

The

TITAN^{RT}



For Farm Works Software[®]

Product Guide for the Rugged Tablet Computer (Rev. 5/10/06)

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Product Information

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Ordering Guide

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Audience

This product manual provides a reference for the use and care of the Titan RT (rugged tablet) computer. The information this document contains is intended for two audiences: (1) Titan RT end users, and (2) qualified electrical or Information Technology personnel familiar with installing, configuring, and maintaining field mapping and record keeping computing devices, hardware peripherals and software.

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Overview of the Titan RT

Whether you are planting, spraying, or soil sampling, your farming operation can be hard on the computing device you bring with you to the field. Driving over rough terrain can shake up a delicate handheld computer and even cause it to vibrate loose from its mount, which might damage the device.

The professionals at Farm Works Software know you cannot afford to lose valuable time and money that results from a damaged personal data assistant, and the loss of important data you have taken precious time to record. That is why we offer a nearly indestructible rugged tablet computer called the Titan RT.

The Titan RT is so tough you can drop it, step on it, or even drive your tractor over it, and it can still keep working. The makers of the Titan RT stress tested this rugged tablet computer by actually parking a large pickup truck on top of it! When they moved the truck, there was no damage to the device at all. It's truly able to take the beating that a delicate PDA could never endure, and still protect your vital farm maps, global positioning system (GPS) data, and other critical information about your farming enterprise. The Titan RT can withstand nearly anything nature throws at it: Heat, cold, rain, dust and mud—almost nothing can stop this rugged tablet computer! (See the chapter "Maintenance" in this product guide.)

Features of the Titan RT

Features of the Titan RT, listed in alphabetical order, include:

- **Audio Out** – Two internal speakers, one 3.5 mm stereo headset jack
- **Carrying Strap Handle** – Shipped with the tablet computer and optional (use of the strap is not required)
- **Compact Flash Memory Storage Card** – 128 MB Type I CompactFlash (CF) memory card with adapter installed in the Type II PCMCIA (PC Card) slot
- **Dimensions** – 10.0" x 8.75" x 1.75" max
- **Easy Battery Recharging of the Optional Battery Pack** – Via a Farm Works Software-supplied, 15 volt DC (direct current) adapter that plugs in to the electric cigarette lighter of a vehicle
- **External Power** – Provided by a vehicle battery via the Farm Works Software 15 volt DC adapter, which is also used to charge the battery pack
- **Installed Components** – MFC (Microsoft Foundation Classes), .NET Compact Framework, scripting support (JavaScript and VB Script)

- **Installed Applications** – Command prompt, Windows Control Panel programs, Site Mate, Trac Mate, Guide Mate, Pocket Internet Explorer, Input Panel (i.e., On-screen Keyboard), Microsoft Excel Viewer, Microsoft Image Viewer, Microsoft PDF Viewer, Microsoft PowerPoint Viewer, Microsoft WordPad, TitanSync USB drive synchronization utility, Windows Explorer (i.e., File Explorer), Windows games, Windows Media Player
- **Installed Services** – FTP (File Transfer Protocol) server, Microsoft Windows networking, SNTP (Simple Network Time Protocol) client
- **Installed Support** – Audio speakers and optional headphone support; Ethernet bridge; serial bridge; USB 1.1 (Universal Serial Bus)
- **Internal RAM Memory** – 128 MB volatile Random Access Memory (RAM) main memory
- **Internal Storage Area** – 64 MB nonvolatile Flash memory, non-removable storage
- **Large, Easy-to-See Display** – 8.4" super video graphics array (SVGA) 800x600 and 24-bit color thin film transistor (CTFT) touch screen for ease of viewing in daylight; 400 nit brightness Cold Cathode Florescent Lamp (CCFL); sunlight readable; eight-wire resistive (stable over a wide temperature range)
- **Long Battery Life of the Optional Battery Pack** – Eight hours at max power consumption, as shipped; 4000 mAh at 11.1 volts
- **LEDs** – Two indicator lights on the face of unit—one to indicate the power status and one for proprietary software
- **Operating System** – Windows CE .NET (Version 4.20)
- **Processor** – Intel XScale 400 MHz (megahertz)
- **Ruggedness** – Industrial strength substrate to pass the ATEX (from the French, "ATmospheres Explosibles") Directive
- **Stylus** – One for use with the tablet computer's touch screen
- **Weight** – 3.75 lbs. (with optional battery pack installed)
- **Wired Connections** – One 10/100 Ethernet network port (RJ-45); two Universal Serial Bus (USB 1.1) ports, which are type A receptacles for the Farm Works USB drive and other USB-compatible storage devices or peripherals; three RS-232-C serial communication (DB-9) ports to connect to GPS receivers, variable rate controllers, and other serial devices

Note: For information on the ATEX Directive and other standards met by the Titan RT, see "Safe Use of the Titan RT".

Typical Uses

The Titan RT has a super-wide and super-bright color thin film transistor display. The nearly eight-and-a-half inch wide CTFT display is easy to make out while driving at the wheel of a tractor or combine, no matter how bumpy the ride and how bright the glare. The handy touch screen also makes entering information effortless.

The rugged tablet computer has the latest technology and software available from Farm Works Software to assist in all field scouting, boundary mapping and applications. Its built-in serial ports support a wide-range of GPS receivers and variable rate controllers, and its mounting accessories make it simple to affix to nearly any vehicle cab. The versatility of the Titan RT gives modern producers the freedom to use an existing GPS receiver, along with the Site Mate program (and other Farm Works Mate programs), to perform a wide range of useful and timesaving tasks in the field.

Farm Works Software for the Titan RT

The professionals at Farm Works Software installed the Farm Works Mate programs on the Titan RT before they shipped the rugged tablet computer. The preinstalled programs are Site Mate, Trac Mate and Guide Mate. You can use any of the programs for which you have purchased a CD key and entered a registration number.

Note: The programs remain disabled until you enter valid CD keys and registration numbers in the Registration dialog box (see “Setting Up the Titan RT” for information on registering the programs). You can purchase additional CD key numbers and receive registration numbers via the Internet by visiting www.farmworks.com, or calling (800) 225-2848.

Site Mate enables you to use a GPS receiver with the rugged tablet computer for site-specific field mapping. Trac Mate gives you the freedom to enter field data when it is convenient for you—while you are still in the field—to takes the hassle out of keeping track of work you complete on your farm.

Guide Mate—the guidance module of Site Mate—adds an on-screen lightbar to keep you on an almost perfectly straight path. The Guide Mate lightbar is easy to follow, and the software integrates fully with Site Mate so you can quickly access maps of your field while you are planting, spraying, or harvesting.

Whether mapping field boundaries, scouting problem areas, taking soil samples, or monitoring variable rate, Farm Works Software offers just the program you need to get the job done right.

Note: Farm Works Software also offers a wide range of programs for the desktop or laptop computer in your office, including Farm Trac++, Farm Funds, Farm Stock, Farm Site and Site Pro. For more information regarding Farm Works Software programs, or to purchase additional Farm Works Software applications, please call (800) 225-2848 to speak to a member of the helpful sales team.

Hardware Accessories for the Titan RT

This section provides information regarding the hardware accessories for your Titan RT. To order additional or replacement accessories, please call toll free (800) 225-2848, or visit the Farm Works Software Web site at www.farmworks.com.

DC Adapter

Farm Works Software ships a DC adapter with the Titan RT (see Figure 1). The DC adapter supplies power to the rugged tablet computer, or recharges the optional battery pack if you install one. The adapter plugs into the electric cigarette lighter of a vehicle and is converts the direct current of the battery of the vehicle to the correct voltage for the tablet computer.



Figure 1. Farm Works Software DC adapter



WARNING: The DC adapter is *not* waterproof. You should *never* immerse it in water, as you might damage the Titan RT, or risk electrocution and death.

You should use only DC adapters supplied by Farm Works Software, or an authorized Farm Works dealer, with the Titan RT. For instructions on using the adapter, see “Setting Up the Titan RT”.

WARNING: Use only Farm Works Software-supplied adapters with the Titan RT. Use of another DC or AC adapter might cause a fire or an explosion.

Battery Pack (Optional)

The Lithium Ion battery pack for the Titan RT is optional, and is an additional accessory you can purchase from Farm Works Software. The proprietary battery pack (see Figure 2), allows you to use the rugged tablet computer without an exterior power source. It holds a charge for a maximum of eight hours of continuous use, after which you must completely recharge it before it can supply up to eight more hours of uninterrupted use.



Figure 2. Optional Lithium Ion battery pack

Farm Works Software ships the battery packs with approximately a 50% charge. A spare battery pack, stored separately (that is, not installed in a tablet computer) can be usable for up to one year. You should fully charge the battery pack *before* using it. The power indicator light will glow green when the battery pack is fully charged (see Table 2 in the chapter “Using the Optional Battery Pack”).

CAUTION: If Titan RT batteries are stored fully charged, or fully discharged, this can adversely affect their capacities. Store battery packs charged to about half-capacity, and remove them from the tablet computer before putting them into storage.

Mounting Bracket

The mounting bracket is made to be affixed to the inside of the cab of your tractor, combine, or other vehicle, and holds the Titan RT firmly in place so that you can use the device while operating the vehicle. The ball joint mounts of the mounting bracket (see Figure 3) let you adjust the position of the rugged tablet computer to just the right height and angle you desire. For instructions on assembling the mounting bracket and attaching it to the Titan RT, see the chapter “Setting Up the Titan RT” later in this product guide.



Figure 3. Assembled mounting bracket

CompactFlash (CF) Card with Adapter

The CF (CompactFlash) storage card installed in your Titan RT is *not* a removable storage device, as is the Farm Works Software USB drive. The CF storage card is a flash memory card that interacts with the tablet computer like a hard drive, but without moving parts. It is a semi-permanent location for the data that you create using Site Mate or Trac Mate.

CAUTION: YOU SHOULD NOT USE THE TITAN RT WITH THE CF MEMORY CARD REMOVED. Removing the card can result in a loss of data, as the Site Mate program that Farm Works Software preinstalled on your Titan RT saves important files to the CF memory card.

If you wish to use a removable storage device, we strongly recommend you utilize the Farm Works Software USB drive, which Farm Works Software shipped with your tablet computer (see “USB Drive and Accessories”).



Figure 4. CF card and adapter in the card slot

The Type I CF memory card has an adapter so it can fit in the Type II PCMCIA (PC Card) slot of the Titan RT. The slot has a hold-down bar that keeps an installed card solidly in place and unaffected by vibrations or rough handling (see Figure 4). For information on installing a new CF card and adapter, see “Storing Data”.

