



T18

GNSS Handheld Controller

Quick Start Guide



T18 GIS Handheld Controller Quick Start Guide

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Preface

Thank you for purchasing this Topcon product. The materials available in this Manual (the "Manual") have been prepared by Topcon Positioning Systems, Inc. ("TPS") for owners of Topcon products, and are designed to assist owners with the use of the receiver and its use is subject to these terms and conditions (the "Terms and Conditions").



NOTICE

Please read the terms and conditions carefully.

Terms and Conditions

Use

This product is designed to be used by a professional. The user should have a good knowledge of the safe use of the product and implement the types of safety procedures recommended by the local government protection agency for both private use and commercial job sites.

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Confidentiality

This Manual, its contents and the Software (collectively, the "Confidential Information") are the confidential and proprietary information of TPS. You agree to treat TPS' Confidential Information with a degree of care no less stringent than the degree of care you would use in safeguarding your own most valuable trade secrets. Nothing in this paragraph shall restrict you from disclosing Confidential Information to your employees as may be necessary or appropriate to operate or care for the receiver. Such employees must also keep the Confidentiality Information confidential. In the event you become legally compelled to disclose any of the Confidential Information, you shall give TPS immediate notice so that it may seek a protective order or other appropriate remedy.

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On the Topcon Support website (www.topconpositioning.com/support), you can download manuals, technical documentation, training material, and various utility software to help you set up and use your Topcon product. The website also offers registration resources, training, and technical assistance.

Register for a free account at <https://www.topconpositioning.com/support> today to download this material.

Safety

Improper use of the receiver can lead to injury to persons or property and/or malfunction of the product. The receiver should only be repaired by authorized TPS warranty service centers.

Miscellaneous

The above Terms and Conditions may be amended, modified, superseded, or canceled, at any time by TPS. The above Terms and Conditions will be governed by, and construed in accordance with, the laws of the State of California, without reference to conflict of laws.

Manual Conventions

This manual uses the following conventions:

Convention	Description	Example
Bold	Menu, or drop-down menu selection	File > Exit (Click the File menu and click Exit)
	Name of a dialog box or screen	From the Connection screen...
	Button or key commands	Click Finish .
Mono	User supplied text or variable	Type <code>guest</code> , and click Enter .
<i>Italic</i>	Reference to another manual or help document	Refer to the <i>Topcon Reference Manual</i> .



NOTE

Further information to note about system configuration, maintenance, or setup.



NOTICE

Supplementary information that can have an adverse affect on system operation, system performance, data integrity, or measurements.



CAUTION

Notification that an action has the potential to result in minor personal injury, system damage, loss of data, or loss of warranty.



WARNING

Notification that an action has the potential to result in personal injury or property damage.



DANGER

Notification that an action has the potential to result in severe personal injury or death.

Introduction

Features

The following section describes the general features of the T18 GIS Handheld Controller.

