User Manual

Version V1.0-20200326

User Manual
For Tersus TC30 Controller

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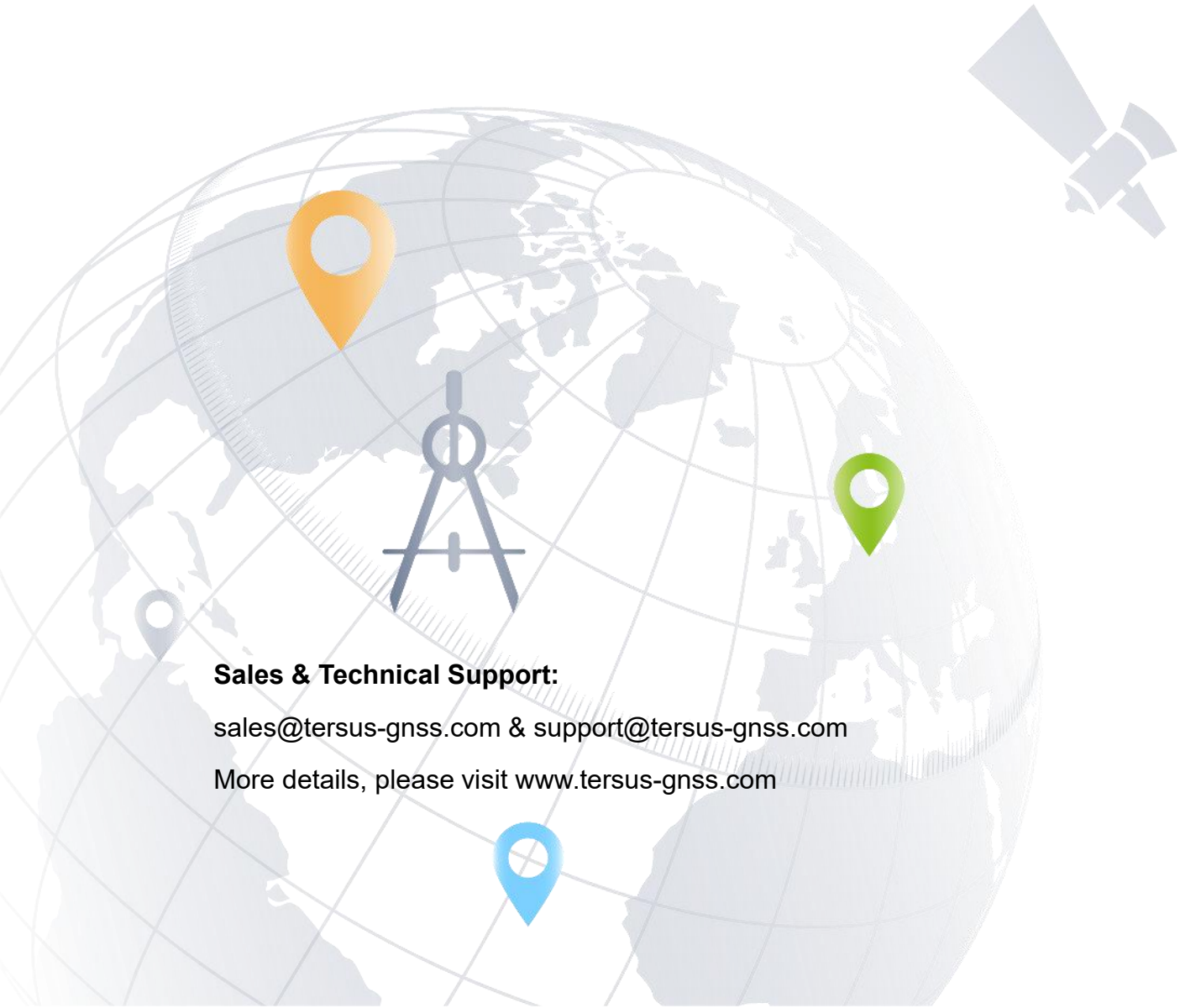

Sales & Technical Support:

sales@tersus-gnss.com & support@tersus-gnss.com

More details, please visit www.tersus-gnss.com

Revision History

Version	Revision Date	Change summary
1.0	20200326	Initial Release

Safety Information

Safety and compliance information

- User responsibly – Read all instructions and safety information before use to avoid injury.

