# TS2020 TERMINAL (FACT)

## INSTALLATION AND MAINTENANCE GUIDE

MAN057-09

JANUARY 2022

# CONTENT

# INTRODUCTION

Drawing on our many years of experience, we have created a Terminal which is smart enough for any office and robust enough for a factory or hospital.

The TS2020 Terminal range provides a solid foundation for accurate, reliable data capture that is fundamental to any chosen system.

This manual guides you through the installation, setup and maintenance of the terminal.

# MOUNTING

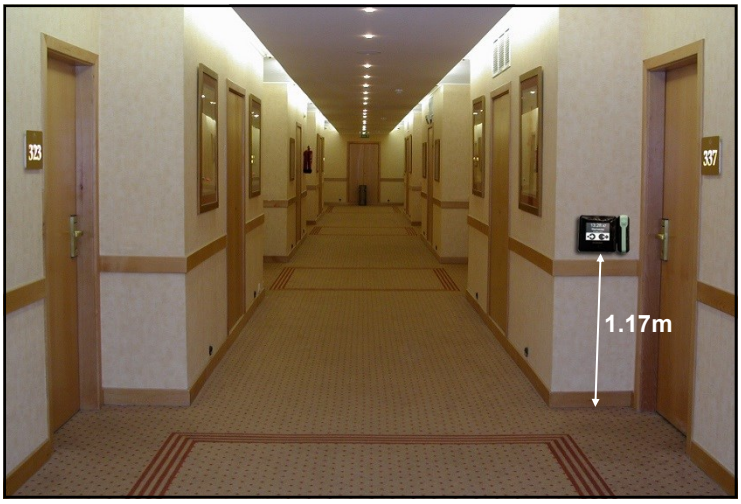
Site the TS2020 terminal indoors and away from extremes of heat, dust, vibration and fumes. It should be protected from excessive condensation, hosing and direct sunlight. Choose a location that allows room for normal use and access for maintenance.

The TS2020 terminal is fixed to a vertical mounting surface through the three holes in the rear of the case using the screws supplied. The upper pair are keyhole type whilst the lower one is a standard screw hole.

Cable entry into the terminal comes through the space at the rear or through the cut-outs, one on the bottom of the rear case and one either side. These are used by drilling holes through the case. These will accept standard 20mm conduit fittings.

# POSTIONING

The TS2020 terminal should be mounted approx **1.17m** from floor level. The exact position may well be determined by other factors (accessibility, lighting and reflection).

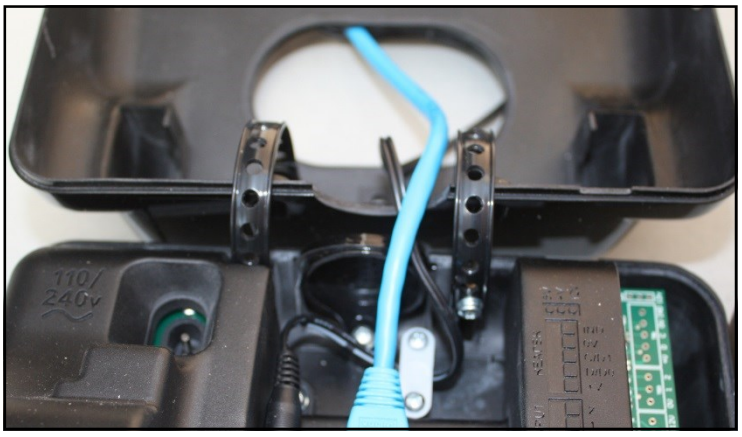



The fingerprint option is possibly the most critical of positioning. For correct reading of employees fingers, a terminal should not be too low or too high otherwise inconsistent reading is a possibility due to peoples different heights. (please see separate section, FINGERPRINT READER)

# GENERAL INFORMATION

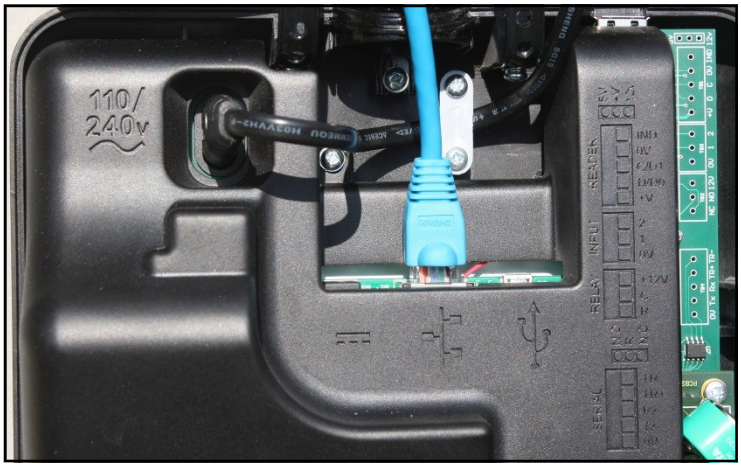
Once removed from its packaging lay the TS2020 on a flat surface. Undo the two screws on the bottom of the terminal with a cross head screw driver to separate the front from the back.