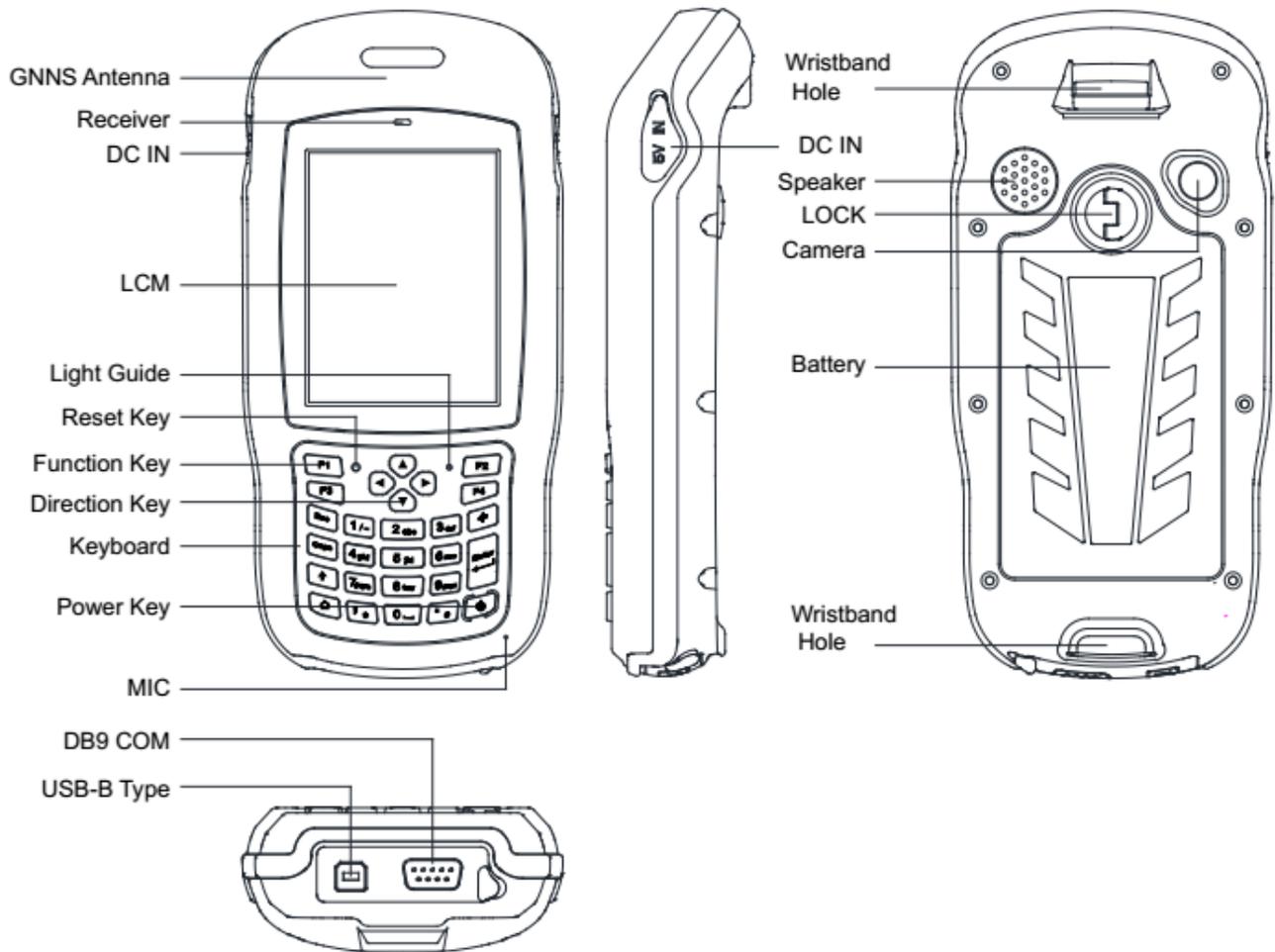


Figure 1-1: General Diagram

Keyboard

The yellow symbols are system defaults.

