TS2020R (IP) RUGGED TERMINAL

INSTALLATION AND MAINTENANCE GUIDE

MAN065-05

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INTRODUCTION

Drawing on our many years of experience, we have created a terminal which is smart enough for any office and robust enough for any factory or hostile environment as they are metal and rated to IP65.

The terminal is compatible with older Feedback Kestrel terminals or the newer IP terminals which means they can be added to an existing network with no connectivity issues.

The electronics are the same as its companion terminal the highly successful standard TS2020 with all the benefits this provides.

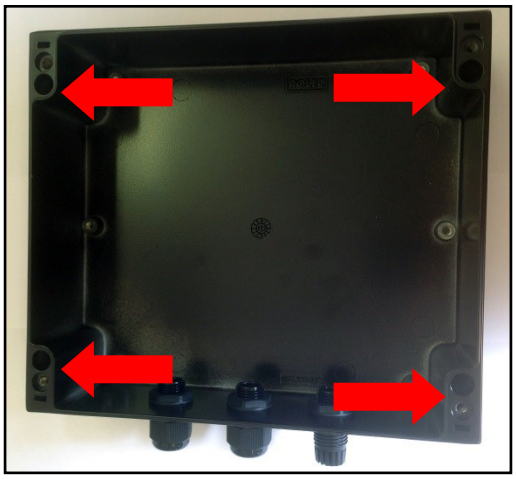
The TS2020R terminal range provides a solid foundation for accurate, reliable data capture that is fundamental to any chosen system.

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

MOUNTING

Site the terminal away from extremes of heat, dust, vibration and fumes. It should be protected from direct sunlight and, for user comfort, avoid locations that are permanently wet. Choose a location that allows room for normal use and access for maintenance. The terminal is protected to IP65 and can used in a wet environment where water jets are used.

The TS2020R terminal is fixed to a vertical mounting surface through the four holes in each corner of the rear of the case using the screws supplied.



To prevent the ingress of water, cabling can enter from the bottom of the terminal only, through the three cable glands.

POSTIONING

The TS2020R 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 mounting holes and front cover fixings are both under the two protective strips along the edge of the terminal.

GENERAL INFORMATION

Once removed from its packaging lay the TS2020R on a flat surface. Take off the two strips on the side to reveal the four screws that hold the front cover on. Use a cross head screw driver to separate the front from the back.

The front comes off but is secured at the bottom edge by plastic straps. Therefore carefully remove the front by lifting upwards and outwards from the top edge.

GENERAL INFORMATION

IMPORTANT SAFETY INFORMATION

This TS2020R 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 working 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 permitted by the equipment's specification.

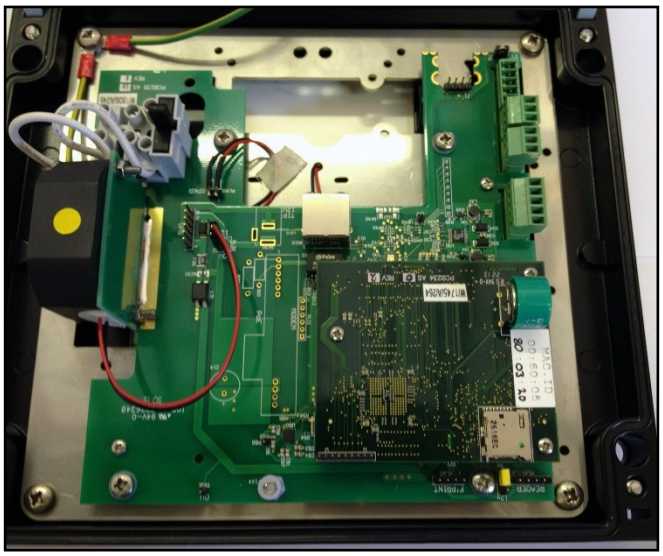
☒ **DO NOT** attempt to service any battery fitted to the equipment. If the battery fitted to the circuit board is faulty, return the complete circuit board to an approved Ser vice Centre. Removable batteries may be replaced by a qualified Service Engineer.

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 TS2020R terminal is either supplied with an internal mains connection or is PoE (Power over Ethernet). The power supply is overload protected and the terminal includes circuit protection

CONNECTING THE POWER

The TS2020R series internal circuit board is the same as the standard TS2020 terminal. All connection points are left open for easy access and are clearly indicated.