The front hinges outwards and is attached at the top edge. Carefully remove the front by pulling outwards from the bottom edge. The front and back are secured together by plastic straps.

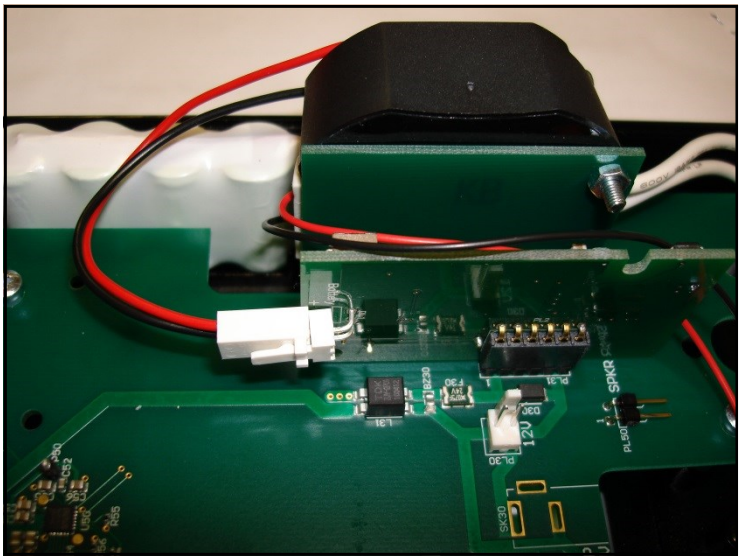


# GENERAL INFORMATION

The TS2020 series internal circuit board is protected by a plastic cover. All connection points are left open for easy access and are clearly indicated.




This should normally not need to be removed. However, housed beneath this are the UPS power supply (if fitted) and battery. Any maintenance or work carried out on these will require the plastic cover to be removed by unscrewing it from the case.



# GENERAL INFORMATION

## IMPORTANT SAFETY INFORMATION

This TS2020 terminal has been designed to meet international safety standards but, like any electrical equipment, care must be taken if safety is to be assured. read these safety instructions before installation and operation of the terminal. Retain this installation guide for future use.

☑ **DO** ensure that all the electrical connections (including power connections and interconnections between pieces of equipment) are properly made in accordance with the manufacturers instructions. The equipment must be earthed.

☑ **DO** consult your dealer if you are in any doubt about installation, operation or safety of the equipment.

☑ **DO** remember that some equipment continues to operate after mains power has been removed, because of an internal battery. In such cases a qualified Service Engi neer must disconnect the battery before attempting to service the equipment.

☒ **DO NOT** continue to operate the equipment if you are in any doubt about it work ing normally

☒ **DO NOT** remove any cover fastenings unless you are qualified to do so. Even then isolate from the power connection before you start.

☒ **DO NOT** allow the equipment to be exposed to rain or moisture other than per mitted by the equipment's specification.

☒ **DO NOT** attempt to service any battery fitted to the equipment. If the battery fit ted to the circuit board is faulty, return the complete circuit board to an approved Ser vice Centre. Removable batteries may be replaced by a qualified Service Engineer.