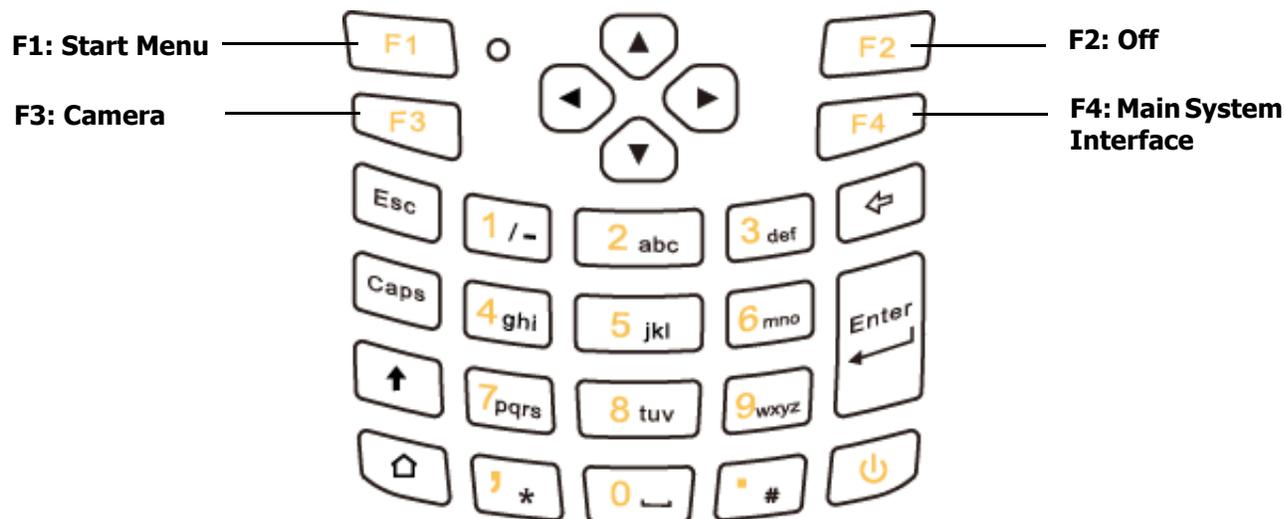


Figure 1-2: Features

Table 1-1. Keyboard Functions

System Defaults	System defaults to the digital input method
	 *
	 #
Press ↑ (shift)	Lowercase letters
	 / - Switch between / and -
	 *
	 #
	Press ↑ (shift) again, to switch to digital input method.
Press Caps	Capital letters
	 / - Switch between / and -
	 *
	 #
	Press the Caps button again for lowercase letters.

LED Functions

Table 1-2 describes the T18 LED functions.

Table 1-2. LED Functions

Operation	Power off	Charging	Fully charged	In use
LED Status	Off	Green light on	Off	Off

Standard Accessories

Table 1-3 describes the standard accessories for the T18.

Table 1-3. 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	Digital version	1

Optional Accessories

Table 1-3 describes the optional accessories for the T18.

Item	Name	Description	Quantity
1	TF card	Memory Capacity: 8G	1
2	External battery charger	5V/2A	1
3	Mounting bracket and Pole (Claw) Clamp	HW-02	1
3	External GNSS antenna	GPS L1, BD B1, Glonass G1 Gain: 40dB TNC Connector	1
4	External antenna cable	Fischer to TNC cable	1
5	TNC to TNC cable	TNC male to TNC male cable, 3m long	1
6	Centering rod	Centering rod	1