Note: When replacing the CF storage card, you should reinstall the PC Card slot cover to meet the IP67 and/or NEMA 4 seal ratings.

USB Drive and Accessories

Farm Works Software ships a USB drive—also called a flash drive, thumb drive, or key chain drive—with the Titan RT (see Figure 5). This USB drive is the primary removable storage device for the rugged tablet computer. Unlike the CF storage card, which should remain in the Titan RT, you can safely insert and remove the USB drive from the USB port of the tablet computer while it is on.

You can save your records—such as log files, maps and variable rate control data —on the USB drive, remove it from the Titan RT, and bring it with you back to your office to transfer the files to your desktop or laptop computer, there. For information regarding the use of the USB drive, see “Storing Data”.



Figure 5. USB drive and accessories (clockwise, top to bottom: USB cable, carrying strap, USB drive, and Windows 98 driver CD)

The Farm Works Software USB drive is also a convenient way to import files into other software applications installed on your desktop, laptop, or other computer, such as the popular Farm Works Software office programs—Farm Trac++, Farm Funds, Farm Site and Site Pro. For more information regarding these, and other, Farm Works Software applications, please call to speak to one of our helpful sales team members by dialing (800) 225-2848, or watch demonstrations of the programs at our website at www.farmworks.com/demos/.

USB Cable and Driver CD

The USB cable (see Figure 5) shipped with the Titan RT is a standard Universal Serial Bus cable with a type A connector on one end and a type B connector on the other end. The type A connector plugs into a USB port, and the type B connector attaches to the USB drive, or to another peripheral device.

If your desktop, laptop, or other computer is using Microsoft Windows 98 or Windows 98 Second Edition (SE), you might need to use the USB Flash Drive CD (see Figure 5) to install software drivers to your desktop or laptop computer before using the USB drive with that computer. You do not need to install drivers from the CD if your desktop or laptop computer is running Windows 2000 Professional, Windows Millennium Edition (Me), Windows XP Home Edition, Windows XP Professional, or Windows XP Media Edition.

Note: The USB drive is not for Windows 3.0, Windows for Workgroups 3.11, Windows NT, or Windows 95, as the USB Flash Drive driver CD does not install drivers compatible with these older operating systems.

Stylus

The Titan RT's plastic stylus looks like a pen, but is for resistive touch screens. You might not always need to use the stylus, however, because some applications provide large buttons that you can select by touching the touch screen with your finger. Do *not* use a writing pen, or other sharp object, instead of the stylus, as you might scratch the touch screen. For more information regarding the use of the stylus, see "Setting Up the Titan RT".

Note: Before using the stylus, you might have to remove the protective plastic cover that is affixed to the touch screen of the Titan RT to protect it during shipping.

Carrying Strap

You can attach the optional carrying strap or handle that Farm Works Software shipped with your Titan RT to the side of the tablet computer's housing when the device is not fastened to the mounting bracket (see the previous section "Mounting Bracket"). The carrying strap makes the tablet computer easier to carry, should you desire to use it as a portable computer instead of mounting it to a vehicle, and have a charged battery pack installed.

Whether or not you use the strap is at your discretion. You can attach it to the side of the Titan RT using the provided screws (see the photograph on the front cover of this product guide). If you decide to fasten the tablet computer to the mounting bracket, you will first have to remove the strap.

Note: The carrying strap or handle also has a convenient sleeve to hold the stylus when it is not in use.

Note: To order additional or replacement hardware accessories for the Titan RT, call toll free to speak to one of the helpful Farm Works Software sales team members at (800) 225-2848.

Setting Up the Titan RT

Farm Works Software typically ships the Titan RT with a mounting bracket, which is unassembled. In addition, if you also purchased the optional battery pack, you will have to install it in the tablet computer. Thus, some initial assembly is required.

Note: If you purchased the optional battery pack and intend to use the mounting bracket, you should first install the battery pack before fastening the mounting bracket to the Titan RT. Follow the steps in the chapter “Using the Optional Battery Pack”, and then return to this chapter and follow the steps below.

Fastening the Mounting Bracket

To set up the Titan RT in your combine, tractor, or other vehicle, you should assemble the mounting bracket, mount it inside the cab of the vehicle, and attach the rugged tablet computer to the mounting bracket. The mounting bracket holds the tablet computer securely in place while the vehicle is moving, and you can adjust it to the height and angle that makes it easiest to view and use.

The mounting bracket assembly kit included with your Titan RT consists of the four parts that make up the mounting bracket—the mounting frame, two ball-joint mounts and bracket arm. To assemble the mounting bracket, attach one of the ball joint mounts to your vehicle according to the instructions the dealer of the vehicle provides. Then, attach the other ball joint mount to the frame using the provided bolts and nuts (see Figure 6).

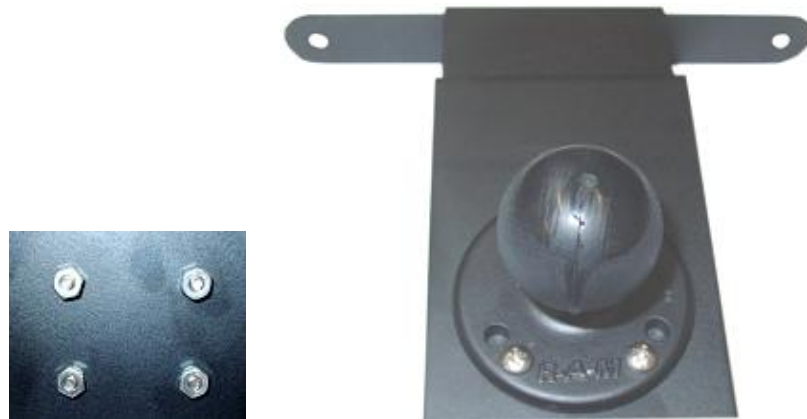


Figure 6. Ball joint mount attached to the mounting frame

Attach the mounting frame to the back of the Titan RT using the provided bolts and washers to secure it to the sides of the tablet computer. The screws should hold the Titan RT firmly in to the frame to minimize vibration (see Figure 7).


 **CAUTION:** Do not use screws that are longer than the ones supplied with the Titan RT, as you might damage the housing of the tablet computer.



Figure 7. Mounting frame attached to the Titan RT

Finish the assembly by placing the ball joint mounts into the bracket arm (if the ball joint mounts will not easily fit into the arm, adjust the large turn screw on the arm to widen the openings). Once the ball joints are securely in place, tighten the arm's grip on the ball joint mounts by turning the turn screw clockwise.



Figure 8. Fully assembled mounting bracket

The bracket arm's grip should be firm enough to keep the mounting frame from jarring loose, but not so tight that you cannot adjust the position of the Titan RT (see Figure 8). See "Safe Use of the Titan RT" for information on how to best position the tablet computer. Once you have the Titan RT correctly mounted to the vehicle, you can attach the serial devices.

Attaching Serial Devices

The Titan RT has three RS-232-C serial communication ports you can use to connect to a GPS (that is, global positioning system) receiver or other devices with nine-pin female serial cables (see Figure 9). Before you turn on your Titan RT, be sure to attach each device to the correct serial port. You can attach the GPS receiver to the first or second serial port (the one labeled COMM 1 or the one labeled COMM 2). If you have a variable rate controller or other serial device, connect it to the third serial port (the one labeled COMM 3). See "Setting Up a GPS Receiver" in this chapter.



Figure 9. Serial communication ports on the Titan RT

The COM ports have these pins enabled:

- COMM 1 – All
- COMM 2 – Pins 2, 3 and 5
- COMM 3 – Pins 2, 3, 5, 7 and 8

The pinouts for the COM ports are as follows:

- Pin 2 – Receive
- Pin 3 – Transmit
- Pin 5 – Ground
- Pin 7 – RTS
- Pin 8 – CTS


CAUTION: You should connect serial devices to the serial ports of the Titan RT *before* you connect the DC adapter or install the battery pack. Connecting devices to, and removing them from, the COM ports while the rugged tablet computer is on might damage the ports.

Insert the DB-9 female connectors of the serial cables firmly, but gently, into the correct COM ports, and turn the thumbscrews until they are securely in place. After you attach the serial cables, you can install the optional battery pack and attach the DC adapter.


Note: For instructions on installing the optional battery pack before you connect a GPS receiver or other serial device, see the chapter “Using the Optional Battery Pack”. For instructions on correctly connecting and positioning a GPS receiver, see the section “Setting Up a GPS Receiver” at the end of this chapter.

Connecting the DC Adapter

The DC adapter shipped with the Titan RT (see Figure 1) allows the device to operate using the direct current of the battery of your combine, tractor, or other vehicle. One cable of the DC adapter attaches to the power port in the bottom of the tablet computer and the other plugs into the electric cigarette lighter of the vehicle. The DC adapter shipped with your Titan RT is compatible with the device, and set to the output 15 volts DC to power the rugged tablet computer and recharge the battery pack, if one is installed.

 **WARNING:** Use only a Farm Works Software-supplied DC adapter with the Titan RT. Use of another adapter might damage the Titan RT, or cause a fire or an explosion. Verify the adapter outputs *not more than 15 volts* before connecting it to the tablet computer.

To attach the DC adapter to the Titan RT: First, plug the two cables into the DC adapter. Second, attach the first cable securely to the port labeled Power on the bottom of the tablet computer (see Figure 1). Third, plug the other cable into the cigarette lighter of the vehicle. Once you have properly attached the adapter, you can turn on the rugged tablet computer.

 **WARNING:** The DC adapter is *not* waterproof. You should *never* immerse it in water, as doing so can damage the Titan RT, or cause electrocution or death.

Turning On the Titan RT

Turn on the Titan RT by pressing the power button located in the upper right-hand corner of its housing. When you first power on the rugged tablet computer, it will take approximately 60 seconds for the device to cold boot to the Windows CE .NET desktop.

Power Button Functionality

Briefly pressing the power button for *less than* five seconds turns on the Titan RT and restores full screen activity, or else it places the rugged tablet computer in suspend mode where data is preserved in RAM (random access memory) pending return to full system use.

Pressing the power button for *more than 10* seconds performs a hard reset of the tablet computer. For information on resetting the device, see “Resetting the Titan RT”.

Power States

The Titan RT can be in one of several power states induced by either user action, or user inaction. Table 1 lists the five states in order of decreasing power consumption.