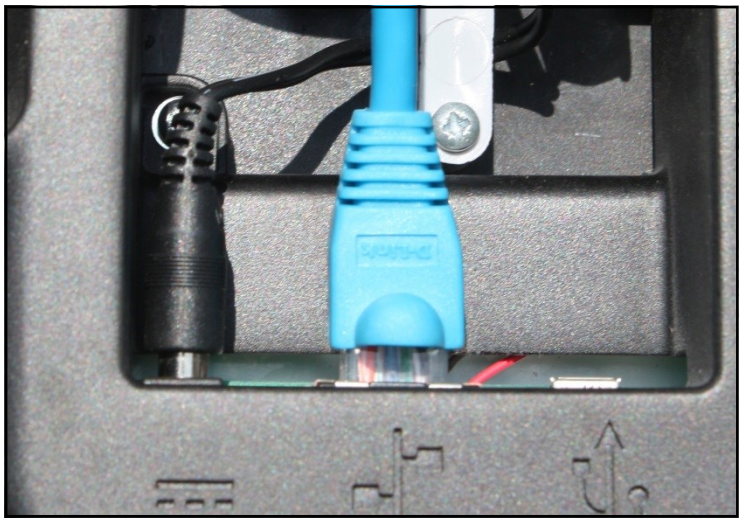
WARNING To comply with international safety standards the a.c. supply must be routed via an easily accessible isolating device. This device must have a contact gap of at least 3mm (three millimetres) and should break both Live and Neutral conductors simultaneously. If the Neutral conductor can be reliably identified the device may be in the Live conductor only.

POWER REQUIREMENT... The TS2020 terminal is either supplied with an external 12V power supply, an internal 12V 6W supply with an external mains connection or is PoE (Power over Ethernet). The power supply is over-

# CONNECTING THE POWER

There are three power options for the TS2020 series dependent upon the model.

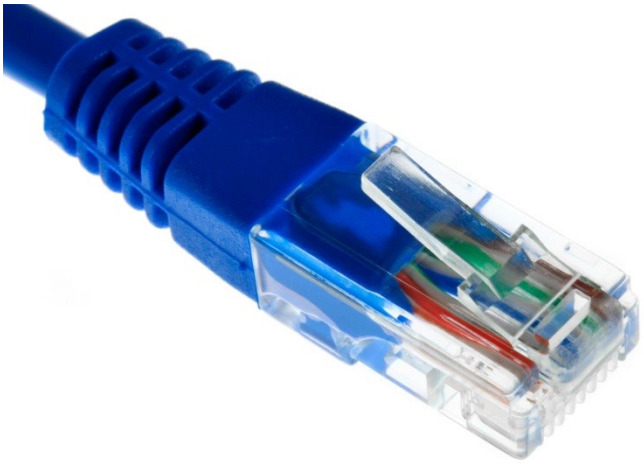
A 12V external power supply, an internal mains power supply (with UPS option) or PoE.



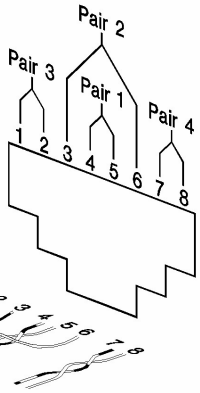
Power leads can be held in place with the clamp situated at the bottom of the case.

# CONNECTING THE TERMINAL TO THE NETWORK

The TS 2020 connects to the network via a standard RJ45 TCP/IP network connector. 10BaseT uses UTP (Unshielded Twisted Pair) cabling and has a nominal maximum segment length of 100 metres. If the TS2020 is fitted with a PoE power supply, the network cable and connector must be compliant and the site network must provide a suitable power source.



| Pair ID | Pin No. | Colour/ Tracer |
|---|---|---|
| T1 | 5 | White/Blue |
| R1 | 4 | Blue/White |
| T2 | 3 | White/Orange |
| R2 | 6 | Orange/White |
| T3 | 1 | White/Green |
| R3 | 2 | Green/White |
| T4 | 7 | White/Brown |
| R4 | 8 | Brown/White |




| Pin | Function |
|---|---|
| 1 | Transmit+ |
| 2 | Transmit- |
| 3 | Receive+ |
| 6 | Receive- |

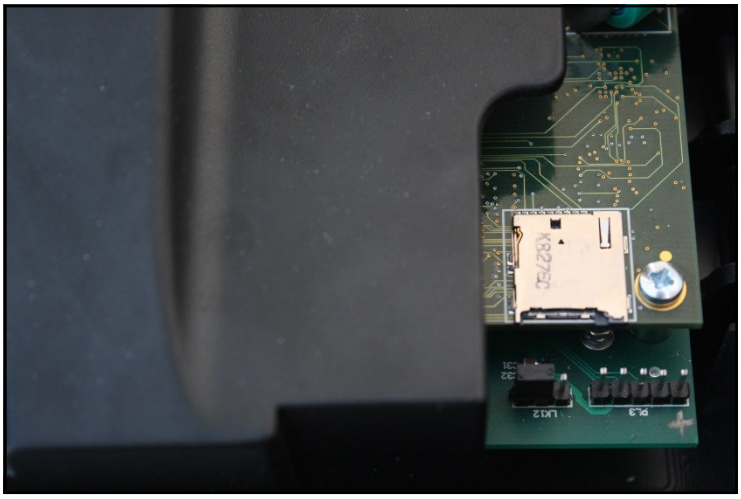
Only pins 1,2 and 3,6 are needed for 10BASE-T.