CONNECTING POWER... The TS2020R terminal should be connected using 3A 240V PVC sheathed cable, from the internal fused terminal block, to an easily accessible isolating device as follows:-

Connect the **LIVE (BROWN)** wire to the fused terminal of the isolator.

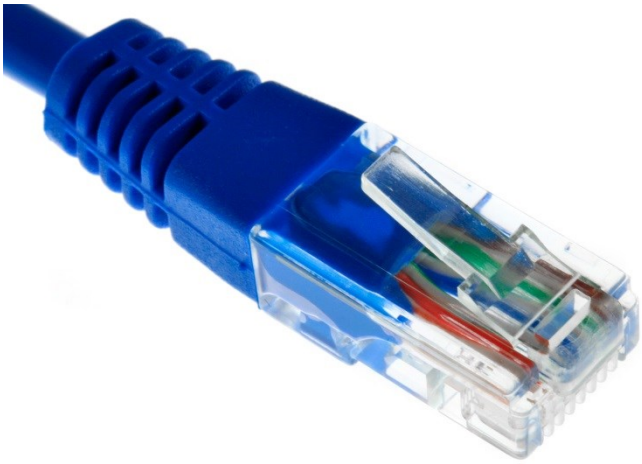
Connect the **EARTH (GREEN & YELLOW)** wire to the earth terminal in the middle of the isolator.

Connect the **NEUTRAL (BLUE)** wire to the remaining terminal of the isolator.

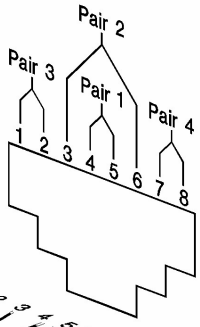
The internal terminal block is fitted with a 1A anti-surge fuse. It is also important that the clamp is used to secure the incoming cable as shown, with the tie wrap securing the wires, ensuring that they are clear of the chas-

CONNECTING THE TERMINAL TO THE NETWORK

The TS2020R 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 TS2020R 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-

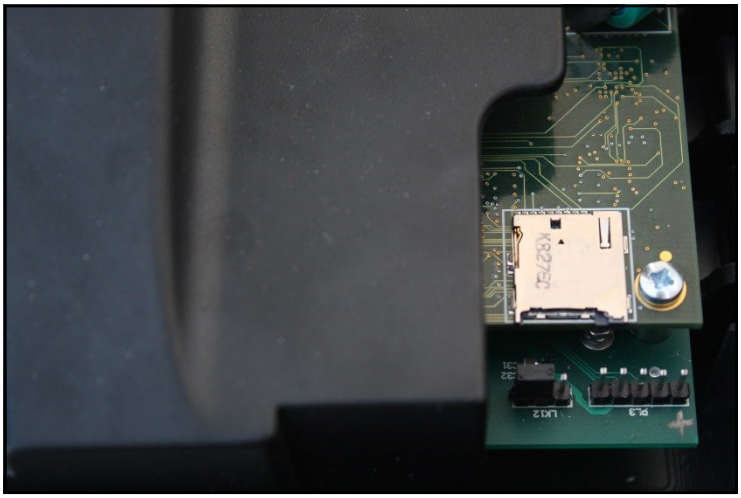
Only pins 1,2 and 3,6 are needed for 10BASE-T.

The TS2020R 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 TS2020R terminal. Contact your dealer or Touchstar customer services department if you need more advice on cabling.

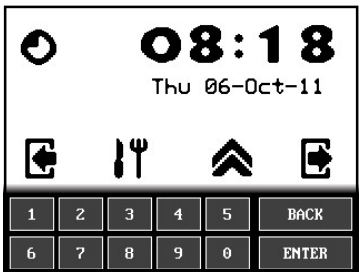
INTERFACES

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.



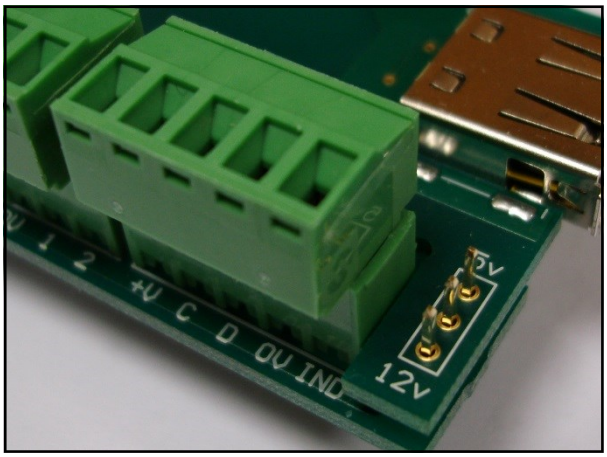
PLEASE NOTE: If fitted, do **NOT** remove the microSD card during the power up sequence of the terminal. This can cause damage to the microSD card and interrupt the terminals operation.