Battery safety

- Charge battery only in temperature ranging from 32℉ to 140℉ (0℃ to 50℃)
- CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type of battery recommended by the manufacturer.
- The maximum operating ambient temperature of the switching power supply declared by the manufacturer is 50℃.
- Dispose of used batteries according to battery manufacturer's instructions.

Wi-Fi safety

- Turn Wi-Fi off in areas where Wi-Fi use is prohibited or when it may cause interference or danger, such as in airplanes while flying.

Care and maintenance

TC30 is an electronic product and should be treated with care. To reduce the risk of fire, electronic shock, or product damage take the following advice:

- Do not expose this device to rain, moisture, or any type of liquid that corrodes electronic circuits. If your device gets wet, immediately turn the power off. Allow the device to dry completely before using it again.
- Clean the display with a soft cloth, and be careful not to wipe the display with anything abrasive.
- Do not expose your device to extreme heat (60℃) or cold (-20℃). For example, do not leave it in the trunk of your car in high heat conditions.
- Do not attempt to open the device other than as instructed in this manual.

- Rough handling can break internal circuitry.
- Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the device.
- Use only the recommended accessories.

CAUTION!

- CONNECTION TO A USB INTERFACE MUST BE LIMITED TO USB2.0 VERSION OR HIGHER.
- CONNECTION TO “POWER USE” MODE IS PROHIBITED.

Support

If there is any problem and the information needed cannot be found in the product documentation, request technical support using the Tersus website at www.tersus-gnss.com, or mail to support@tersus-gnss.com.

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1. Introduction

This chapter mainly introduces the overview and specification of the Tersus TC30 Controller.

1.1 Overview

The Tersus TC30, the full keyboard robust controller has a combination of connectivity options and standard features including DB9 serial port, Wi-Fi and 3G/4G, provides entire solutions for high-accuracy GIS applications. The rugged IP67 rate is designed for various field applications. TC30 comes ready for you with application possibilities in power companies, agriculture and geological industries, forestry, field service, GIS / surveying and etc.

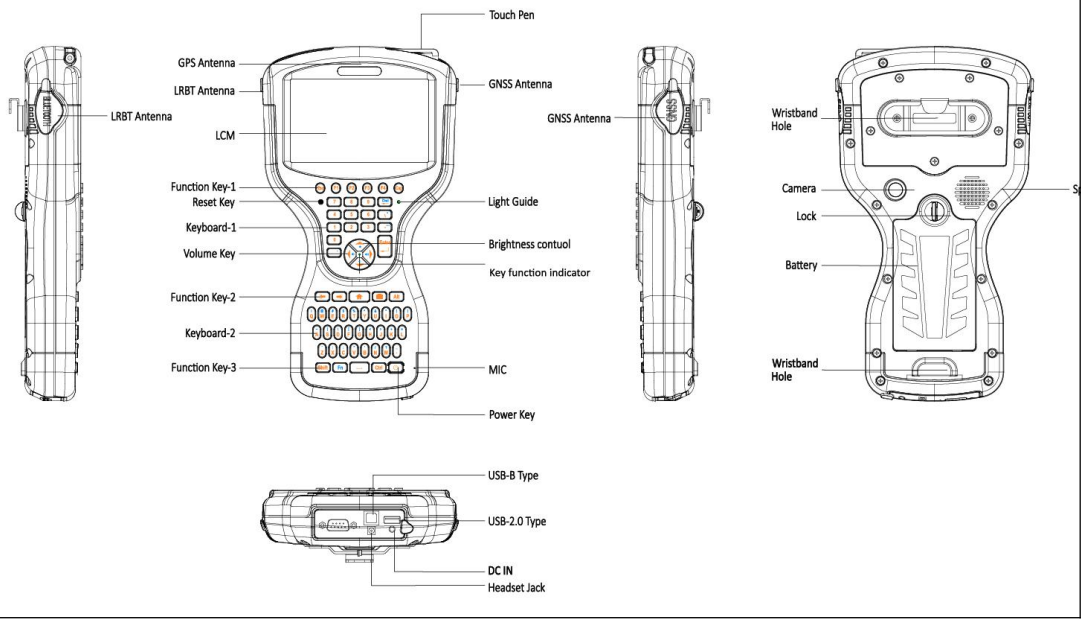
Figure 1.1 The outlook of TC30 Controller