The TS2020 operates via DHCP or can be configured with fixed network parameters. The communication port is 9100.

Touchstar offers utilities to assist in setting up the TS2020 terminal. Contact your dealer or Touchstar customer services department if you need more advice on cabling.

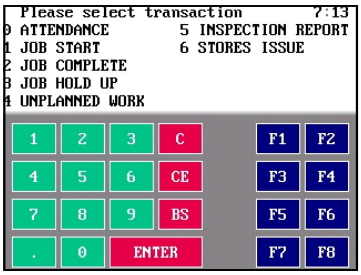
# INTERFACES

If you have been supplied with a micro-SD card it can be used for uploading firmware updates and different applications to the terminal. However, the terminal can be powered up without the card as it holds a default configuration.



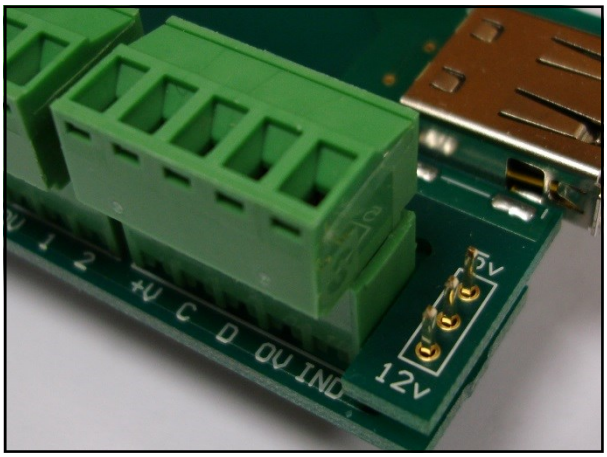
PLEASE NOTE: If fitted, do **NOT** remove the microSD card during the power up sequence of the terminal. This can cause damage to the microSD card and interrupt the terminals operation.

When the terminal has completed its power up sequence, a default idle screen will be displayed dependant on the terminal configuration.



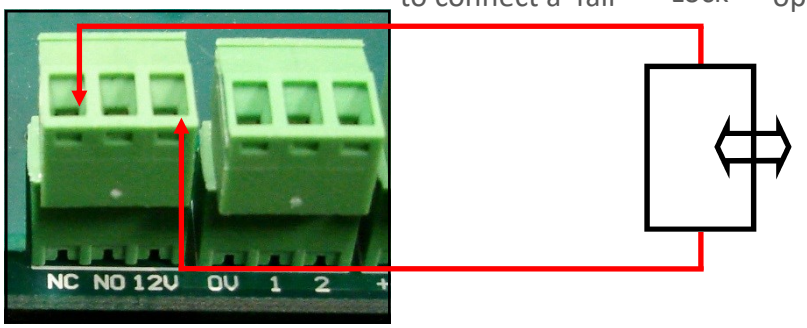
# CONNECTING THE TERMINAL TO OTHER EQUIPMENT

EXTERNAL READERS... The auxiliary I/O module allows a compatible external reader to be connected. The terminal provides **+5V** or **+12V** to power the reader, refer to the individual reader manufacturers data for power requirements. To select the appropriate voltage, use **LK1**.




RELAY CONNECTION... The auxiliary I/O module has a relay fitted. This may be used to switch loads of 2A at 30V d.c, including door locks, alarms and indicators. Use this relay to drive external relays in order to switch larger voltages or currents. The relay contacts are protected against transient spikes by non-polarised suppression.

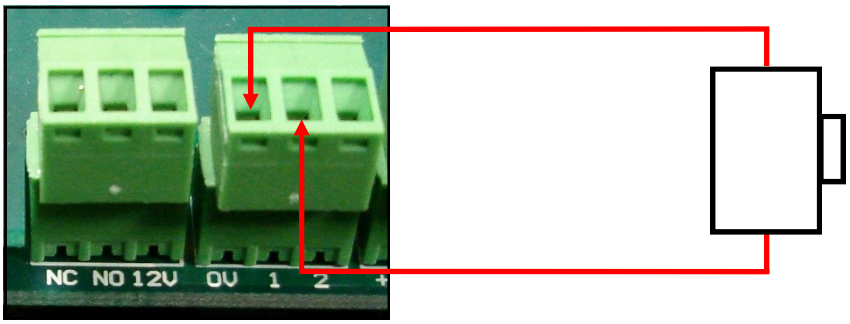
The diagram shows how to connect a 'fail Lock open' type of lock.