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



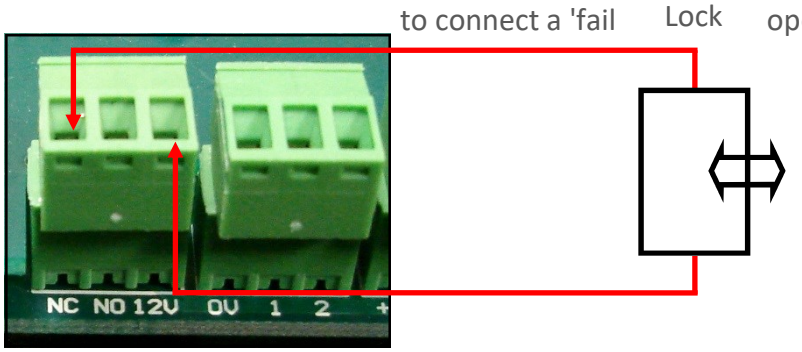
CONNECTING THE TERMINAL TO OTHER EQUIPMENT

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.

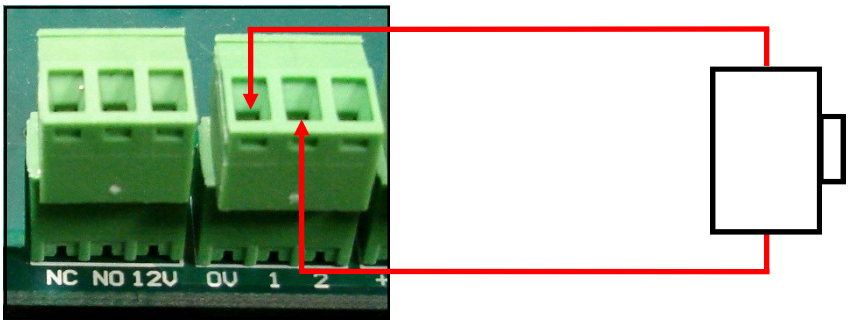
The diagram shows how to connect a 'fail open' type of lock.



CONNECTING THE TERMINAL TO OTHER EQUIPMENT

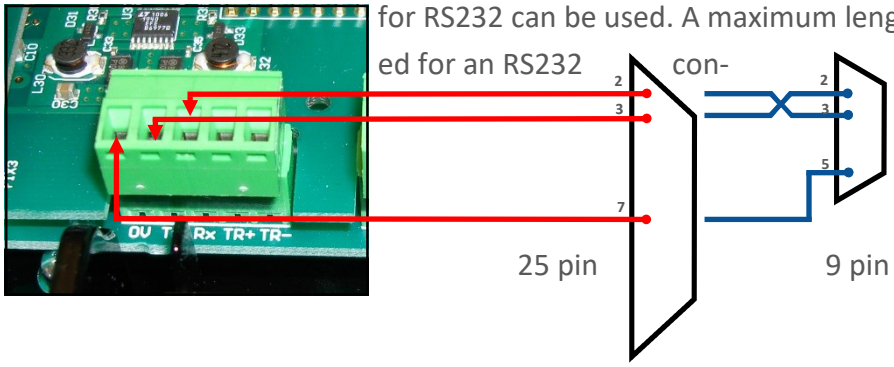
INPUT CONNECTIONS... The auxiliary I/O module has opto-coupled inputs that use the power supply of the terminal and are rated 30V at 100mA. The external switch or device must be capable of sinking **5mA** to operate the input.

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.