1.2 Specification

Table 1 TC30 technical specification

System	
Operating System	Windows Mobile
CPU	1GHz
Memory	512MB RAM + 1GB ROM
Keypad	62 numeric + programmable keys
Display	5'' sunlight readable touch screen
Resolution	800x480
Camera	5 megapixel
Storage extension	MicroSD card
GNSS (Optional)	
Signals tracking	GPS L1+BeiDou L1 / GPS L1+GLONASS L1
GNSS channels	72
Data format	NMEA-0183
Raw data	Alternative
Single Point Positioning Accuracy	2.5m
SBAS Differential Positioning Accuracy	2m
Communication	
Wi-Fi	Supported
Cellular	3G/4G
Bluetooth	V2.1
Long range Bluetooth	SMA female x1
USB port	USB Type B x1, USB Type A x1
Serial port	DB9 male x1
GNSS port	Coaxial connector x1
Electrical	

Power	5V DC, 2.0A
Battery	6500 mAh, 3.7V
Working time	>8 hours
Physical	
Dimension	283mmx158mmx50mm
Weight	1.15kg (include battery)
Environmental	
Operating Temperature	-30 ℃ ~ +60 ℃
Storage Temperature	-30 ℃ ~ +80 ℃
Dustproof & Waterproof	IP67
Shock	1.2m drop protection
Relative humidity	5%~95%, non-condensing
Supported Software	
SurvCE, FieldGenius, SuperGeo	
Mechanical Drawing	



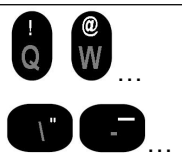
1.3 Keyboard

Figure 1.2 The keyboard of TC30 Controller

Some keys have two different silk screen colors. One is red, the other is white. “Fn” key is used to switch the key’s function between the two colors. Red silk screen indicates the default function. When the indicator in the center of the four arrow keys lighted, the function indicated by white color is available.

Table 2 Keyboard function

Key	Sample image	Silkscreen Color	Function
Function keys F1-F4		Red	User definable keys to execute chosen commands or access chosen screens.
Alpha keys a~z, A~Z	...	Red	To type letters. Red characters.
Numeric keys 0~9	…	Red	To type numbers. Red characters.

Punctuation and special characters		White	To type punctuation and special characters.
Caps Lock		Red	Switches between upper case and lower case letters, and lock the case status.
Backspace		Red	Clears all entry at the beginning of user input. Clears the last character during user input. Red symbol.
Delete		White	Deletes character at the cursor.
Esc		Red	Leaves the current screen without storing any changes.
Arrow keys		Red	Move the focus on the screen.
Volume adjust		White	Up or down the volume
Backlight adjust		White	Increase or decrease the screen brightness
Next Tab key		Red	To advance the cursor to the next tab stop.
Previous Tab key		Red	To advance the cursor to the previous tab stop.
Home		Red	Switches to the Windows EC7 Start Menu.
Camera		Red	Access the camera.
Alt		Red	To change (alternate) the function of other pressed keys.
Shift		Red	Combine with an alpha keys to switch between upper case and lower case letters.

Fn		White	First press: switch the functions to the white characters indicated Press again: switch the functions back to the red characters indicated
Space		Red	Enters a blank.
Ctrl		Red	Combine with another key to performs a special operation
Enter		Red	Selects the highlighted line and leads to the next logical menu / dialog.
Power		Red	If the TC30 controller is already off: Turn on the controller holding for 3~5s. If the TC30 controller is already on: Turns off the controller holding for 3~5s.