# CONNECTING THE TERMINAL TO OTHER EQUIPMENT

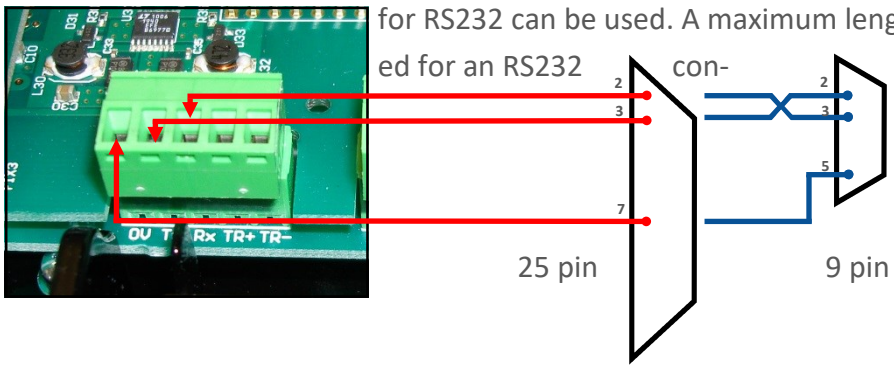
INPUT CONNECTIONS... The auxiliary I/O module has opto-coupled inputs that use the power supply of the terminal and are rated 30V at 100mA. The external switch or device must be capable of sinking **5mA** to operate the input.

The diagram shows a digital input connected Digital to **IP1**.




SERIAL EQUIPMENT... The auxiliary I/O module has a serial port which can be used to connect the terminal directly to RS232 or RS485 serial equipment, such as printers and weigh-scales.

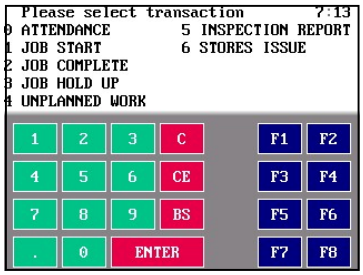
Any cable suitable for RS232 can be used. A maximum length of 25 metres (80 feet) is recommended for an RS232 connection.



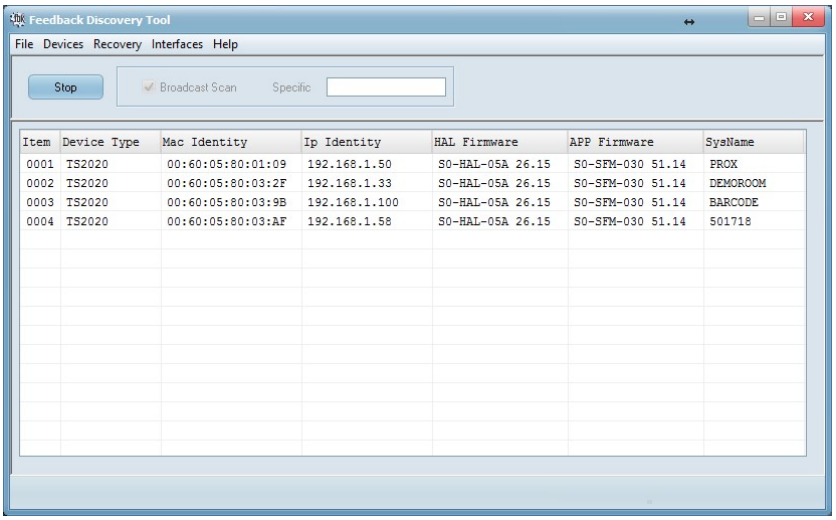
# COMMISSIONING THE TERMINAL

TERMINAL STARTUP... By default the TS2020 terminal has an IP address of **0.0.0.0**. This means that if it is connected to a DHCP network, it will be assigned an IP address automatically.

Therefore, it is possible to simply connect the terminal straight away with it's in built default configuration.

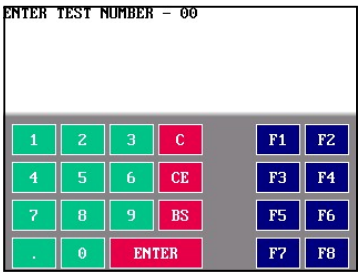



DISCOVERY... It is possible to detect the terminal on the network if it has been assigned an IP address using our **TSDiscover.exe** software utility available from our Sharefile site. It will list all terminals found and give the IP address and MAC identity.