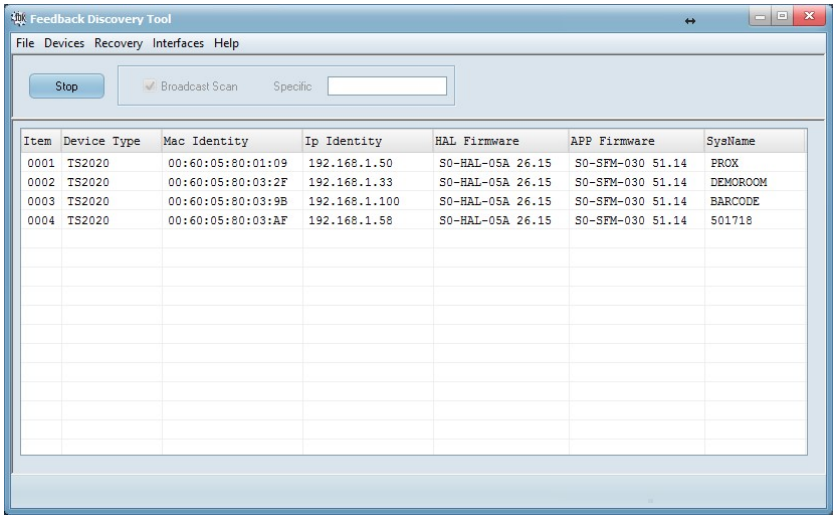
Any cable suitable for RS232 can be used. A maximum length of 25 metres (80 feet) is recommended for an RS232 connection.



COMMISSIONING THE TERMINAL

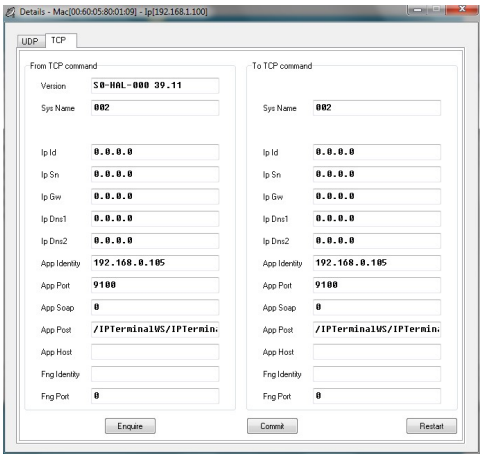
TERMINAL STARTUP... By default the TS2020R terminal has an IP address of **0.0.0.0**. This means that if it is connected to a DHCP network, it will be assigned an IP address automatically. The terminal then needs to know the location of the server that is running the communications software. Our **Terminal Exchange IP+** is used as the example here.

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 the website. It will list all terminals found and give the IP address and MAC identity.



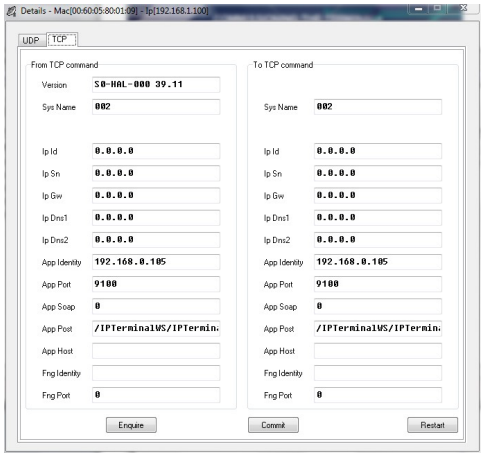
Item	Device Type	Mac Identity	Ip Identity	HAL Firmware	APP Firmware	SysName
0001	TS2020	00:60:05:80:01:09	192.168.1.50	S0-HAL-05A 26.15	S0-SFM-030 51.14	PROX
0002	TS2020	00:60:05:80:03:2F	192.168.1.33	S0-HAL-05A 26.15	S0-SFM-030 51.14	DEMOROOM
0003	TS2020	00:60:05:80:03:9B	192.168.1.100	S0-HAL-05A 26.15	S0-SFM-030 51.14	BARCODE
0004	TS2020	00:60:05:80:03:AF	192.168.1.58	S0-HAL-05A 26.15	S0-SFM-030 51.14	501718

Select the terminal to be configured, identified by the MAC ID, and double click to open the details screen. Select the **TCP** tab and then click on **Enquire**. The current settings of the terminal will be displayed:



COMMISSIONING THE TERMINAL

The 3 important parameters that must be entered in the **To TCP command** section are **Sys Name**, **App Identity** and **App Port**.



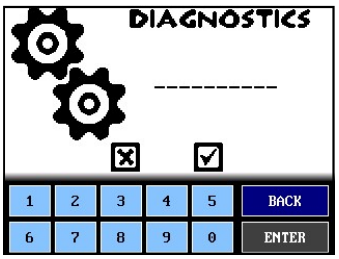
Sys Name = individual identity of the terminal

App Identity = IP address of the server where Terminal Exchange IP+ resides

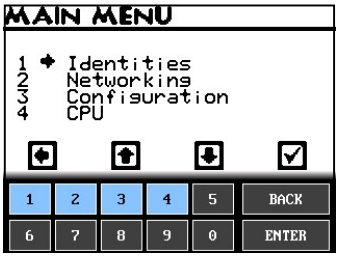
App Port = communications port number (default is 9100)

Click **Commit** and they will be sent to the terminal. Click on **Restart** for them to take effect.