Table 1 - Titan RT Power States

<u>Power State</u>	<u>Description</u>	<u>Initiation of State</u>	<u>Move to On</u>	<u>Move to Suspend</u>
ON (Titan RT in full run mode)	Fully on, all processes enabled.	Power button pressed briefly (less than five seconds), or screen is tapped while in suspend mode.	N/A	Press the power button briefly (less than five seconds), or tap Start and Suspend .
DIM BACKLIGHT (Full run mode with dimmed display)	Dimmed backlight, system processes ongoing.	No touch screen, button or keypad activity for a user-set period.	Tap the touch screen to return to the on power state.	Press the power button briefly (less than five seconds), or tap Start and Suspend .
DISPLAY OFF (Idle mode)	No backlight, no system processes ongoing.	No serial port or card slot activity for user-set period, or battery voltage drops below a threshold set in the Battery program of the Control Panel.	Press the power button briefly (less than five seconds) to return to on.	Once on, press the power button briefly a second time (less than five seconds), or tap Start and Suspend .
SUSPEND (Sleep mode)	No backlight, all internal devices shut down or in low-power mode.	User tapped Start , Suspend , or pressed power button twice; no activity for user-set period; voltage dropped below a threshold of Battery program of the Control Panel.	Press power button briefly (less than five seconds) to return to on.	N/A
RESET (Titan RT is in the process of a hard reset)	Resetting to default settings, data already saved to storage area or card is safe.	DC adapter disconnected; battery pack fully discharged or improperly installed; user pressed the power button for more than 10 seconds.	Wait 60 seconds and press the power button briefly to power on.	Once on, press the power button briefly a second time (less than five seconds), or tap Start and Suspend .

Instant On – Instant Off

The Titan RT features *Instant On* and *Instant Off*. It instantly "wakes" when you touch the touch screen, or briefly press the power button for less than five seconds. It instantly "sleeps" when you briefly press the power button once again. The Instant Off feature puts the rugged tablet computer into suspend mode, which is the low-power mode described in Table 1.

Resetting the Titan RT

On the rare occasion when the embedded Windows CE .NET operating system hangs (or fails to respond) you might find the only way to restore normal operation is to reset the Titan RT. To perform a reset, press the power button for *more than* 10 seconds.

Resetting will remove all data from volatile RAM (random access memory) just as though you removed the battery and DC adapter. You will lose data *only* for any open projects of the Farm Works Mate programs that you have *not* saved. Projects saved to the CF storage card, or flash memory storage area, before the reset procedure should not become lost.

Aligning the Touch Screen

Farm Works Software ships the Titan RT with the touch screen already aligned and ready to use, but you might need to recalibrate the touch screen to realign the cursor on the display with the stylus.

Using the Stylus

You use a stylus (which is shaped like a pen) instead of a mouse to navigate menus and select items on the Titan RT touch screen.

- **Tapping** – Tapping the stylus is the equivalent of using your mouse to click on an item. Tap once, or double-tap twice quickly, on the touch screen with the stylus to open an item. Tap and hold to open a shortcut menu, which is the equivalent of right clicking.
- **Dragging** – Place the stylus on the touch screen and drag it across the screen to select an item, or to move program windows and scroll bars. Drag the stylus down a list to select multiple items.

Recalibration realigns the cursor on the touch screen with the tip of your stylus. To realign the touch screen:

1. Tap **Start**, **Settings** and **Control Panel**, and then tap the **Stylus** icon to open the **Stylus Properties** dialog box.
2. In the dialog box, tap the **Calibration** tab.
3. Tap the **Recalibrate** button.
4. In the **Recalibration** window (see Figure 10), tap the centers of target locations with the tip of the stylus. The target moves when you tap its center. If you miss a target, keep the stylus on the screen and slide it over to the target center before lifting the stylus.



Figure 10. Recalibration window

Note: To cancel the recalibration and close the Recalibrate program, tap the screen in any spot that the target does *not* occupy.

After successfully tapping the target centers, the Recalibrate utility displays a message indicating that it successfully recalibrated the touch screen. To accept the new calibration settings, tap anywhere on the screen to exit the Recalibrate utility, and then tap the **OK** button on the **Stylus Properties** dialog box. To keep the old settings, tap the touch screen to exit the Recalibrate program, and then tap **Close**, instead of **OK**. Once you complete the recalibration, you can set the date and time.

Setting the Date and Time

To set the date and time, tap **Start, Settings, Control Panel**, and tap the **Date/Time** icon to display the **Date/Time Properties** dialog box. You should enter the current date, time and time zone for your location. Once you do this, you can register Site Mate, and any other programs you have purchased for use on the Titan RT.

Note: If you disconnect the Titan RT from a power source, or the battery pack fully discharges, the rugged tablet computer resets the date and time to the factory default settings. If this happens, you can change the date and time after you restore power to the tablet computer.

Registering the Mate Programs

Before you use the preinstalled Farm Works Mate programs you purchased for the Titan RT, you should register the software:

1. Start the Trac Mate – Site Mate program, which should display the **Register** dialog box (see Figure 11).

2. Use the **Input Panel** (see “Using the Titan RT”) to enter the 11-digit CD key number in the **CD Key** boxes of the dialog box.
3. Enter the registration number in the **Registration #** box. (You can obtain the registration numbers via the Web at www.farmworks.com/register or by calling the toll free number (800) 225-2848. You will need to provide the machine ID number to obtain the registration number.)

Note: If you do not wish to purchase a second CD key—and you already have the latest version of Site Mate installed on another computer—you have the option of doing the following. (1) Use the Remove Programs utility to *uninstall* the Mate programs from the other computer (Remove Programs is in the System window of a Pocket PC or in the Control Panel of a laptop computer). (2) Use the CD keys for the programs you removed from the other computer to register the programs on the Titan RT. For more information regarding legal use of the software, read the end user license agreement of your Farm Works Software applications. (You will find this on page 54 of the *Quick Start Guide* that ships with the Farm Works Software installation CD.)

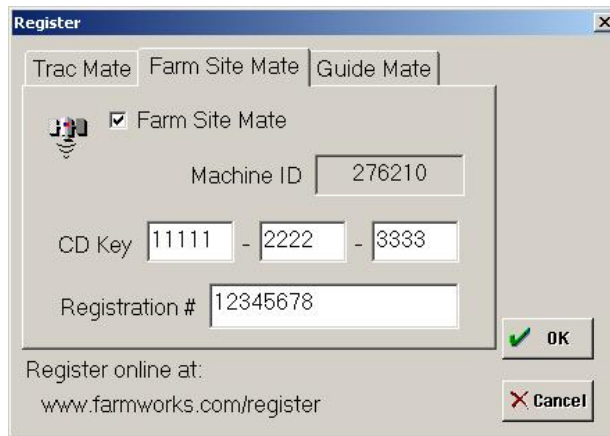


Figure 11. Site Mate Register dialog box

4. Verify the CD keys and registration numbers for all the programs are correct, and tap **OK**.

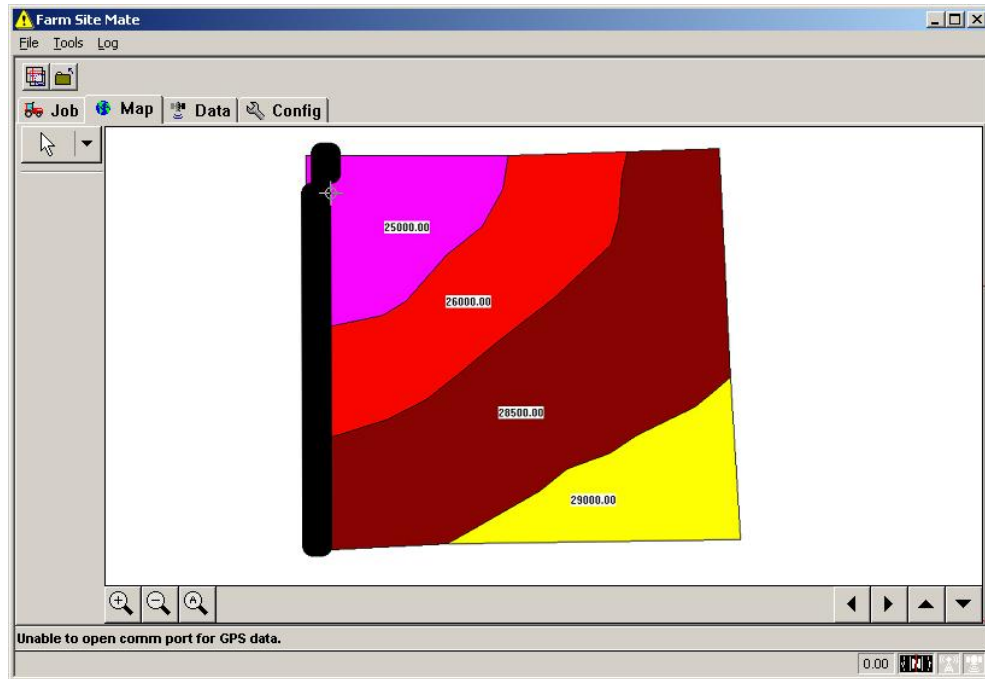


Figure 12. Site Mate program on the Titan RT

5. Once you enter the correct CD key and registration numbers, you can begin using the software (see Figure 12).

Saving Settings for the Mate Programs

Once you have Site Mate (and any other Farm Works Mate programs) configured with the correct settings for your GPS receiver or variable rate controller, you can save the settings to the storage card. Doing so protects the settings from deletion should the DC adapter disconnect from the Titan RT or the battery pack fully discharge. To save the software settings:

1. Open the Site Mate program.
2. Tap the **File** menu and tap **Save Settings to Card** to open a dialog box.
3. In the dialog box, tap **Storage Card** in the **Card Name** list, and tap **Save**.
4. A message indicates when the program has successfully exported the registration number and other settings to the storage card; tap **OK** and **Close**.

You have now saved the settings to the CF storage card and the program will reconfigure them after the tablet computer loses all power and then has power restored.

Setting Up a GPS Receiver

Before you connect the DC adapter to the Titan RT and power it on, you should first connect a GPS (global positioning system) receiver to the tablet computer. Connect the DB-9 connector of the GPS receiver cable to the first or second serial port on the bottom of the Titan RT (the ones labeled COMM 1 and COMM 2).

Note: For more information on connecting devices to the serial communications ports of the Titan RT, see the section of this chapter “Attaching Serial Devices”.