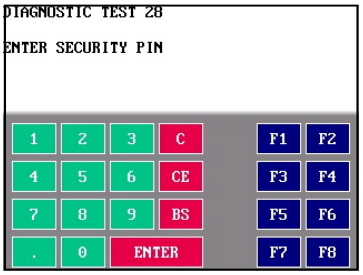


# COMMISSIONING THE TERMINAL

ENTER DIAGNOSTICS … To enter diagnostic mode, press the **C** key for 5 seconds.




❶ Enter test number **28** and then the security PIN ... the default is **0825**:



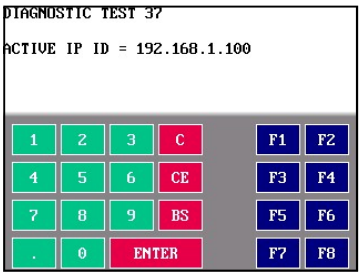

❷ Press the **C** key again. This will allow full access to all diagnostic tests.

PLEASE NOTE: The default PIN can be changed to any 4 digit number if required.

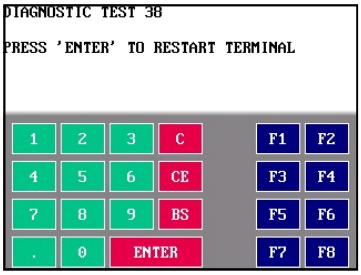
# COMMISSIONING THE TERMINAL

DIAGNOSTICS… After entering diagnostic mode on the terminal go to test **37**. This is where IP parameters are setup.

❶ Enter test **37** to setup the network parameters. The **ACTIVE** settings are those currently being used by the terminal:



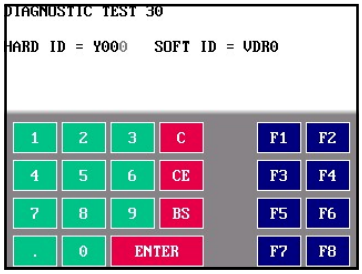

❷ To change these details, press the **ENTER** key until the **STORED** parameters are displayed. Key in the required values and then press the **ENTER** key. Select test **38** and restart the terminal for these settings to take effect.



# COMMISSIONING THE TERMINAL

IDENTITY ... The TS2020 will need an identity before it can to be used.

❶ Enter test **30** Identities and then use **F1** or **F2** to cycle through and select the desired **HARD ID**:




PLEASE NOTE: The **SOFT ID** is allocated by the software communicating with the terminal.

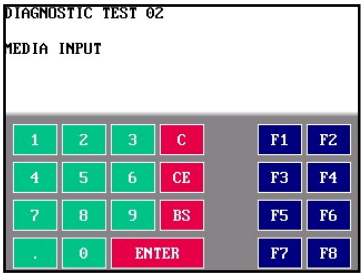
Press the **ENTER** key.

# COMMISSIONING THE TERMINAL

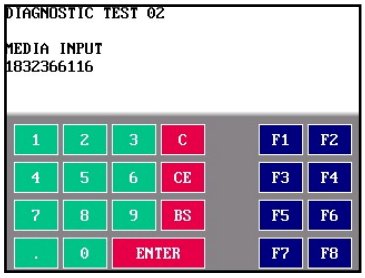
OTHER DIAGNOSTICS... The TS2020 terminal includes several set-up and test facilities that may be useful when commissioning the terminal. To use these facilities select the diagnostic mode as described previously, then select the required test number.

MEDIA TEST ... This is a very useful test to check that the internal and external (if fitted) reader is working correctly independently of any software.

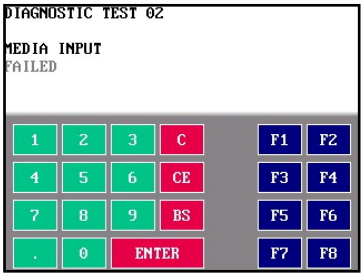
❶ Enter test number **2** on the keypad and this is displayed:




❷ Swipe or present the relevant media and the data will be displayed on screen:



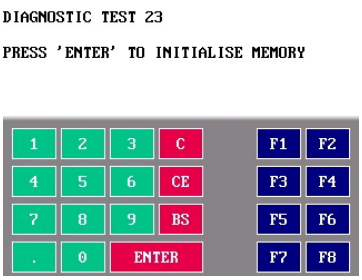

❸ If the media is incorrect or the reader not working, '**FAILED**' will flash on the screen:



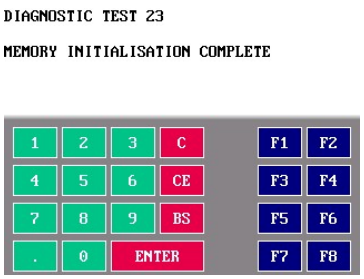
# COMMISSIONING THE TERMINAL

INITIALISE MEMORY ... This test clears the data and program memory of the terminal. However, it will not effect communication parameters such as the IP address and terminal identity.