1.4 LED Status

Table 3 Charging LED status

Operation:	Power off	Charging	Fully charged
LED Status:	Off	Red light on	Off

Table 4 Key function indicator

LED Status:	Off	On
Function of the key:	Red silk screen indicated	White silk screen indicated

1.5 Accessories of TC30 Controller

The standard accessories of TC30 Controller are listed below.

Table 5 Standard accessories

Item	Name	Description	Quantity
1	DC Adapter	220V/DC5V/2A	1
2	USB cable	USB to B-Type USB cable	1
3	Serial cable	DB9 serial cable	1
4	Li-ion Battery	3.7V/6500mAh	1
5	Strap	Black, 180*12mm	1
6	Stylus	Black, 127mm	1
7	Screen protection film	57*76mm, 3H & Screen Microfiber Cloth	2
8	User guide	14*21cm	1

The optional accessories of TC30 Controller are listed below.

Table 6 Optional accessories

Item	Name	Description	Quantity
1	MicroSD card	Memory Capacity: 8GB	1
2	External battery charger	5V/2A	1
3	Mounting bracket and Pole (Claw) Clamp	HW-02	1
4	External GNSS antenna	GPS L1, BeiDou B1, GLONASS L1 Gain: 40dB TNC Connector	1
5	External antenna cable	Fischer to TNC cable	1
6	TNC to TNC cable	TNC male to TNC male cable, 3m length	1
7	Ranging pole	Centering rod	1

2. General Operation

This chapter introduces how to use Tersus TC30 Controller.

2.1 Install MicroSD card/SIM card/Battery

a) Turn the back cover screw to the open position according to the instructions on the label in the box, and take off the back cover.

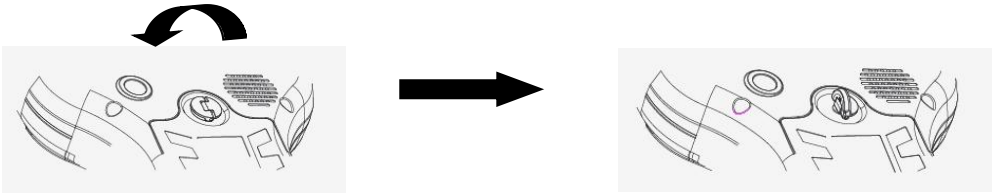


Figure 2.1 Open the back cover

b) Insert the SIM card and MicroSD (TF) card according to the instructions in the battery compartment.

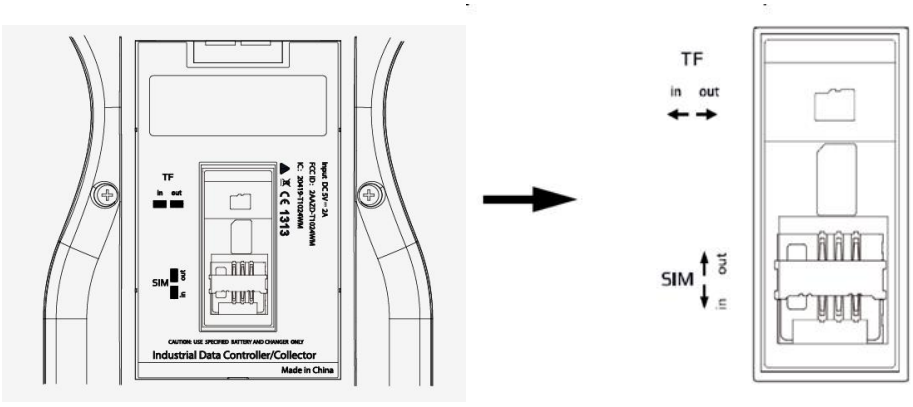


Figure 2.2 Insert the SIM card

c) Insert the battery according the instructions on the battery label shown as below.