The position of your GPS receiver is important to ensure there is no interference with the receiver. Placing the receiver too near the Titan RT might cause interference. Typically, mounting the receiver a minimum of three to five feet from the tablet computer should eliminate any interference. The preferred position of the antenna of the GPS receiver is to the right or left of the tablet computer, as opposed to in front or behind it. This assures that the antenna has a clear view of the sky.

Note: To complete the setup of the receiver, go to GPS Settings under the Configuration tab within Site Mate. The COM port in Site Mate must match the COM to which the GPS cable is connected. The baud rate must match the output of the receiver.

Using the Optional Battery Pack

The Titan RT does not require a battery pack for normal use. The DC adapter, connected to an external power source, is all you need to power the device. Even if the DC adapter is disconnected, data already saved to the CF storage card (such as important farm project files of the Site Mate program) should *not* be lost, as this storage area is nonvolatile. For these reasons, using the Lithium Ion battery pack is not required, but you might purchase the optional battery pack from Farm Works Software for one of these reasons:

- You want a backup power source to prevent the loss of data that you have *not* saved to flash memory, should you inadvertently disconnect the DC adapter while logging data.
- You want to use the Titan RT outside of the cab of your tractor or combine.
- You do *not* want to use your tractor or combine battery as the power source for the rugged tablet computer.
- You want to use the rugged tablet computer both in the field and at the office, without a DC adapter or AC adapter.

Note: To purchase optional battery packs, call the Farm Works Software at (800) 225-2848.

Note: Farm Works Software ships an optional carrying handle with the Titan RT. You can attach this handle to make carrying the device easier. Use of the carrying handle is not required.

Installing the Battery Pack

The proprietary lithium ion battery pack of the Titan RT provides 4000 mAH at a nominal 11.1 volts and is available only from Farm Works Software.



Figure 13. Installing the optional battery pack


To install the optional battery pack:

1. Loosen the slotted screws of the protective cover of the battery pack bay at the bottom of the Titan RT with a screwdriver or coin, and then remove the protective cover (see Figure 13).
2. Insert the battery pack into the bay, ensuring that the alignment tabs on the battery pack fit into the alignment slot on the top of the battery bay, and firmly seated it.
3. Using a screwdriver or coin, install the two slotted screws in the two screw holes in the bottom of the battery pack to hold it securely in place.

Note: You must correctly install the battery pack in the bay. If it is not, you will not be able to recharge it, and it will not power the Titan RT.

Charging the Battery Pack

Before using the Titan RT with the optional battery pack installed, you should charge the battery pack for *at least* two hours with the DC adapter. In order to recharge the battery pack, you must install it in the battery bay of the Titan RT, and connect the 15-volt DC adapter to the rugged tablet computer and to a DC power source.

 **WARNING:** Using an DC adapter with an output of more than 15 volts of direct current might damage the battery pack, or the Titan RT, and even cause a fire or explosion. *Do NOT use a DC adapter other than one supplied by Farm Works Software, or by an authorized Farm Works Software dealer.* In addition, the DC adapter is *not* waterproof, and you should *never* immerse it in water.

The Titan RT, with a new and fully charged battery pack, that has continuous screen activity and the backlight at default brightness, will have a battery life of up to a full eight hours. However, typical use of the rugged tablet computer generally will not require you to power the tablet computer for a continuous eight hours, because the device will usually enter suspend mode to save power (see “Setting Up the Titan RT” for instructions on how to configure this feature).

Note: Charging the tablet computer battery at room temperature will extend the battery's life. The Titan RT battery pack charges only at battery temperatures of 0°C - 45°C (32°F - 113°F). If the tablet computer has been running on battery power for some time, the battery can be up to 10° warmer than the ambient temperature. Thus, charging a warm battery can only be possible at ambient temperatures ranging from about -10°C to 35°C (14°F - 95°F).

In *suspend mode*, the rugged tablet computer appears to be off, but when the power button is pressed it instantly “wakes” and allows work to continue from the previous state of the unit. (For example, a Titan RT with a new and fully-charged battery pack and no peripherals attached, which is set to the default brightness and used 15 minutes every hour and suspended for 45 minutes every hour, might last for up to 28 hours without recharging the battery.)

IMPORTANT: As batteries are charged and discharged, they naturally lose capacity. After about 300 full charges and discharges at room temperature, batteries can have only about 75% of their original capacity available. When a battery pack's capacity drops below your needs, you should consider replacing it with a new battery pack. If you do *not* fully discharge the batteries before recharging them, they will retain a higher capacity. To order replacement or spare battery packs, call Farm Works Software at (800) 225-2848 and ask to speak to one of the helpful sales team members.






Storing Spare Battery Packs

You should charge batteries that you put in storage for long periods to about 50%, and remove them from the Titan RT. Storing batteries either fully charged or fully discharged can adversely affect their capacity. A spare battery pack should be usable for up to one year. Unlike NiCd/NiMH batteries, the tablet computer's lithium ion battery pack has no memory, so there is no need for a discharge cycle, and you can use them at any time during the recharging.

The Power Indicator Light

The tri-color (red-amber-green) indicator light on the right side of the external keypad of the Titan RT (see Figure 15) indicates power status (see Table 2). When the power indicator light starts blinking red, approximately 15 minutes remain until the battery stops supplying power and the rugged tablet computer shuts down. If the device shuts down, you should attach the DC adapter to it and plug it into a power source to begin recharging the battery (see the "Charging the Battery Packs" in this chapter).

Table 2 - Battery Power Indicator States

<u>Power Indicator Color</u>	<u>Condition</u>
 Green	Running on a fully-charged battery pack
 (No light)	Power off; no battery and no DC adapter connected
 Amber	Currently charging battery pack
 Blinking Red	Battery power low, or discharged battery pack
 Solid Red	No battery installed but DC adapter supplying power; battery improperly installed or not functioning

Note: A solid red indicator light is normal for a Titan RT using a DC adapter *without* a battery pack installed.

The power indicator LED displaying an unblinking red light indicates the Titan RT cannot communicate with the battery. The cause of this might be that you did not properly install the battery pack, or did not install the battery pack at all. To remedy this, try removing and reinstalling the battery pack. If the indicator is still solid red after reinstallation, you can try replacing the battery pack with a new one. To reinstall or replace a battery pack, follow the instructions in the next section of this chapter.

Note: The indicator on the left side of the keypad is another tri-color indicator that is available for use by custom application software (see Figure 15).

Field Swapping Battery Packs

When you need to replace a battery pack:

1. Press the power button briefly to place the Titan RT in suspend mode (see Table 1).
2. Using a screwdriver or coin, remove the two slotted screws securing the battery pack to the bottom rear of the tablet computer.
3. Lift the battery pack up and out of the battery bay (see Figure 13).
4. Insert a fresh battery pack into the battery bay, ensuring that the alignment tabs on the battery fit into the alignment slots and that you have firmly seated the battery in the bay.
5. With a screwdriver or coin, reinstall the two slotted screws in the screw holes at the bottom of the battery pack.
6. Press the power button briefly (*less than* five seconds) to reactivate the tablet computer.



CAUTION: You should save your data to nonvolatile storage and close all open programs before you replace the battery. Save data to either the storage card or the storage area.

Using the Titan RT

There are two primary ways to enter information with the Titan RT: (1) Pressing the external keypad buttons, or (2) tapping the touch screen with your finger or stylus. The functions of each of the buttons, and instructions for using the stylus, follow.

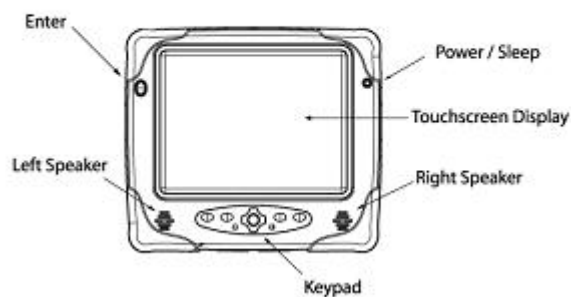




Figure 14. Front view of the Titan RT

Power-Sleep Button

The power button  on the upper, right-hand side of the front housing of the Titan RT (see Figure 14) lets you power on, suspend and reset the tablet computer. For more information on this button's functionality, see the chapter "Setting Up the Titan RT".

Enter Buttons

The Titan RT has two enter buttons  that enable you to select a command, or make a program entry:

- The enter button located on the upper, left-hand side of the tablet computer housing (see Figure 14)
- The enter button located in the center of the navigation buttons on the keypad (see Figure 15)

Keypad

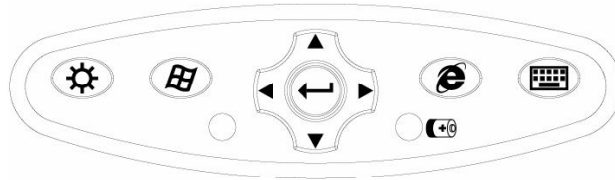













Figure 15. Titan RT keypad

Located directly under the touch screen, the keypad of the Titan RT (see Figure 15) provides:


- An enter button  surrounded by four navigation buttons for moving the cursor up  down  right  and left 
- Two tri-color (red-amber-green) indicator lights:
 - The indicator light on the left, which is available for use by customized software.
 - The indicator light on the right, which shows the power status (see Table 2).
- Four keys with these functions:
 - **Brightness**  – Located on the far left side of the keypad; toggles between the current display brightness and maximum brightness.
 - **Windows**  – Located in the middle left of the keypad; this key is available for your own use (see the section that follows “Setting the Keypad Buttons”).
 - **Internet Explorer**  – Located in the middle right of the keypad; press to open the Site Mate program.
 - **Input Panel (On-screen Keyboard)**  – Located on the far right of the keypad; press to toggle on and off the Input Panel (see Figure 20).





Setting the Keypad Buttons

To redefine a function of a button on the keypad:

1. Tap **Start, Settings, Control Panel**, and in the **Control Panel**, tap the **HotKey** icon. 
2. In the **HotKey** dialog box, select **Enable Hot Keys**.
3. For the key you want, tap the browse button  and then browse to the program you want the key to open, select it, and tap **OK**.

To set a button to shut down the Titan RT so you can conserve battery power:

1. Follow the preceding steps to open the **HotKey** dialog box.
2. In the **HotKey** dialog box, select **Enable Hot Keys**.
3. For the button you want to use to shut down the rugged tablet computer, tap the browse button. 
4. Browse to and select **Shutdown.exe**, and tap **OK**.
5. The dialog box displays `\\windows\shutdown.exe` in the box for the key.