❶ Enter test number **23** on the keypad and this is displayed:




❷ Press **ENTER** as instructed and the terminal memory will be initialised:




PLEASE NOTE: All terminal transactions and data will be erased. Please ensure that any required transactions are downloaded before carrying out this test.

# CARE AND MAINTENANCE

BOARD REMOVAL... The TS2020 terminal contains one main circuit board (**PCB235**) with a processor board (**PCB234**) attached to it. Depending on the model it may also be fitted with the UPS board (**PCB239**). These can be removed for repair or replacement. This must not be done by anyone not trained to do so. If it is necessary to remove the board, proceed as follows:

❶ Remove mains power from the terminal.

❷ Open the case and then press **SW1** push button on the UPS board (**PCB239**) if fitted.

❸ Unplug the battery cable from the connector marked **PL1** on this **PCB239** board.

❹ Unplug the power supply cable from the connector marked **PL30** on the **PCB235** board.

❺ Unplug all other cable connections.

❻ Undo the four fixing screws holding **PCB235** to the front case. Carefully remove the board and the connected display panel.

❼ When replacing a board, ensure that the replacement is the correct type and that all links are fitted in exactly the same positions as on the original board.

MEDIA PREPARATION... To ensure the best performance from the TS2020 terminal, it is essential to use only good quality media. In particular, check that cards and badges are flat, smooth and in good condition: Any damage to proximity cards can result in poor quality reading.

# CARE AND MAINTENANCE

BATTERY CARE... All models of the TS2020 terminal are fitted with a re-chargeable battery on the **PCB234** board. This battery maintains the time, configuration and transaction data. It is not serviceable and no attempt should be made to remove it. If a battery is faulty, return the complete board, or the complete terminal, to an authorised service centre. TS2020 terminals fitted with a UPS contain a separate high capacity battery pack located in a slot on the inside of the front case. This battery pack can be replaced by a trained service engineer.If it is necessary to remove the board, proceed as follows:

❶ Remove mains power from the terminal.

❷ Open the case and then press **SW1** push button on the UPS board **PCB239**.

❸ Unplug the battery cable from the connector marked **PL1** on this **PCB239** board.

❹ Unplug the power supply cable from the connector marked **PL30** on the **PCB235** board.

❺ Remove the battery pack from its fixing.

❻ Fit a replacement battery and connect its cable to the connector marked **PL1** on **PCB239** ensuring that the polarized plug is not reversed. **NEVER** connect the battery to any other plug.

The battery pack is normally 'trickle' charged from the mains power supply. This can take about 48 hours from a fully discharged state. Faster charging is permissible, at a current of 75mA , using a charger specifically intended for NiMH cells. Full charge will be reached in 16 hours. This process should never be attempted by anyone not qualified to do so.

All batteries, must be handled with care and disposed of correctly.

GENERAL CLEANING... An occasional wipe with a soft cloth and a general purpose cleaner is all that is necessary. In unusually dirty situations it may be necessary to arrange for the terminal's slot and, if relevant, read head to be cleaned regularly. This can be done easily, using readily available cleaning cards or lint free soft cloths.

# FINGERPRINT READER

FINGERPRINT READER ESSENTIALS...It is critical to the operation of the terminal that users are enrolled correctly onto the system. This is a simple task to carry out as long as some basic rules are adhered to in the process...

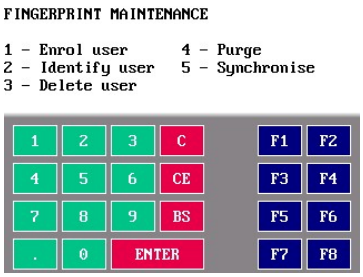
The finger or fingers to be enrolled must be dry, clean and free of any dirt or dust. In other words, clean hands.

It is essential that the position of the finger or fingers is constant. This is most easily maintained by mounting the terminal at a height whereby easy and comfortable placing of the finger is possible.