Getting Acquainted

Installing the TF Card/SIM Card/Battery

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

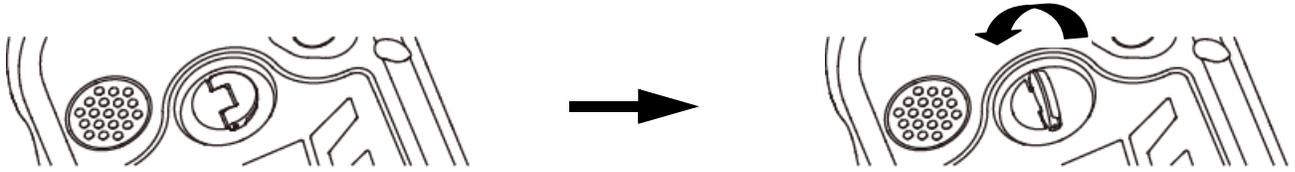


Figure 2-1: Opening the Back Cover

2. Insert the SIM card and TF card according to the instructions in the battery cabin.

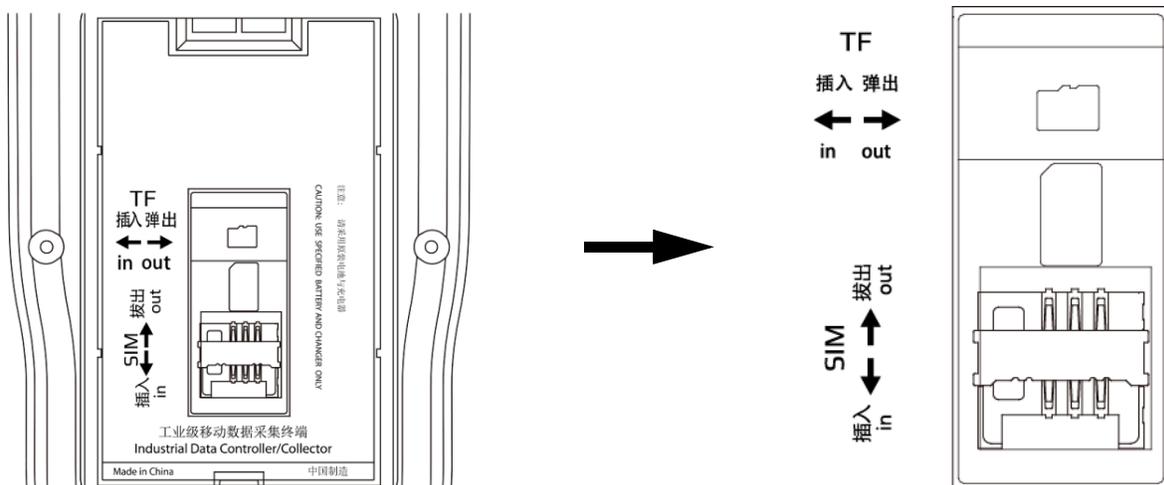


Figure 2-2: Inserting the SIM Card

3. Insert the battery according the instructions on the battery label (Figure 2-3).

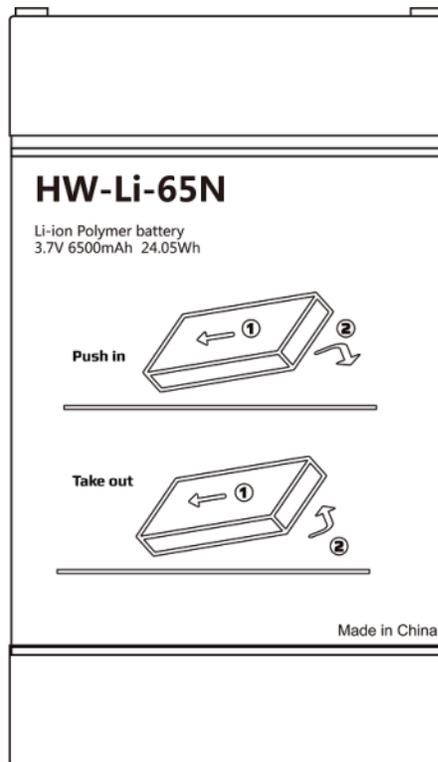


Figure 2-3: Inserting the Battery

4. Close the back cover and turn the back cover screw to the lock position.

Charging

- DC adapter: Open the DC IN cover on the right side of the device, and charge with the DC adapter. Charging current can reach 2A.
- USB cable: A USB cable can also be used to charge the device, and current is limited to 500mA.

Turning the Collector On/Off

1. Make sure the battery has enough power, or connect the T18 to the DC adapter.
2. Press power button for three (3) to five (5) seconds to turn on (until the boot screen appears).
3. 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 T18 does not operate normally, use the tip of the stylus to press the reset key to restart the T18.

Connecting to a PC

1. Make sure 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 PC.
2. Connect the T18 to a PC with the USB cable.
3. ActiveSync/WMDC will connect to the T18 and PC automatically. The  icon will appear in the tool bar of PC and also the **Synchronization Setup Wizard**. In the meantime, click **Cancel** or **connect without setting up your device**.
4. Click **Browse** to check the files in the T18, and then transfer data between your PC and the T18.

