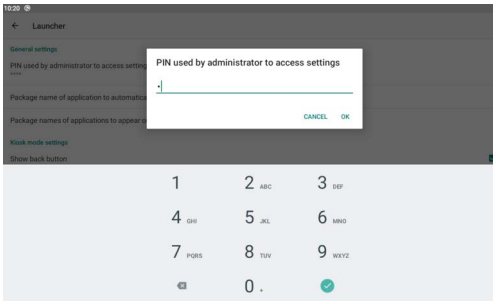
4. Scroll down and click **Launcher**.



5. Click **Erase all data**.



6. Enter new PIN and click **OK**.



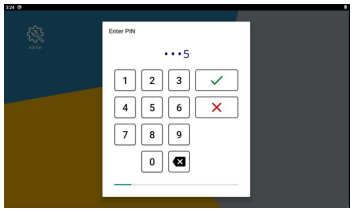
Configuring network settings

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

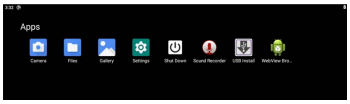
Note: when selecting Wi-Fi, wireless must be enabled to see available networks.

1. Enter clock set up and click **Admin**.

2. Enter PIN: the default is **1905**.

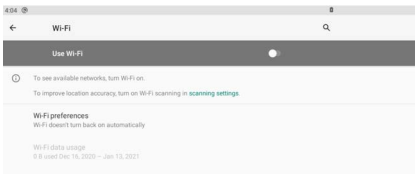


3. Click **Settings**.

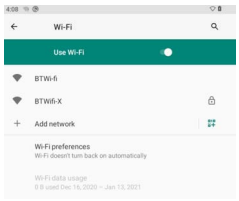


4. Click **Wi-Fi**.

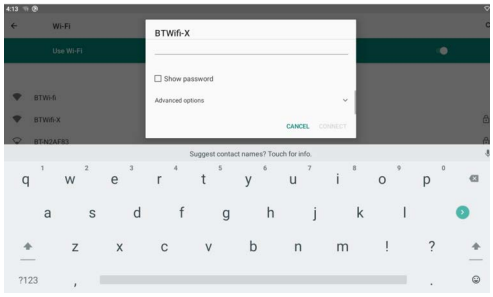
5. Click **Use Wi-Fi** to toggle Wi-Fi on/off.



6. Toggle turns green and, after a few moments, displays available networks.



7. Select chosen network, enter details and click **connect**.



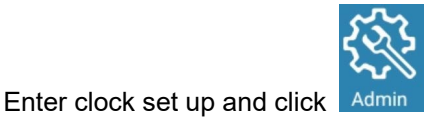
8. If the network you require is not listed select **Add network** to add a network connection manually.

9. Select Wi-Fi preferences to configure automatic reconnection, etc.

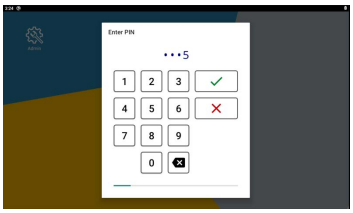
Clock setup

Configure wired networks

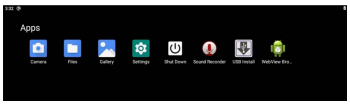
1. Enter clock set up and click **Admin**.



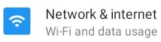
2. Enter PIN: the default is **1905**.



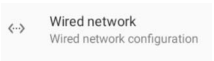
3. Click **Settings**.



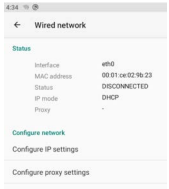
4. Click **Network & internet**.



5. Click **Wired network**.



6. Select required option and enter details as required.



Note: if using a VPN, select the **VPN** option from the menu, click **+** (plus) at the top right of the next screen and enter your VPN details.

Configuring readers

The GT8 can accommodate a wide range of reader types and credential formats. Setting up a reader has two elements:

- **Reader Type**. This relates to the reader hardware and its connection to the system: for example, proximity, Wiegand, magstripe, and so on.
- **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.

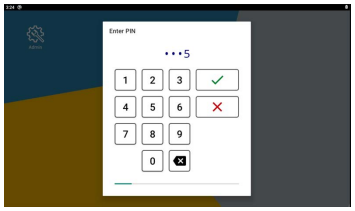
Both the reader type and the decoder can be auto detected and this is the default configuration. In most instances this will give satisfactory results: however, these can be manually configured if required.

Readers are configured through the **Settings** menu.

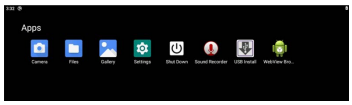
1. Enter clock set up and click 

Admin.

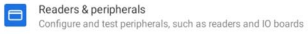
2. Enter PIN: the default is **1905**.



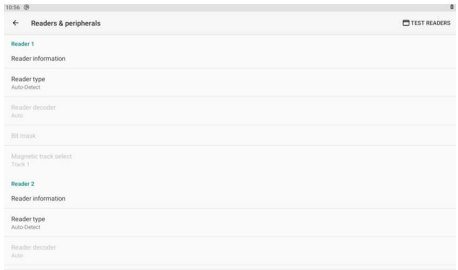
3. Click **Settings**.