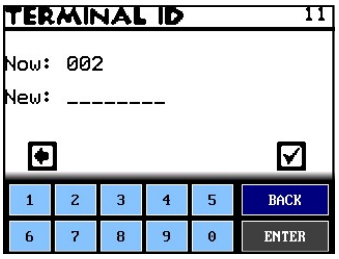
DIAGNOSTICS… Alternatively, these parameters can be entered manually at the terminal. To enter diagnostic mode, press the **BACK** key for **5** seconds. Enter the PIN number when requested. The default is **01892**.



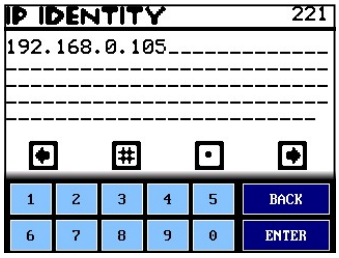
The main diagnostic menu will be shown.



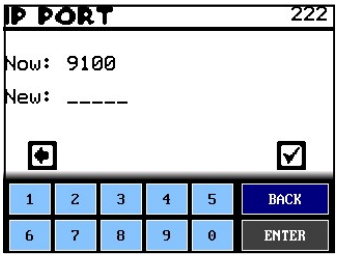
IDENTITY… Select option **1** Identities and then **1** again and set the terminal ID.



Press the back arrow to go back to the main menu. Select **2 Networking**, **2 Server**, **1 IP Identity**. Enter the IP address of the server that will run Terminal Exchange IP+.



From the **Server** menu select **2 IP port**. Type in the required port number followed by the tick key.

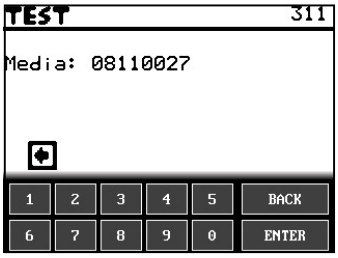


PLEASE NOTE...By default TouchStar terminals communicate using port number **9100**, however, If using web services, the port number will be **80** and the **Protocol** will need to be **Soap**.

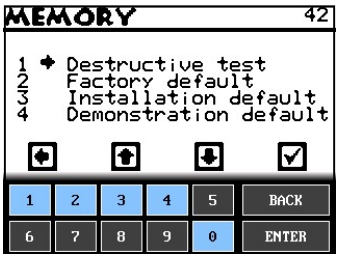
OTHER DIAGNOSTICS... The TS2020R terminal includes several set-up and test facilities that may be useful when commissioning the terminal. To use these facilities select the diagnostic mode as described previously, then select the required test number.

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.

Select **3 Configuration**, **1 Media**, **1 Test**. Swipe the media and if read correctly it will be displayed on the screen.



MEMORY... There are 4 basic memory default tests available. These perform varying functions that affect the terminal in different ways. These are available in the **Memory** menu. From the main menu select **4 CPU**, **1 Memory**. The 4 different options are listed.



DESTRUCTIVE TEST...

Transactions are lost.

Media parameters will revert to default values.

Terminal identity and network parameters are retained.

PIN reverts to the default value.

Validation table is lost.

FACTORY DEFAULT...

Transactions and configuration are lost.

Media parameters revert to default values.

Terminal identity and network parameters are lost.

PIN reverts to the default value.

Validation table is lost.

INSTALLATION DEFAULT...

CARE AND MAINTENANCE

BOARD REMOVAL... The TS2020R 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 TS2020R 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 TS2020R 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. TS2020R 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.

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.

FAMS TERMINAL

COMMUNICATIONS FORMAT	TCP/IP 9600 baud Termination character = CR
VALIDATION TABLE SIZE	256 bytes
MEDIA TYPE	Barcode
CODES ENABLED	Code 3 of 9, no checksum Magnetic stripe, Track 2
TERMINAL ID	0
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

Rugged metal IP65 rated housing

touchstar
access | time | CCTV

HEAD OFFICE

TouchStar ATC Limited

Access | Time | CCTV

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Trafford Park

Manchester M17 1HW

T: 0845 3379 155

E: support@touchstar.co.uk

W: www.touchstar-atc.com

REPAIRS

TouchStar ATC Limited

Access | Time | CCTV

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