The default settings for the keypad buttons are these: The far-left button  adjusts brightness, the center-left button  is not used and is available, the center-right button  opens the Site Mate program, and the far-right button  opens the input panel (on-screen keyboard). To restore the default settings for the buttons:


1. Follow the preceding steps to open the **HotKey** dialog box.
2. In the **HotKey** dialog box, select **Enable Hot Keys**.
3. Tap inside each box and use the on-screen keyboard to enter the following:
 - **Far Left** – `\\windows\ghikey.exe b`
 - **Center Right** – `\\Storage\SiteMate\SiteMate.exe`
 - **Far Right** – `\\windows\ghikey.exe k`
4. Tap **OK** to save the changes and close the dialog box.

Note: You must enter a space and the letter b after `ghikey.exe` to have the button adjust brightness, and enter a space and the letter k after `ghikey.exe` to have the button open the on-screen keyboard.

Optional Ports

Ports and connectors on the top of the Titan RT housing (see Figure 16) are not required for normal use of the device, but are available for your convenience. These provide the following connectivity:

- 15 volts DC power port for a secondary DC adapter (or AC adapter) to use *instead* of the main power port on the bottom.

 **WARNING:** Do *not* connect two power adapters to the Titan RT as the same time. Doing so can damage the tablet computer and even cause a fire or an explosion. Use only one power adapter at a time, and use only a DC adapter supplied by Farm Works Software, or an authorized Farm Works Software dealer.

- Headphone jack for use with standard headphones.

- USB 1.1 (Universal Serial Bus) host type A port, which facilitates connectivity with peripherals. The USB port supports data transfer at a full-speed of 12 million bits per second (12.0 Mbps) and at a low-speed of 1.5 Mbps.

Note: You can use both USB ports (the one at the bottom of the Titan RT and the one at the top) simultaneously. This enables you to use two USB devices at the same time if you desire to do so.

- RJ-45 network jack, which lets you connect an Ethernet network, or crossover, cable to the Titan RT.

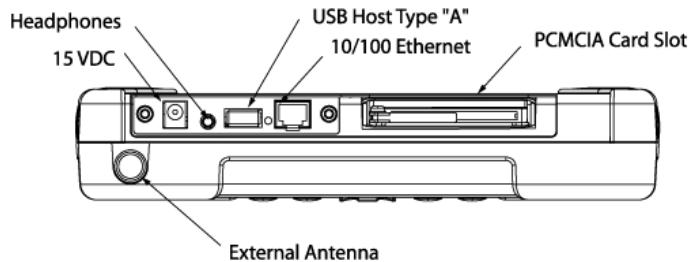


Figure 16. Top view of the Titan RT

Also located on the top of the Titan RT is the PCMCIA (PC Card) slot (see Figure 16). Installed in the slot is a 128 MB CF memory card and adapter, which is used as nonvolatile storage that should not be lost if the battery becomes completely discharged or the tablet computer otherwise loses power. You should *not* remove this CF card. (For information regarding the CF card, as well as instructions for using the USB drive, see “Storing Data” later in this product guide.)

Port Covers

Two port covers protect the ports on the top of the Titan RT. One port cover shields the PC Card slot (where the CF storage card with adapter is installed). The other guards the ports that are not necessary to use, but are available should you need them—a headphone jack port, an Ethernet network port, an additional DC adapter port, and a second USB 1.1 port. When possible, keep the port covers installed with the provided screws to protect the ports from moisture and debris.


Note: You should properly install both port covers in order to meet the IP67 and NEMA 4 seal ratings.

Headphone Jack

The Titan RT lets you listen to audio from its speakers, and via the 3.5 mm stereo headphone jack on top of the rugged tablet computer (see Figure 16). Use of headphones is optional, and you can purchase headphones separately, if you want to use them.

Taskbar and Start Menu

When you power on the Titan RT, the taskbar with its Start button and other items appear at the bottom of the tablet computer's touch screen. If you do not see the taskbar, it is likely hidden and you can do this to make it stay visible:

1. Tap your stylus at the bottom edge of the rugged tablet computer CTFT display, and keep tapping there until the Windows CE .NET taskbar appears, and then tap the **Start** button on the taskbar.
2. If the taskbar does *not* appear, press the button on the far right of the Titan RT keypad  to open the Input Panel, and then tap **Ctrl** and **Esc** to open the Start menu.
3. On the **Start** menu, tap **Settings** and tap **Taskbar and Start Menu**.
4. In the dialog box that opens, select the **Always on Top** check box, clear the **Auto Hide** check box, and tap **OK**.

Note: For more information on using the taskbar and Start menu, see the sections that immediately follow. For information on using the Control Panel, see the section "Changing the Titan RT Settings" in this chapter.




Taskbar

Like the taskbar of other Windows operating systems, you can minimize program windows to the Windows CE .NET taskbar using the show desktop button, as explained later in this section. Restore the windows by tapping their buttons on the taskbar.




Figure 17. Windows CE .NET taskbar of the Titan RT

The notification area of the taskbar shows the time and the devices to which the Titan RT is connected. The taskbar also contains the:

- **Start button**  – Tapping this button displays the Start menu (see Figure 18).
- **Show Desktop button**  – Tapping this button minimizes all windows to the taskbar (see Figure 17).
- **Input Panel button**  – Tapping this button opens the Input Panel menu (see Figure 19).

Start Menu

Tap the Start button  to display the Windows CE .NET Start menu. The Start menu that appears shows Programs, Favorites, Documents, Settings and other menus (see Figure 18).

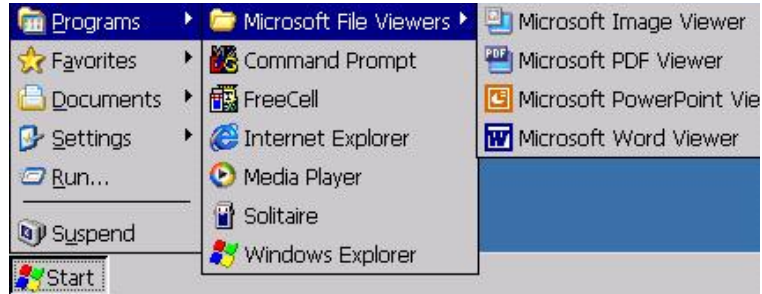



Figure 18. Windows CE .NET Start menu of the Titan RT

Preinstalled Programs

The Titan RT has several Control Panel programs (that is, Microsoft software utilities to help you change the Windows CE .NET operating system settings) that are available by tapping **Start** , **Settings** and **Control Panel**.

In addition, the rugged tablet computer typically has preinstalled programs. The following programs appear on the Programs menu and the Microsoft File Viewers submenu.

- Command Prompt
- Internet Explorer
- Media Player
- Microsoft Excel Viewer
- Microsoft Image Viewer
- Microsoft PDF Viewer
- Microsoft PowerPoint Viewer
- Microsoft WordPad
- Windows Explorer
- Windows games

Using the Input Panel

To enter text without a physical keyboard, you can use the Input Panel, which is an on-screen keyboard.

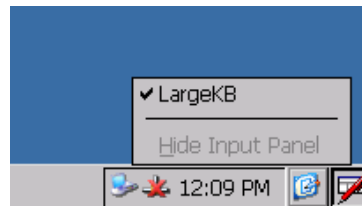


Figure 19. Input Panel menu

To open the Input Panel:



1. Tap the **Input Panel** button  on the far right of the taskbar (see Figure 19).
2. Tap **LargeKB** (or **SoftKB**) on the **Input Panel** menu.
3. Alternately, press the rightmost button  on the Titan RT keypad (see Figure 15) to toggle the **Input Panel** on.
4. The Titan RT displays the **Input Panel** (see Figure 20), which you can tap with the stylus to select letters, numbers and symbols to enter.
5. If necessary, move the Input Panel by placing your stylus on the panel's title bar and then dragging the panel to the desired position (see "Setting Up the Titan RT" for instructions on how to drag using the stylus).





Figure 20. Input Panel (on-screen keyboard)

Input Panel Keys

Most keys on the Input Panel (see Figure 20) are intuitive, but some require explanation:

- **Esc** – Tap the escape key to close some programs.
- **Ctrl** – Tap the control key, and then tap the escape key to open the Windows Start menu.
- **F1 - F12** – Tap one of the function keys to perform special functions for installed programs on the Titan RT.

The Input Panel does not represent movement keys by arrows, as on a computer keyboard, but instead: **BS** is the backspace key, **up** is the up arrow key, **lt** (or **Left**) is the left arrow key, **dn** is the down arrow key, and **rt** is the right arrow key. To close the Input Panel:

1. Tap the Input Panel button  on the taskbar.
2. Tap **Hide Input Panel** on the menu (see Figure 19).
3. Alternately, press the rightmost button  on the Titan RT keypad (see Figure 15) to hide the Input Panel.

Changing the Titan RT Settings

Settings that govern how your Titan RT functions, such as what power-saving mode it enters if left idle, are modified using Windows CE .NET Control Panel programs (that is, the operating system utilities). Settings are stored in the tablet computer's built-in flash memory, which is nonvolatile and persists even if you remove the DC adapter or optional battery pack for extended periods.

To change the Titan RT configurations, tap **Start**, **Settings** and **Control Panel** to open the **Control Panel** (see Figure 21).

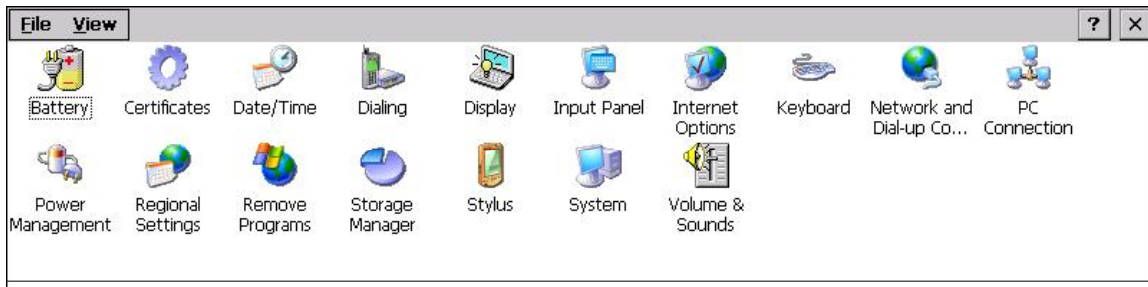


Figure 21. Windows CE .NET Control Panel

Note: To cause all Control Panel programs to appear on a Start menu, tap **Start**, **Settings**, and **Taskbar and Start Menu**. In the **Taskbar and Start Menu Properties** dialog box that appears, tap the **Advanced** tab, select the **Expand Control Panel** check box, and tap **OK**.