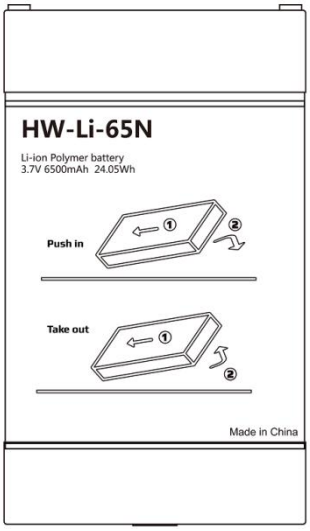


Figure 2.3 Instructions on the battery

d) Close the back cover and turn the back cover screw to the lock position.

2.2 Charging

Open the cap at the bottom of the controller, and charge with the DC adapter.

Charging current can reach 1.5A.

2.3 Turn on/off the controller

a) Ensure the battery has enough power, or connect the TC30 to a DC adaptor.
b) Press the power button for three (3) to five (5) seconds to turn on (until the boot screen appears).
c) Press the power button for three (3) to five (5) seconds, and confirm to power off.

NOTE: If there are abnormal situations, such as the TC30 does not operate normally, use the tip of the stylus to press the reset key to restart the TC30 controller.

2.4 Connecting to a PC

a) Ensure Microsoft ActiveSync application has been installed in Win-XP PC. And make sure WMDC (Windows Mobile Device Center) has been installed in Vista/Win7/Win8/Win10 PC.
b) Connect TC30 to a PC with USB cable.
c) ActiveSync/WMDC will connect to TC30 and PC automatically. The icon will appear in the tool bar of the PC and also the **Synchronization Setup Wizard.** In the meantime, click **Cancel** or **connect without setting up your device**.
d) Click **Browse** to check the files in the TC30, and then transfer data between your PC and the TC30 controller.

2.5 Install Applications

2.5.1 Install Applications via ActiveSync or WMDC

a) Ensure the TC30 is connected with your PC via ActiveSync or WMDC.

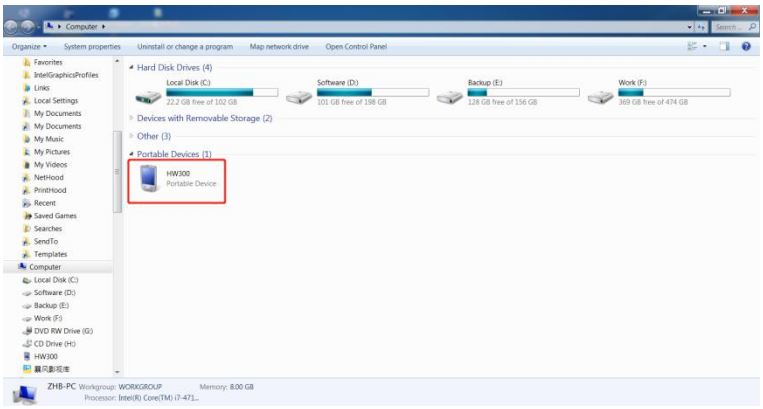


Figure 2.4 TC30 connected with PC

b) Click the installation file on your PC to start the installation of an application.

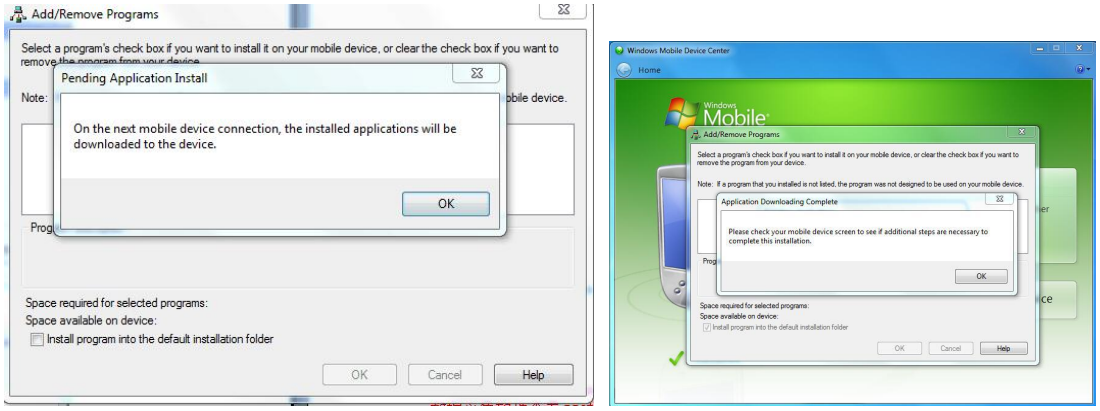


Figure 2.5 Install an application

c) Select an installation directory in the TC30 controller（**Flash Storage** is recommended）, and tap **Install**.