Installing Applications

Installing Applications via ActiveSync or WMDC

1. Make sure the T18 is connected with your PC via ActiveSync or WMDC.

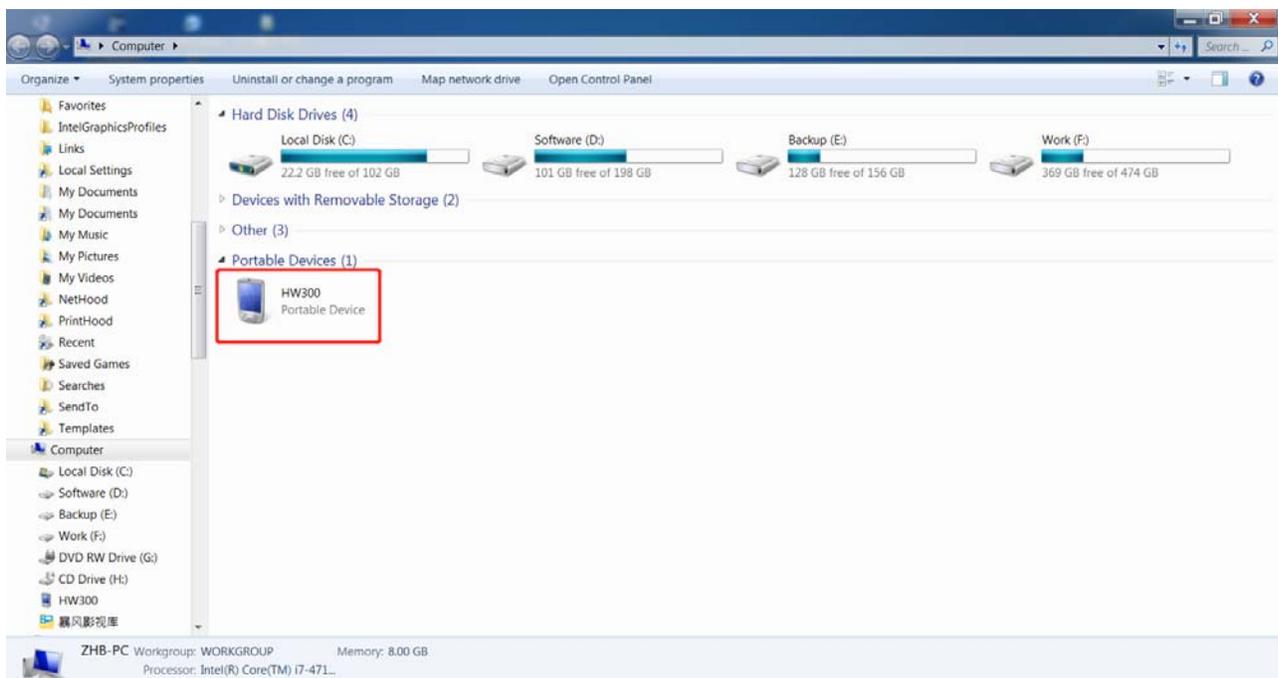


Figure 2-4: T18 Connected with PC

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

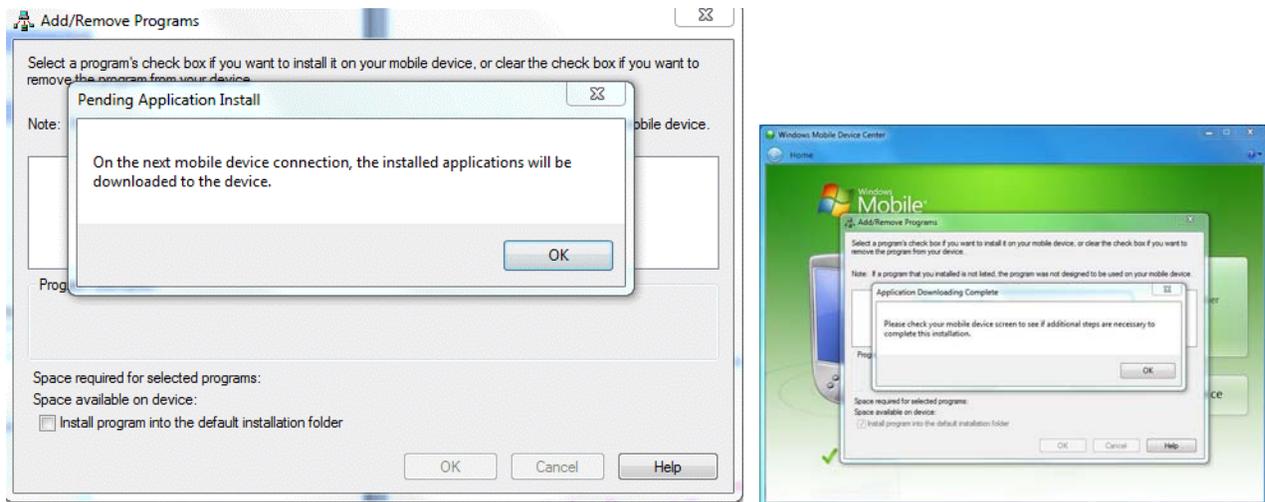


Figure 2-5: Installing the Application

3. Select an installation directory in the T18 (**Flash Storage** is suggested), and tap **Install**.

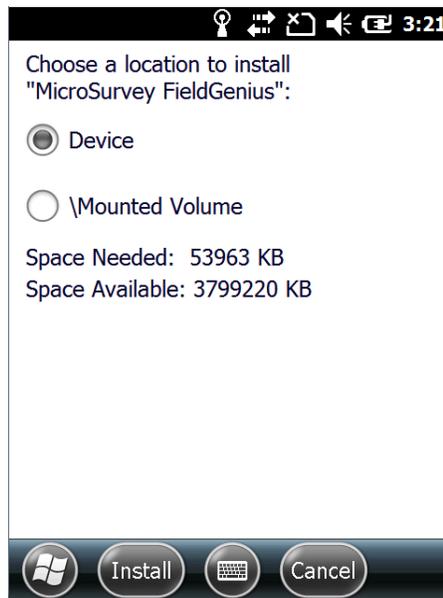


Figure 2-6: Choosing Install Location



NOTE

We suggest installing the application in **Flash Storage**, and saving your data to a TF card.

Directly Installing Applications

If the installation file is compatible on mobile devices, copy the file into the T18 and tap the file to directly start the installation.

GNSS Status

1. Go to `\My Device\GNSSViewer` and run **GNSSViewer.exe**
2. The T18 supports COM3 and COM5 as GNSS ports and its BaudRate is 9600. Choose a GPS Port and BaudRate by tapping **Setup > Port Setup** as shown in Figure 2-7.



NOTE

COM3 is a hardware GNSS port, COM5 is a virtual GNSS port.



Figure 2-7: GNSS Status

3. Tap **OK**.

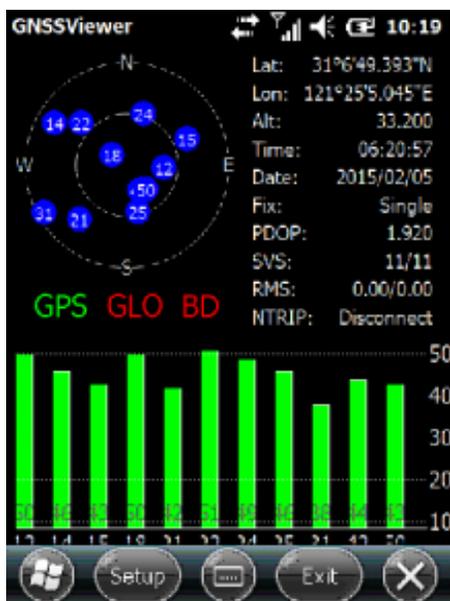


Figure 2-8: GNSS Status

Camera