Many Control Panel programs of the Titan RT are similar to those on your desktop, laptop, or other computer. Since using Control Panel programs to adjust settings on your computer is intuitive, the following sections focus only on those that help you manage your tablet computer's power. These Control Panel programs are Battery Properties, Display, and Power Management Properties.

Battery Properties

Because the Titan RT runs on battery power when used as a portable computer, it is important to determine how much battery power is left. You can see how much battery power remains, and an estimate of how much time is left before battery power runs low, by viewing the **Battery Power** tab of the **Battery Properties** dialog box.

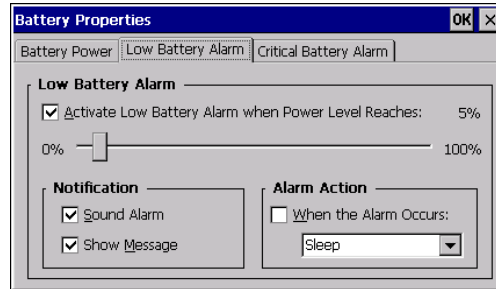


Figure 22. Battery Properties dialog box

The **Low Battery Alarm** tab (see Figure 22) and **Critical Battery Alarm** tab of the dialog box let you set low and critical battery power thresholds respectively, as well as set auditory and visual alarms to notify you when battery power gets low. You can also configure the Titan RT to move into *display off* or *suspend* mode when it reaches these thresholds. (For more information about power states, see Table 1.)

Display

One of the means of extending battery life is to properly manage the backlight of the CTFT touch screen, which can consume a significant amount of battery power. The **Brightness/Contrast** tab of the **Display** dialog box (see Figure 23) lets you reduce backlight power consumption to conserve power.

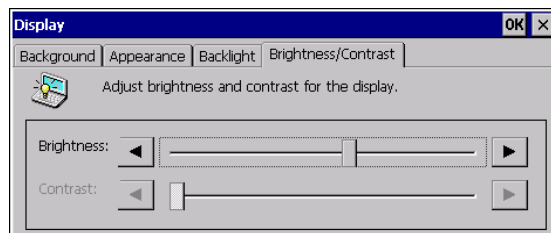


Figure 23. Display dialog box

In full daylight, you might need to set the rugged tablet computer to full brightness. At night, or in places where less ambient light is present, this tabbed area of the dialog box lets you adjust the tablet computer's backlight to a lower setting to conserve battery power.

Note: Since the Windows CE .NET operating system automatically adjusts the contrast of the display the **Display** dialog box disables the **Contrast** slider.

Power Management Properties

There are two power schemes in the **Power Management Properties** dialog box—one for running on external power, and one for running on battery power (see Figure 24). The options are:

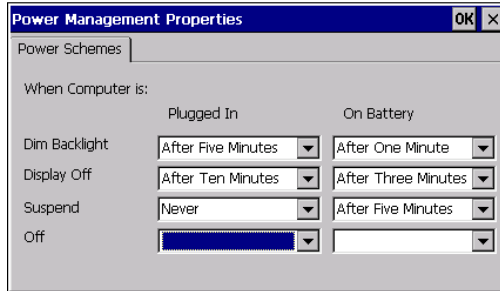


Figure 24. Power Management Properties dialog box

- **Dim Backlight** – Sets the tablet computer to dim the touch screen backlight after a period of user inactivity lasting minutes, hours, or days—or to never dim the backlight. In *dim backlight* mode, user-initiated system processes will still run. When the backlight dims, tapping the touch screen returns the Titan RT to an active state.
- **Display Off** – Sets the rugged tablet computer to turn off the backlight after a period of system inactivity lasting minutes, hours, or days—or to never turn off the backlight. Although no system processes are running when the device is in *display off* mode, it preserves your work in RAM. With a tablet computer in this mode, press the power button to reactivate the tablet computer.
- **Suspend** – Sets the rugged tablet computer to turn off the backlight and go into *suspend* mode after a period of inactivity lasting minutes, hours, or days—or to never automatically go into suspend mode. This mode substantially conserves power by turning off the backlight and drastically reducing power to unused system components, while preserving your work in RAM. When you press the power button a second time to resume from suspend, Windows displays program windows just as they were before the device entered suspend mode.

Note: If possible, save your work before leaving your Titan RT unattended for any lengthy period. This way, if the tablet computer loses power, the data will be safe on the CF storage card. To save your work in the Farm Works Mate programs, you must tap the **Close Job** button on the **Job** tabbed window. If it is a Trac Mate job, you can mark the job as unfinished so you can return to it by clicking the **Unfinished Work Orders** button.

Storing Data

There are several ways to store data when using the Titan RT. You can save files to the:

- **Main memory** – The 128 MB (megabytes) of internal, random access memory (RAM)
- **Storage area** – The 64 MB built-in flash memory
- **Storage card** – The 128 MB installed CompactFlash (CF) storage card
- **Hard disc** – The 128 MB removable USB drive
- **Another computer** – A remote computer on a wired (Ethernet) or wireless network
- **An external storage device** – USB-compatible external hard drive, CD-R drive, or other external storage device

Note: The Windows CE .NET File Explorer names the removable Farm Works Software USB drive *Hard Disc* in the Windows File Explorer, even though it is not a hard drive.

The RAM main memory is volatile in that any data stored in it is lost if the Titan RT loses power (much like a new document that is not yet saved is lost when a desktop computer loses power). In contrast, the built-in flash memory storage area and the CF storage card are nonvolatile, so data saved to these locations will *not* be erased when power is lost (something like a desktop computer where a document saved to a hard drive is not lost when the power is turned off). Farm Works Software recommends that, whenever possible, you save files to the CF storage card to protect them from loss and to make it easy to copy the files to the USB drive using the TitanSync utility (see “Synchronizing with the USB Drive”).

Built-In Flash Memory Storage Area

The Site Mate program and other Farm Works Mate programs are preinstalled to the 64 MB built-in flash memory called the *storage area*. The storage area is nonvolatile, and if the Titan RT loses power, it automatically reinstalls programs from the storage area to the main memory after you restore power to the tablet computer. The Titan RT also restores program settings saved to the CF storage card (see “Saving Software Settings to the Storage Card”).

You have the option of saving files to the storage area. However, Farm Works Software recommends you use the CF storage card for this purpose instead so the TitanSync utility will copy files to the USB drive (see “Synchronizing with the USB Drive”). The My Computer or Windows Explorer window represents the internal flash memory as the *Storage* folder.

CompactFlash (CF) Storage Card

The 128 MB CF memory card, called the *storage card*, installed in the Titan RT is *not* a removable storage device, as is the USB drive (see “USB Drive Removable Storage”). Once you save files to the storage card, they are permanently stored until you delete them. No loss of data saved to the card occurs even if you reset the tablet computer. The storage card is where Site Mate and other Farm Works Mate applications save project files (such as logs, maps and variable rate control data). My Computer or Windows Explorer represents the CF memory card as the *Storage Card* folder.

If you wish to use a removable storage device, Farm Works Software recommends you utilize the Farm Works Software USB drive, which shipped with your tablet computer (see “USB Drive Removable Storage”).



CAUTION: YOU SHOULD NOT USE THE TITAN RT WITH THE CF CARD REMOVED. Removing the card can result in a loss of data, as Site Mate and other programs preinstalled on your tablet computer save important files to the storage card.

Saving Software Settings to the Storage Card

You can save the software configuration settings for Site Mate and other Farm Works Mate programs you have registered to the CF storage card. To do this:

1. Open the Site Mate program.
2. Tap the **File** menu and select **Save Settings to Card**. A dialog box opens.
3. In the dialog box, select **Storage Card** in the **Card Name** list, and then tap **Save** to save the settings to the card.
4. A message box indicates when the program successfully exports the settings to the storage card. Tap **OK**.
5. Tap **Close** to close the dialog box.

Note: Saving the settings to the card saves you the inconvenience of reconfiguring the software and obtaining new registration numbers from Farm Works Software. The Titan RT usually restores this registration numbers, even if you have disconnected it from the DC adapter or it otherwise loses power.

Replacing the CF Storage Card

The Type I CF storage card installed with a Type II PCMCIA (PC Card) adapter is in the PC Card slot of your Titan RT (see Figure 16). The PC Card slot is equipped with a hold-down bar that keeps installed cards solidly in place and unaffected by vibrations or rough handling (see Figure 4). You can eject the installed card by using an ejector button inside the card slot.

For reasons explained above, you should remove the CF storage card only to replace it with a new CF card that you obtain from Farm Works Software. To install a Type I CF card in the PC Card slot:

1. Remove the screws that hold down the port cover and remove the cover.
2. Loosen the hold-down bar screw, and slide the hold-down bar out of the way.
3. Press the black ejector button to eject the adapter and card currently in the slot.
4. Remove the old CF card from the card adapter.
5. Insert the new CF card in the card adapter.
6. With the label of the CF card turned toward the back of the Titan RT (see Figure 4) insert the adapter into the PC Card slot and gently but firmly seat it in the slot.
7. Put the hold-down bar in contact with the card adapter and tighten its screw.
8. Replace the cover plate and reinstall its screws.

Note: When using PC Cards and CF cards, you must reinstall the PC Card slot cover to meet the IP67 and NEMA 4 seal ratings.

USB Drive (Removable Storage)

Farm Works Software ships a USB drive (also called a flash drive, key chain drive, or thumb drive) with your Titan RT. The USB drive (see Figure 25) is the primary removable storage device, unlike the CF storage card, which should remain installed in the tablet computer (see “CompactFlash (CF) Storage Card”).



Figure 25. Removable USB drive

You can save your data (such as log files, maps and variable rate controller data) to the USB drive, remove it from the Titan RT, and then bring it to your desktop, laptop, or other computer to transfer the files. My Computer or Windows Explorer represents the USB drive as the *Hard Disc* folder.

Note: The Farm Works Software USB drive is compatible with Universal Serial Bus 1.1 standard architecture. It functions with your desktop, laptop or other computer as long as it has an enabled USB 1.1 or Hi-Speed USB 2.0 port. If the computer has Windows 98 or Windows 98 Second Edition (SE) installed, you might need to install the USB drivers using the USB Flash Drive CD that shipped with your Titan RT (see Figure 5).

The USB drive is a convenient way to import files into other software applications, such as the popular Farm Works office suite applications—Farm Trac++, Farm Funds, Farm Site and Site Pro. For information regarding how to use the USB drive, see “Synchronizing with the USB Drive”.