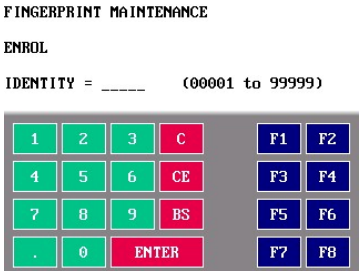
The finger should be completely flat and straight against the reading platen.

# FINGERPRINT READER

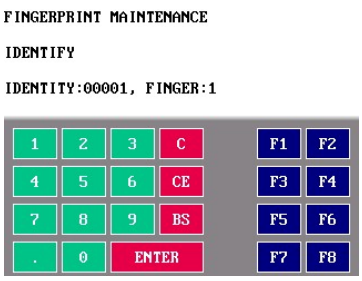
FINGERPRINT MAINTENANCE... The initial menu is under diagnostic test **41**.



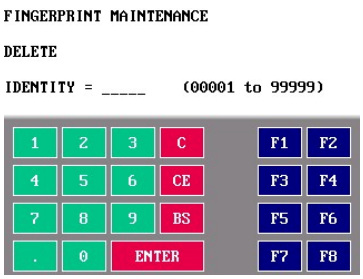

❶ ENROL USER...The Enrol User option is used to enrol a user so that their fingerprint is recognised. The operator/administrator must enter the desired identity for the user (5 digits from **00001** to **65534**) and specify how many fingers should be associated with that identity. The user is then prompted to swipe their finger(s) (twice for each one).



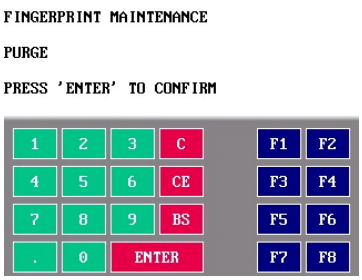

❷ IDENTIFY USER...The Identify User option is used to determine whether a given user's fingerprint is recognised. The user is prompted to swipe their finger and (if recognised) the identity associated with that fingerprint (along with an indication of the finger used) is reported.



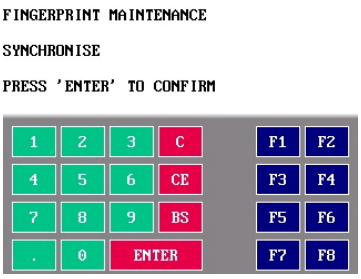
❸ DELETE USER...The Delete User option is used to delete a given user and their associated fingerprint(s). The operator/administrator is prompted to enter the identity of the user who should be deleted.




❹ PURGE...The Purge option deletes all users and their fingerprints from the terminal.




❺ SYNCHRONISE...The Synchronise option sends a message to the fingerprint sharing server which requests that all details are re-sent.




FURTHER INFORMATION...With all of these options a message is generated which is sent (as soon as practically

# DEFAULT CONFIGURATION

If the terminal is in its default state or is defaulted using diagnostic test **6**, the firmware will revert to the following values.

**FACT TERMINAL**

| | |
|---|---|
| **COMMUNICATIONS FORMAT** | TCP/IP<br>4800 baud<br>Termination character = CR |
| **VALIDATION TABLE SIZE** | 256 bytes |
| **MEDIA TYPE** | Barcode |
| **CODES ENABLED** | Code 3 of 9, no checksum<br>Magnetic stripe, Track 2 |
| **TERMINAL ID** | Y00_ |
| **VOLUME LEVEL** | 3 |

# SPECIFICATION

## USER INTERFACE

- 5.7" TFT display
- Anti-glare Touch Panel
- Wide-range loudspeaker
- Proximity, Fingerprint, Mag-stripe or Bar-code Reader

## INPUT/OUTPUT

- 10/100Base Ethernet
- 1 x Relay Output (optional)
- 2 x Digital Inputs (optional)

## POWER

- Internal Mains Supply
- External 12V plug-top adaptor
- Power over Ethernet (PoE)
- Back-up battery (optional)

## PERFORMANCE

- High performance, low-power ARM9 processing engine
- Micro-SD memory card slot
- High-speed FLASH and DRAM program storage
- 4Mb non-volatile data storage
- Non-volatile real-time clock/calendar
- Rechargeable Mempac battery (transaction buffer retention)

## PHYSICAL

- Impact-resistant ABS housing
- Black gloss finish
- Colour-coded reader detail

## HEAD OFFICE

TouchStar ATC Limited

Access | Time | CCTV

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## REPAIRS

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