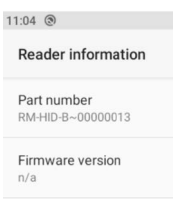
4. Click **Readers & peripherals**.

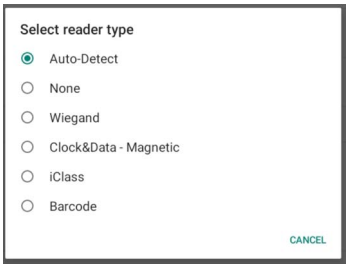


5. Click **Readers & peripherals**.



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 displays the information for the RM-HID-B.





Clock setup

Wiegan Bitmask

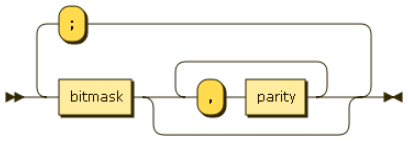
In addition to the standard fixed decodes for reader data a configurable bit mask can be applied to create custom decodes. Selecting **Wiegand bitmask** as a decoder type will open a dialog for the bitmask to be entered.

The following letters are defined for bitmasks:

Mask char	Description
S	Site code (Most Significant Bit (MSB) first)
B	Badge code (MSB first)
s	Site code (Least Significant Bit (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 characters '**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 decorder 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

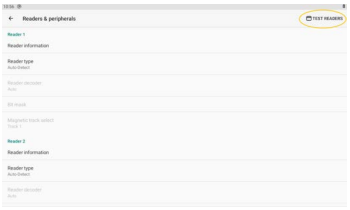
- **X** is used to count bits that are set (e.g. 1).
- **E** is used to specify the bit that should make the bit count even.
- **O** is used to specify the bit that should make the count odd.

It does usually not make sense to have more than one E or O per parity mask.

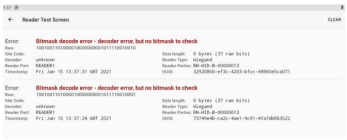
Testing card readers

The GT8 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** dialog.

1. From the reader configuration screen select **Test Readers**.



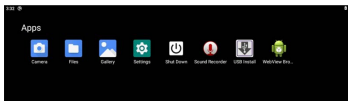
2. Present/swipe card as appropriate to view the information.



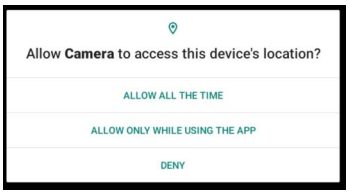
Testing the camera

Selecting the **Camera** icon allows the GT8's camera and a live picture is displayed on the clock display. There is a camera active indicator to the right of the camera, which is lit when the camera is operating.

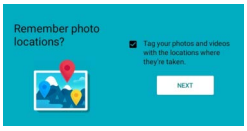
1. Click **Camera**.



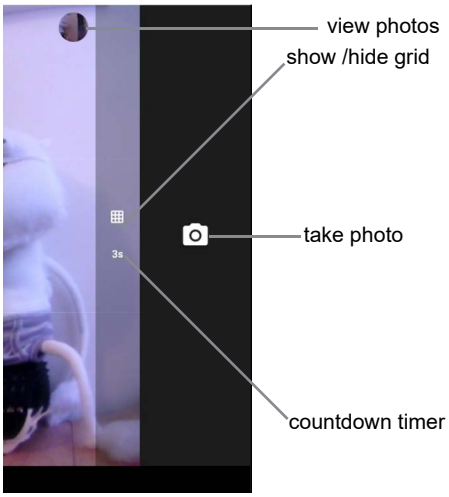
2. Click **option**.



3. Click option and click **Next**.



4. Camera options.

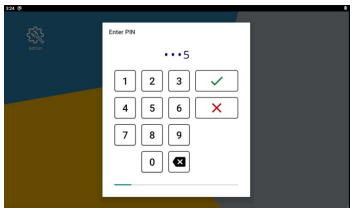


Testing Biometric reader

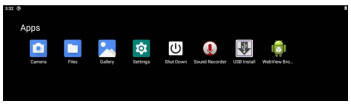
The GT8 includes a utility to display the output of a Biometric reader to validate correct functioning and setup. The utility is accessed from the **Biometric** dialog.

1. Enter clock set up and click **Admin**.

2. Enter PIN: the default is **1905**.



3. Click **Settings**.

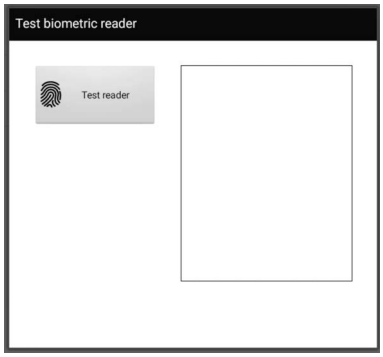


4. Click **Biometric**.

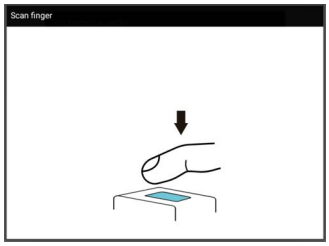
5. Click **Test Reader** (top right).