Note: For more information regarding available Farm Works Software programs see the software demos online at www.farmworks.com, or call to speak to one of the helpful sales team members by dialing toll free (800) 225-2848.

Synchronizing the Titan RT with the USB Drive

Synchronizing with the Farm Works Software USB drive is an easy way to transfer files to, and from, the Titan RT. By synchronizing with the USB drive, you can use it to carry copies of your important Farm Works Mate project files—such as log files, prescription maps and variable rate control data. You can then synchronize the USB drive with your desktop, laptop, or other computer, for use with the Farm Works Software installed on that computer. The USB drive eliminates the need to carry the Titan RT back to the office, so you can leave the tablet computer in your combine, tractor or other vehicle, without having to disconnect it from a GPS receiver, variable rate controller, or lightbar.

The TitanSync utility dialog box should automatically open whenever you insert the USB drive into the Universal Serial Bus port of the Titan RT. To complete the synchronization process:

1. Make sure the write-protect switch on the USB drive is set to the unlock setting.
2. Insert the USB drive gently but firmly into the USB port on the bottom of the Titan RT (see Figure 25). Be sure not to insert it upside down—when you correctly insert the USB drive, its indicator light is visible from the front of the tablet computer.
3. The **TitanSync** utility automatically detects the USB drive and opens.
4. Make sure the **TitanSync** dialog box indicates the status of the USB drive is **Connected**. If it indicates that it is not connected, wait 30 seconds. If after that time it is still not

indicating that the USB drive is connected, try removing the USB drive for ten seconds and then plugging it back into the USB port.

5. Depending on what Farm Works Software applications are registered on the Titan RT, the dialog box displays up to four sections and as many as eight check boxes of options you can choose. You can select as many, or few, options you want by selecting the check boxes.
6. Under **My Documents** of the dialog box you can select:
 - **Remove Copied Log Files from Titan** to delete files from the My Documents folder of the storage card of the Titan RT after they are copied to the USB drive.
7. Under **VRA Rx Maps** of the dialog box you can select:
 - **Remove All Old VRA Rx Maps from Titan** to delete old variable rate adjustment maps from the Titan RT after the TitanSync utility copies the maps to the USB drive.
 - **Remove Copied VRA Rx Maps from USB** to delete every variable rate adjustment map from the USB drive after they are copied to the Titan RT.
8. In the **Trac Mate** section, you can select:
 - **Remove Old Work Orders from Titan** to delete Trac Mate logs from the Titan RT after they are copied to the USB drive.
 - **Remove Old Work Orders from USB** to delete Farm Trac++ work orders from the USB drive after the TitanSync utility copies them to the Titan RT.
 - **Remove Copied Scouting Jobs from Titan** to delete scouting job logs from the Titan RT after they are copied to the USB drive.
9. In the **Background Maps** section you can select:
 - **Remove All Old Background Maps from Titan** to delete every background map that is copied to the USB drive.
 - **Remove Copied Background Maps from USB** to delete maps from the USB drive after they are copied to the Titan RT.
10. To close the dialog box *without* synchronizing, select the **Hide This Window** button.
11. To synchronize and delete any files for which you have selected the check boxes, tap the **Synchronize Data** button. The TitanSync utility displays the files it is in the process of copying and displays a message when the synchronization is complete.
12. Tap **OK** to the message and **Hide this Window** to close the dialog box.

Updating Software with the USB Drive

To have the Farm Works Software synchronization utility install a software update saved to your USB drive, do this:

1. Download the software update from the Farm Works Software Web site.
2. Unzip the downloaded zip file to the root of the USB drive. It is important that these files are not extracted to a folder on the USB drive.
3. Bring the USB drive to the Titan RT and connect it as described in the previous section. This should open the **TitanSync** dialog box.
4. In the **TitanSync** dialog box, tap the **Update Software** button and then tap **Hide this Window**. The utility updates the software and prompts you to complete the installation by doing a hard reset).
5. Press the power button for 15 seconds to perform a hard reset (for more information, see “Setting Up the Titan RT”).

Folders Used by Farm Works Mate Programs

The TitanSync utility automatically creates identical folders on the USB drive and on the CF storage card of the Titan RT. The directory structure created consists of these folders:

- Background Maps
- My Documents
- TMSMData
- VRA Rx Maps

The Background Maps and VRA Rx Maps folders are where ArcView shape files (that is, files with names that end in .shp, .shx and .dbf) are stored.

The Titan RT uses the TMSMData folder only if you have purchased a CD key for Trac Mate and registered the program on the tablet computer. The TMSMData folder has the following subfolders:

- The project subfolders (that is, folders named with eight numbers and a period followed by the letters .prj)
- The Fieldbounds subfolder
- The Scouting subfolder
- The SiteMate subfolder
- The Startup subfolder

<p>IMPORTANT: It is imperative that you do <i>not</i> change the default folders where Site Mate and other Farm Works Mate software programs save your log files, scouting maps, VRA prescription maps and other data files, as <i>this change can cause a loss of data</i>.</p>

The Fieldbounds subfolder is the place the program saves the Trac Mate field boundaries (that is, ArcView shape files with the extensions .shp, .shx and .dbf). The Startup folder is where the shortcuts reside to Farm Works Mate (that is, Farmworksmate.lnk) and the TitanSync utility (that is, TitanSync.lnk).

Site Mate and other Farm Works Mate applications use the folders and subfolders of the created directory structure as the default locations for the synchronized files. If you have questions regarding the file types that the programs create, please see the documentation for those programs.

Note: The TitanSync utility automatically saves files to the correct folders (see “Synchronizing with the USB Drive”). If you wish to store other files on your USB drive, however, you should save them to the **My Documents** folder of the **Storage Card** folder of the Titan RT. The TitanSync utility will automatically copy the files in this folder to the **My Documents** folder of the USB drive the next time you synchronize it with the tablet computer.

Where Files are Synchronized

When you synchronize the USB drive with the Titan RT, the TitanSync utility copies files in certain folders on the USB drive to folders with the same name on the tablet computer, and it copies files in certain folders on the Titan RT to folders of the same name on the USB drive, as shown below:

- **Background Maps** – The TitanSync utility copies files in this folder on the USB drive to the folder with the same name on the Titan RT.
- **My Documents** – The TitanSync utility copies files in this folder on the Titan RT to the folder of the same name on the USB drive.
- **TMSMData** – The TitanSync utility copies files in this folder on the USB drive to the folder of the same name on the Titan RT, and files in this folder on the Titan RT to the folder of the same name on the USB drive.
- **VRA Rx Maps** – The TitanSync utility copies files in this folder on the USB drive to the folder with the same name on Titan RT.

Note: If you have additional files on the Titan RT that you want the TitanSync utility to automatically copy to the USB drive, save them to the My Documents folder located in the Storage Card folder of the tablet computer. Do not save the files to the Windows CE .NET My Documents folder of the main memory.

Synchronizing with a Desktop Computer

It is just as easy to synchronize the Farm Works Software USB drive with a laptop, notebook, or desktop computer running Farm Works Software office programs, such as Farm Trac++, Farm Site and Site Pro. All that is required is that the computer has an enabled USB


port and has the Farm Trac++ and Farm Site programs, or the Site Pro program, installed. To synchronize the USB drive with a desktop or other computer:

1. Start the Farm Works office software on your desktop, laptop, or notebook computer.
2. Plug the Farm Works Software USB drive into a USB port of the desktop, laptop or notebook computer.
3. In the Farm Works Software office program, select **Sync Trac Mate** on the **File** menu to open the **Trac Mate Options** dialog box.
4. In the **Trac Mate Options** dialog box, choose the **Trac Mate Version 9.0 or Higher** option button to synchronize Trac Mate job data to the Farm Works office program.
5. Alternately, you can select the **Site Mate Version 9.0 or Higher** option button to synchronize Site Mate log files to the Farm Works office program.

Note: If you want to synchronize *both* Trac Mate and Site Mate data, you will have to repeat the synchronization process (one time choosing **Sync Trac Mate Version 9.0 or Higher** and the other time choosing **Sync Site Mate Version 9.0 or Higher**).

6. In the **Synchronization Location** list, select the drive letter for the USB drive (for most computers this is drive E, but might be a different drive letter for your computer).

Note: Windows Explorer or My Computer likely will call the USB drive is a Removable Drive.

7. Select the **View Operations**, **Upload Boundary**, and **Apply GPS Quality Filter** check boxes as desired. (You can select one, more than one, or none of the check boxes.)
8. Select **OK** and the Farm Works Software office program indicates when the synchronization is complete. Select **OK** to close the message box.
9. Before removing the USB drive from the USB port, you should use the Windows Safely Remove Hardware utility:
 - Double-click the **Safely Remove Hardware** icon  in the Windows notification area, which is on the taskbar near the clock.
 - In the **Unplug or Eject Hardware** dialog box, choose the drive letter for the port to which the USB drive is connected, and select **OK** and **OK**.
 - Unplug the USB drive when Windows indicates when it is safe to remove it.

Troubleshooting Guide

<u>Problem</u>	<u>Cause</u>	<u>Possible Solution</u>
Troubleshooting Power ...		
Titan RT does not turn on.	You did not wait long enough for display to appear after powering on or resetting.	Wait at least 30 seconds before pressing the power button briefly (for less than 5 seconds) a second time.
	DC adapter is not properly attached.	Reattach the DC adapter (see "Setting Up the Titan RT").
	Voltage of the optional battery pack dropped below a threshold, under which it does not function.	Recharge or replace the battery pack (see "Using the Optional Battery Pack").
	Battery pack is incorrectly installed.	Ensure correct installation (see "Using the Optional Battery Pack").
	Battery is not charged.	Charge or replace battery pack (see "Using the Optional Battery Pack").
Titan RT turns itself off.	Voltage dropped below threshold and caused the shutdown; DC adapter disconnected from power or Titan RT.	Recharge or replace battery pack (see "Using the Optional Battery Pack") or reconnect the DC adapter.
Titan RT is unresponsive.	Windows CE .NET failing to respond.	Press and hold the power button <i>longer than</i> 10 seconds to perform a hard reset, then briefly press the power button less than five seconds to turn the tablet computer on. (See "Setting Up the Titan RT").
No response after a hard reset.	Windows CE .NET failing to respond.	Recycle power to all onboard devices: (1) Remove DC adapter. (2) Remove battery pack for 10 minutes. (3) Reinstall battery and DC adapter. (4) Press power briefly (for less than five seconds) to turn on the tablet computer. (See "Setting Up the Titan RT".)
Troubleshooting Display ...		
Display is too dim or bright.	Brightness of display determined by setting in the Windows Display program.	Use the Brightness slider in the Display program of the Control Panel to adjust touch screen brightness (see "Using the Titan RT").
Backlight is dimmed.	User inactivity caused Titan RT to move to Dim Backlight mode.	Touch screen to reactivate Titan RT (see Table 1).
Touch screen display is off.	User chose pressed the power button with display on or dimmed.	Press power button briefly (less than five seconds) to reactivate Titan RT (see "Setting Up the Titan RT").
	System inactivity caused Titan RT to move to Display Off mode.	Press power button briefly (less than five seconds) to reactivate Titan RT (see "Setting Up the Titan RT").
	Further inactivity caused Titan RT to move to Suspend mode.	Press power button briefly (less than five seconds) to reactivate Titan RT (see "Setting Up the Titan RT").