1. Select **Start > Picture & Video**, and select **Camera** or the **camera key** icon to take photos.
2. Press the camera key (**F3**) to take photos.
3. Tap the screen, and select **OK** to exit.

User Serial Port

The user serial port is COM2. To transfer data between the T18 and other devices, use a DB9 serial cable.



NOTE

This user serial port is at the bottom of the T18.

Wireless Connection (Bluetooth/GPRS/WIFI)

Standard Bluetooth

1. Select **Start > Settings > Connections > Wireless Management**, tap the  icon to activate the Bluetooth (BT) device.
2. Select **Start > Settings > Bluetooth**, and tap **Add new device....**
3. Follow the tips shown on the screen to finish the operation of pairing the other BT device.



NOTE

The standard Bluetooth virtual ports are COM7 and COM9.

Long Range Bluetooth (Optional)

1. Select **Start > Settings > System**, and tap **Bluetooth Radio Manager**.



Figure 2-9: Bluetooth Radio Manager

2. Chose the module **DirectConn**, and tap **Power On**.

3. Tap **Search BT** to start searching for Bluetooth (BT) devices.
4. After all BT devices have been found, select a device.
5. Tap **Connect** to pair with a BT device of your choice. Your screen will display **Connect the BT device successfully** after BT pairs successfully.