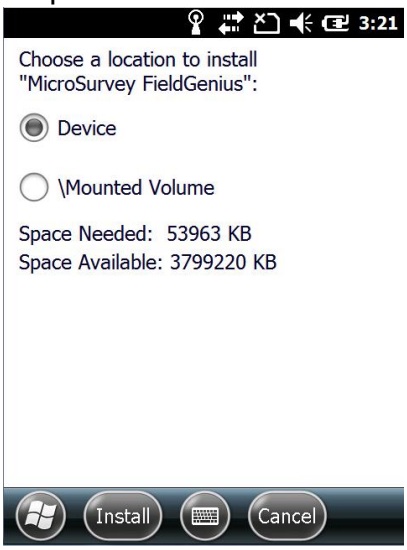


Figure 2.6 Choose the installation location

NOTE: It is recommended installing the application in **Flash Storage**, and saving your data to a MicroSD (TF) card.

2.5.2 Install Applications directly

If the installation file is compatible with this mobile devices, copy the file into the TC30 and tap the file to directly start the installation.

2.6 Camera

a) Select **Start -> Picture & Video**, select **Camera** or the **camera key** icon to take photos.
b) Press the camera key or **F3** to take photos.
c) Tap screen and select **OK** to exit.

2.7 USB Device

a) Plug a USB drive to USB type A port at the bottom of the controller.
b) The system will detect this USB device automatically and map it as a USB device.

2.8 User Serial Port

The user serial port is COM2. Use a DB9 serial cable to transfer data between the TC30 controller and other devices.

NOTE: This user serial port is at the bottom of the TC30 controller.

2.9 Wireless Connection

2.9.1 Bluetooth

a) Select **Start -> Settings -> Connections -> Wireless Management**, tap the

icon to activate the Bluetooth (BT) device.
b) Select **Start -> Settings -> Bluetooth**, and tap **Add new device…**. Follow the tips shown on the screen to complete the operation of pairing the other

BT Device.

NOTE: The standard Bluetooth virtual ports are COM7 and COM9.

2.9.2 Long Range Bluetooth (optional)

a) Select **Start -> Settings -> System**, and tap **Bluetooth Radio Manager**.

Figure 2.7 Bluetooth radio manager

b) Chose the module **DirectConn**, and tap **Power On**.
c) Tap **Search BT** to start searching for BT devices.
d) After all BT devices have been found, select a device.
e) Tap **Connect** to pair with a BT device of your choice. The screen will display **Connect the BT device successfully** after BT pairs successfully.

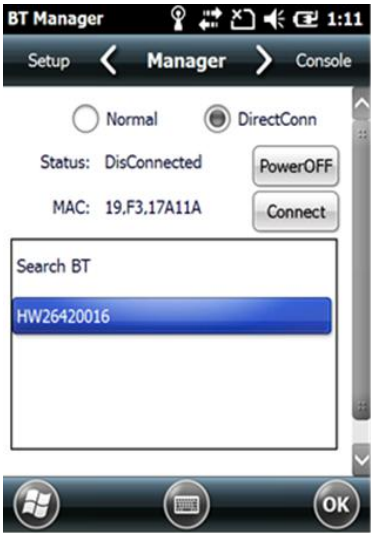


Figure 2.8 BT Manager – DirectConn

f) Tap **Console** to check the status of Bluetooth, as shown below.