Note: clicking the other menu items provides further information about the installed Biometric reader.

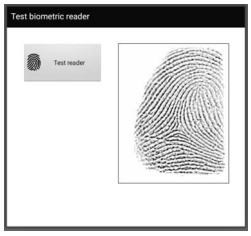
6. Click **Test Reader**.



7. Place finger on reader, as displayed below:



8. The test fingerprint is displayed.



9. Press **Test Reader** to retest, if required.

10. Click anywhere outside of the test reader window to close.

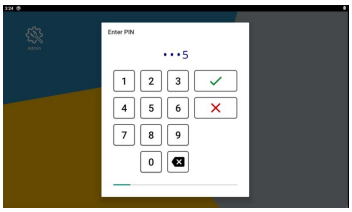
Note: test fingerprints are not saved.

Clock health information

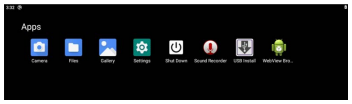
The GT8 monitors key elements of the system and can display their status, accessed by selecting health from the **Settings** menu.e

1. Enter clock set up and click **Admin**.

2. Enter PIN: the default is **1905**.

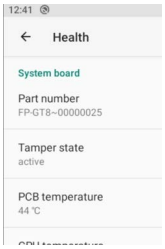


3. Click **Settings**.



4. Select **Health**.

5. Scroll down to review information.



Note: depending on the item further information may be displayed by clicking it.

Chapter 9:

Software deployment

Software deployment

Deployment is the process of setting up (or updating) the GT8 clock with the required firmware, application and settings*.

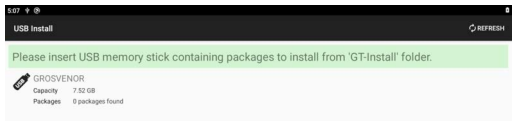
* If using a **gt8-config.xml** file, refer to the User Guide relating to our specific application for instructions on how to configure this.

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

Deployment from USB memory device

1. Format a USB memory stick as **FAT32**.
2. Create a top-level folder inside the memory stick named **GT-Install**.

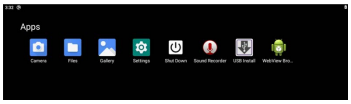
Note: the installer will only look for files in this folder. Any files outside of this folder will be ignored.



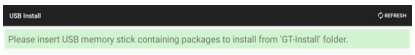
3. Copy the firmware and/or application files to the GT-Install folder.

Note: the supplied file must be copied to the memory stick as is with file structure intact. Do not unzip the contents of zip files.

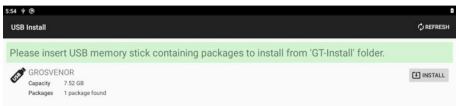
4. Properly eject the USB memory stick from your computer.
5. Start the **USB Install** utility, from the **Apps** screen, on the clock.



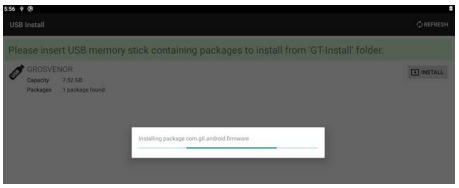
6. Insert the memory stick into an available USB port on the clock.



7. This will automatically detect the memory stick and display an **Install** button.

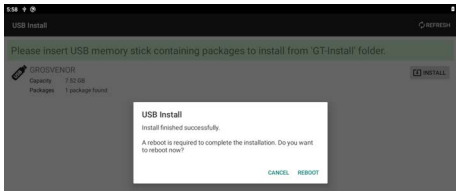


8. Click **Install** to complete the process.



WARNING: only click Install if you wish to proceed. You will not be asked to confirm the installation and there is no option to quit. Once installation has commenced the process must be allowed to finish. This may take a few minutes.

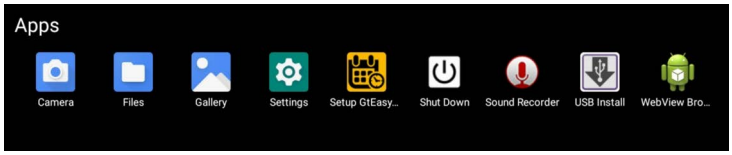
9. If prompted, click **Reboot** to complete the installation.



Application setup

When the application is first installed it will require configuring before it is active/usable. Until this is completed, the GT8 clockwill alternate between the **Application not initialized** and **Home** screen, the **Home** screen will now also display the application icon.

To configure the application select **Setup Application** or click the application icon, the application icon is also displayed on the **Apps** window.



GTEasyClock set up menu:

Note: please refer to the application User Guide for specific instructions on how to configure your application.

Chapter 10:

Care and maintenance

Care and maintenance

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

Maintenance instructions

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

- Pre-impregnated micro-fiber 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 clock 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 GT8 are followed, there is no need for regular maintenance of the device, other than the battery.