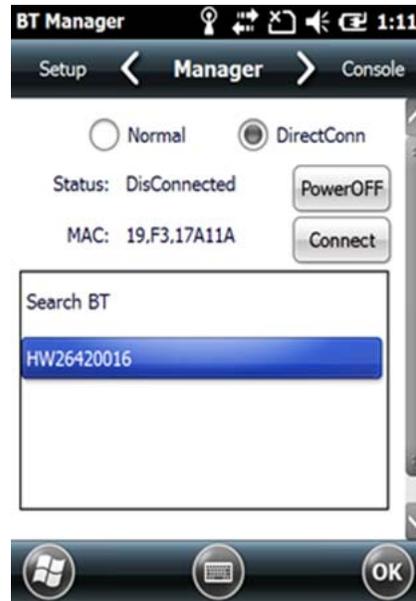


Figure 2-10: BT Manager - DirectConn

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

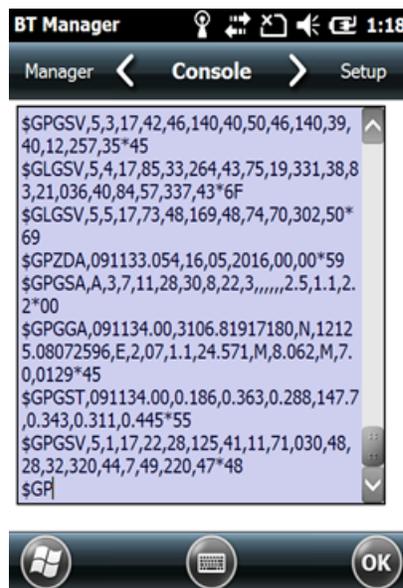
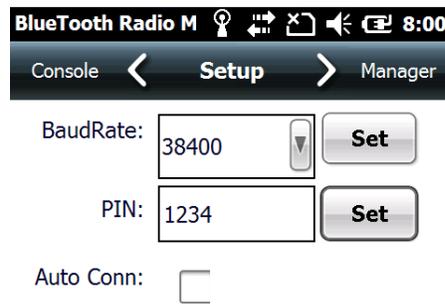


Figure 2-11: BT Manager - Status

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



VERSION:2.0.0.5 2016/07/13



Figure 2-12: BT Manager - Setup

8. The default baud rate is 38400.
9. The **PIN** code refers to the pairing PIN code of the BT device which the T18 want to pair with.
10. If you check **Auto Conn**, the T18 will automatically connect to the last pairing BT device when powered up.



NOTE

Long Range Bluetooth port is COM2 which is the same as user serial port. If Long Range Bluetooth been used, user serial port is disable.

Wi-Fi

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

GPRS/3G Data Connection

1. Make sure there is a SIM card in the T18.
2. Select **Start > Settings > Connections > Connections**.
3. Tap **Add a new modem connection**.
4. Input connection name, select **Cellular Line (GPRS)**, and tap **Next**.
5. Input **Access point name**, tap **Next**.
6. Tap **Finish** and add new connection successfully.

7. Tap **Manage existing connections**.
8. Tap and hold on **new connection**, and select **Connect**.
9. If there is the identifier on the signal icon in the top right corner, this indicates a successful.

Useful Functions

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

Adjusting the Backlight

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



Figure 3-2: Backlight

Removing Programs

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

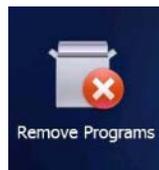


Figure 3-3: Remove Programs

Auto Power Off*

(*NOTE: The device does not support the Auto power off function, instead use Go-to-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: Go-to-Sleep Mode

Clean Boot

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



NOTE

The password is "1234". Restoring factory settings will clear the system configuration, please be cautious.



Figure 3-5: Clean Boot

PWConfig

Select **Start > Settings > System > PWConfig**.



NOTE

While on **Screen off** mode, the device won't hibernate.



Figure 3-6: PWConfig

Specifications

This chapter provides specifications for the T18 GIS Handheld Controller.

General Details

Table 4-4 lists the T18's environmental specifications.

Table 4-4. T18 Environmental Specifications

Environmental	
Operating temperature	-20°C to +60°C
Storage temperature	-30°C to +70°C
Humidity	5% to 95%, non-condensing
Drop	1.5m drop tested on all surfaces
Dust rating	Dustproof and resistant to heavy wind driven rain per IP65

Safety Warnings

Care and Maintenance

The T18 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.

General Warnings



WARNING

To comply with RF exposure requirements, maintain at least 25cm between the user and the radio modem.



WARNING

This product should never be used:

- Without the user thoroughly understanding this manual.
 - After disabling safety systems or altering the product.
 - With unauthorized accessories.
 - Without proper safeguards at the survey site.
 - Contrary to applicable laws, rules, and regulations.
-



WARNING

TPS products should never be used in dangerous environments. Use in rain or snow for a limited period is permitted.