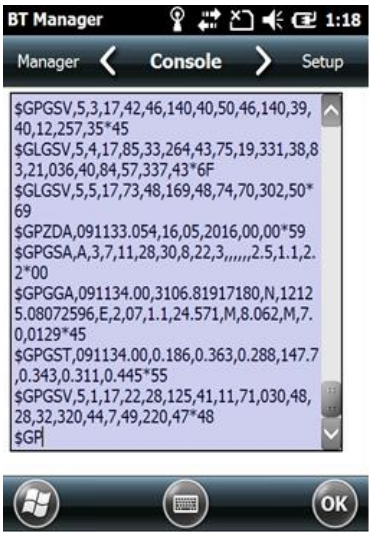


Figure 2.9 BT Manager – Status

g) Tap **Setup** to setup this Bluetooth, as shown below.

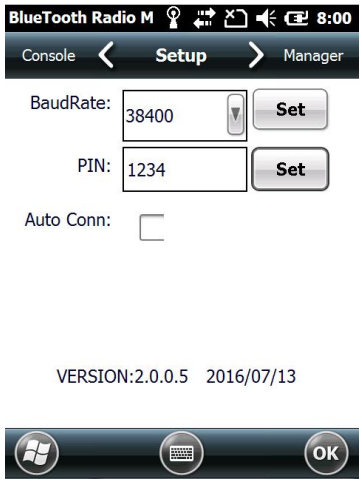


Figure 2.10 BT Manager – Setup

h) The default baud rate is 38400.
i) The **PIN** code refers to the pairing PIN code of the BT device which TC30 want to pair with.
j) If you check **Auto Conn**, TC30 will automatically connect to the last pairing BT device when powering up.

NOTE: Long Range Bluetooth port is COM2 which is the same as user serial port. If Long Range Bluetooth is used, the user serial port is disabled.

2.9.3 Wi-Fi

a) Select **Start -> Settings -> Connections -> Wi-Fi**.
b) Tap **Search for Networks**, select a network listed. Follow the connecting guide to input a password and confirm connection to Wi-Fi.

2.9.4 Cellular Data

a) Ensure there is a SIM card which can access internet in the TC30 Controller.
b) Select **Start -> Settings -> Connections -> Connections**.
c) Tap **Add a new modem connection**.
d) Input connection name, select **Cellular Line (GPRS)**, and tap **Next.**
e) Input **Access point name**, tap **Next**.
f) Tap **Finish** and add new connection successfully.
g) Tap **Manage existing connections**.
h) Tap and hold on **new connection** and select **Connect**.
i) If there is an identifier on the signal icon in the top right corner, it indicates a successful connection.

3. Useful Functions

3.1 Screen response

Select **Start -> Settings -> System -> Screen** ,tap the **Align Screen** icon and follow the guide to align the screen.

Figure 3.1 Align screen

3.2 Backlight adjustment

Select **Start -> Settings -> System -> Backlight** to adjust backlight according to the guide.

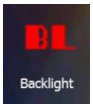


Figure 3.2 Backlight

3.3 Remove programs

Select **Start -> Settings -> System -> Remove Programs**, select the programs you want to remove in the list and click **OK** to remove.

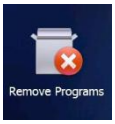


Figure 3.3 Remove programs

3.4 Sleep mode

Select **Start -> Settings -> System -> Power -> Advanced**, set the power off time in different conditions. Backlight will be off according to selected settings.

Figure 3.4 Power setting

3.5 Clean boot

Select **Start -> Settings -> System -> Clean Boot**, to restore factory default settings according to the guide.

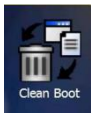


Figure 3.5 Clean Boot

NOTE: The password is “1234”. Restoring factory settings will clear the system configuration, please be cautious.

3.6 Power config

Select **Start -> Settings -> System -> PWConfig**.
NOTE: While on **Screen off** mode, the device won’t hibernate.

Figure 3-6: PWConfig

4. Terminology

BT	Bluetooth
DC	Direct Current
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
LED	Light Emitting Diode
SN	Serial Number
SIM	Subscriber Identification Module
USB	Universal Serial BUS

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