Battery Pack Warnings

**DANGER**

Never attempt to open the casing of the detachable or internal batteries! Lithium-Ion batteries can be dangerous if mishandled!

**DANGER**

Do not incinerate or heat battery pack above 212 degrees Fahrenheit (100 degrees Celsius). Excessive heat can cause serious damage and possible explosion.

**DANGER**

Tampering with the batteries by end users or non-factory authorized technicians will void the battery's warranty.

- Do not attempt to open the battery pack or replace it.
- Do not disassemble the battery pack.
- Do not charge in conditions different than specified.
- Do not use other than the specified battery charger.
- Do not short circuit.
- Do not crush or modify.

Receiver Warnings

**CAUTION**

Tampering with the receiver by the end users or non-factory authorized technicians will void the receiver's warranty:

- Do not attempt to open the receiver and modify any of its internal components.
- Do not charge in conditions different than specified.
- Do not short circuit.

Usage Warnings

**CAUTION**

If this product has been dropped, altered, transported or shipped without proper packaging, or otherwise treated without care, erroneous measurements may occur.

The owner should periodically test this product to ensure it provides accurate measurements.

Inform TPS immediately if this product does not function properly.

Regulatory

The following sections provide information on this product's compliance with government regulations for use.

FCC Compliance

This equipment complies with FCC radiation exposure limits set forth for uncontrolled equipment and meets the FCC radio frequency (RF) Exposure Guidelines in Supplement C to OET65. This equipment has very low levels of RF energy that it is deemed to comply without maximum permissive exposure evaluation (MPE). But it is desirable that it should be installed and operated with at least 20cm and more between the radiator and person's body (excluding extremities: hands, wrists, feet and ankles).

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

If this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Move the equipment away from the receiver.
- Plug the equipment into an outlet on a circuit different from that to which the receiver is powered.
- Consult the dealer or an experienced radio/television technician for additional suggestions.



WARNING

Any changes or modifications to the equipment not expressly approved by the party responsible for compliance could void your authority to operate such equipment.

Industry Canada Compliance

This class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Community of Europe Compliance

The product described in this manual is in compliance with the R&TTE and EMC directives from the European Community.

European Community Declaration of Conformity with Radio Equipment Directive 2014/53/EU

The following CE mark is affixed to the device:



WEEE Directive

Following information is for EU-member states only:

The use of the symbol below indicates that this product may not be treated as household waste. By ensuring this product is disposed of correctly, to help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. For more detailed information about the take-back and recycling of this product, please contact a supplier where you purchased the product or consult.



Bluetooth Transmission Statements/Compliance

This Bluetooth device is compliant to the following profiles of the core spec version 2.1/2.1+EDR:

- Baseband
- HCI
- Link Manager
- Radio

The radio has been tested using the maximum antenna gain of 2.3 dBi and the Bluetooth qualification is valid for any antenna with the same or less gain.



Warranty

Topcon laser and electronic positioning equipment are guaranteed against defective material and workmanship under normal use and application consistent with this Manual. The equipment is guaranteed for the period indicated, on the warranty card accompanying the product, starting from the date that the product is sold to the original purchaser by Topcon's Authorized Dealers.¹

During the warranty period, Topcon will, at its option, repair or replace this product at no additional charge. Repair parts and replacement products will be furnished on an exchange basis and will be either reconditioned or new. This limited warranty does not include service to repair damage to the product resulting from an accident, disaster, misuses, abuse or modification of the product.

Warranty service may be obtained from an authorized Topcon warranty service dealer. If this product is delivered by mail, purchaser agrees to insure the product or assume the risk of loss or damage in transit, to prepay shipping charges to the warranty service location and to use the original shipping container or equivalent. A letter should accompany the package furnishing a description of the problem and/or defect.

The purchaser's sole remedy shall be replacement as provided above. In no event shall Topcon be liable for any damages or other claim including any claim for lost profits, lost savings or other incidental or consequential damages arising out of the use of, or inability to use, the product.

1. The warranty against defects in a Topcon battery, charger, or cable is 90 days.



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