<u>Problem</u>	<u>Cause</u>	<u>Possible Solution</u>
	Voltage dropped below a user-set threshold, causing Titan RT to move to Suspend mode.	Press power button briefly (less than five seconds) to reactivate Titan RT (see "Setting Up the Titan RT").
	Voltage dropped below a user-set threshold, causing display to turn off.	Press power button briefly (less than five seconds) to reactivate Titan RT (see "Setting Up the Titan RT").
Tapping touch screen selects wrong items.	Touch screen cursor not aligned with stylus.	Recalibrate touch screen using Stylus program of the Control Panel (see "Setting Up the Titan RT"). Tap OK when finished recalibrating.
Troubleshooting Battery Pack ...		
Titan RT does not turn on after installing a replacement battery pack.	Battery pack is installed incorrectly.	Ensure battery is properly installed (see "Using the Optional Battery Pack").
	Replacement battery pack was in storage more than a year.	Recharge or replace the battery pack (see "Using the Optional Battery Pack"). Consider recharging spare battery packs to half-power before storing them.
Battery pack does not recharge.	DC adapter was removed before battery was recharged.	Reconnect to DC adapter and allow battery to go through full charging cycle (two hours for 80% charge, five hours for 100% charge). (See "Using the Optional Battery Pack".)
	Ambient temperature is too high for battery pack to properly recharge.	Move to a cooler spot, such as an air-conditioned room, and recharge battery pack there (see "Maintenance").
	Ambient temperature is too low to recharge Titan RT.	Move to a warmer spot, such as a heated room, and recharge battery. Do <i>not</i> place the Titan RT too near a heat source (see "Maintenance").
Battery must be recharged too frequently.	Battery capacity has faded.	Replace battery (see "Using the Optional Battery Pack"). Be sure to recharge battery packs before they become completely discharged.
Power indicator is blinking red.	Battery charge is running low.	Recharge battery (see "Using the Optional Battery Pack").
	Battery is fully discharged.	Replace battery (see "Using the Optional Battery Pack").
Power indicator is solid red.	DC adapter powering the device with no battery.	Solid red light is normal in this case.
	Battery is incorrectly installed.	Ensure battery is properly installed (see "Using the Optional Battery Pack").
	Battery is damaged.	Replace battery (see "Using the Optional Battery Pack").
Low battery alarm sounds or low battery message.	Battery power reached the low battery threshold set in Battery program of the Control Panel.	Recharge battery (see "Using the Optional Battery Pack").
Critical battery alarm sounds or message.	Battery power reached the critical battery threshold set in Battery program of the Control Panel.	Recharge battery (see "Using the Optional Battery Pack").

<u>Problem</u>	<u>Cause</u>	<u>Possible Solution</u>	
Troubleshooting Windows CE .NET ...			
No sound is audible.	Volume setting was low or muted.	Adjust the volume using the Volume & Sounds program of the Control Panel (see Figure 21). Examine the settings on Output , Input , and Volume tabbed windows. When done, tap OK .	
Cannot see the taskbar or Start menu.	Taskbar is hidden.	(1) Tap the bottom of the display to display the taskbar. (2) Tap Start, Settings, Taskbar and Start Menu . (3) Select the Always on Top check box and clear the Always Hide check box, and tap OK .	
Tapping stylus at bottom of display does not unhide taskbar.	Taskbar is hidden & touch screen is not correctly aligned.	(1) Press the keyboard button on the keypad to open the on-screen keyboard (see Figure 15). (2) On the on-screen keyboard, tap Esc and tap Cancel to display the taskbar and Start menu. (3) Select the Always on Top check box and clear the Always Hide check box, and tap OK .	
Troubleshooting Memory & Storage ...			
Receive "Error transferring" or similar error.	The safety switch on the USB drive was in the locked position when trying to use the TitanSync utility.	Remove the USB drive from the USB port, move the switch to the unlocked position, plug the USB drive back into the USB port, and tap the Synchronize Data button in the TitanSync utility once more.	
TitanSync utility does not open when you insert the USB drive.	USB drive was not recognized.	Remove the USB drive from the USB port, in Site Mate tap File and Exit, and plug the USB drive back into the USB port. If the TitanSync utility still does not open, do a hard reset of the Titan RT (see "Troubleshooting Power") in this Troubleshooting Guide chapter.	
TitanSync utility has the Update Software button disabled.	The software update files are saved to a folder, instead of to the root directory, of the USB drive.	Use the Windows Explorer program on the Titan RT to move all software update files out of folders and to the Hard Disk folder, remove the USB drive, tap OK in the TitanSync utility, and insert the USB drive once more.	
Message appears stating that the memory is full.	Memory allocation for storage is set too low.	Use the Memory tab of the System program of the Control Panel to allocate more memory to storage (see Figure 21).	
	Memory allocation for programs is set too low.	Use the Memory tab of the System program in the Control Panel to allocate more memory to programs (see Figure 21).	
	Too many files are stored on Titan RT.		Too many Site Mate files are stored on the Titan RT. When synchronizing the USB drive with the tablet computer, consider selecting the check boxes in the TitanSync dialog box to remove files from the Titan RT (see "Storing Data"). The TitanSync utility will <i>permanently delete these files</i> from the tablet computer.
			Delete old files on Titan RT to recover memory, or save them to the storage area or storage card and delete them from the main memory (be careful not to delete any files or folders within the Farm Works Mate directory structure (see "Storing Data").
			Consider upgrading to a larger CF card (that is, one capable of storing more than 128 MB of data). (For instructions on installing a new card, see "Storing Data".)
Too many programs are installed on Titan RT.		Use the Remove Programs program in the Control Panel to remove unused programs (see Figure 21).	

<u>Problem</u>	<u>Cause</u>	<u>Possible Solution</u>
Troubleshooting Site Mate, Trac Mate & Guide Mate ...		
Not sure how to use the software.	Try reading the program user guides installed on your desktop computer.	On desktop PC, click Start, Programs (or All Programs), Farm Works Software, Manuals , and click Guide Mate Manual or Site Mate Manual .
The status bar at the bottom of the program displays “Unable to open COM port for GPS”.	Cable from GPS receiver is connected to wrong serial COM port on the Titan RT.	Connect the cable to serial port one (COM 1).
	Incorrect cable is connecting the GPS receiver to the Titan RT.	Verify that you are using the correct type of cables for your GPS receiver and other hardware (to determine what cables to use, read the documentation provided by your GPS receiver manufacturer).
	Cable is not securely connected to GPS receiver, Titan RT, or other hardware.	Verify that the cable is securely connected to the Titan RT, to the GPS receiver, and to any interface box (IFB).
	GPS receiver or IFB is not receiving power from an external power source.	Connect the GPS receiver or IFB to the external power source and verify that the device is receiving the correct voltage.
The status bar at the bottom of the program displays “No GPS data received”.	The Farm Works Mate software is configured to use an incorrect COM port.	Change the COM port to 1: In Site Mate, tap the Config tab, GPS Settings , the Comm tab, and then enter 1 in the COM Port list.
	The Farm Works Mate software is configured to use an incorrect baud rate.	Change the baud to the correct rate according to the specification of the GPS receiver manufacturer: In Site Mate, tap the Config tab, GPS Settings , the Comm tab, and then enter the correct baud in the Baud Rate list. (Read the documentation that accompanied your GPS receiver to determine what baud to use.)
	The Farm Works Mate software is set for to high a minimum GPS quality.	Change the minimum GPS quality: In Site Mate, select the Config tab, GPS Settings , the Quality tab, and then choose the correct minimum GPS quality for your GPS receiver in the Minimum GPS Quality list.
Receive error: “Unable to create new log file”, an error code number, or other error.	The GPS receiver is receiving interference.	Position the GPS receiver a minimum of 3' to 5' from the Titan RT. Place the receiver to the left or right of the Titan RT (not in front or behind it).
	You have confirmed that the correct serial communication port, baud rate, and minimum GPS quality are configured. However, no GPS data is received.	If no GPS signal is received after five minutes, do a hard reset of the Titan RT by pressing the power button for more than 10 seconds, waiting 60 seconds, and then pressing the power button briefly for less than five seconds (see Table 1).
	Not enough free space on the storage card.	See “Troubleshooting Memory & Storage” in this Troubleshooting Guide.
	Entered invalid characters for the log file name.	Change the log file name to one with only letters, numbers and spaces.
	You have not installed the latest update of Site Mate and Trac Mate on the Titan RT.	See “Updating the Software with the USB Drive” in the chapter “Storing Data”.
	Other cause.	Contact Farm Works Software support: (800) 225-2848.

Maintenance

The Titan RT is an exceptional tablet computer whose ruggedness, reliability, and ability to perform under extreme weather conditions have been proven in test after test. (See “Environmental Qualifications” for test results.) However, proper care and maintenance of the tablet computer ensures longer life.

Cleaning the Titan RT

The surface of the touch screen and housing of the Titan RT might occasionally need cleaning during the course of normal use. Follow these instructions when cleaning your tablet computer:

- Clean the touch screen using a soft cloth moistened with a diluted window-cleaning solution. Dry the screen with a soft, dry cloth.
- Clean the tablet computer’s housing using a soft cloth moistened with a few drops of a mild dish detergent and water. Dry using a soft, dry cloth.
- Do not use abrasive or harsh cleaning agents on either the touch screen or the housing.

Care of the Touch Screen

The Titan RT’s touch screen is composed of an industrial-strength substrate that passes the EN 50021 High Level Impact testing. To keep the touch screen in optimal condition:

- Avoid scratching the touch screen.
- Use only your finger, the supplied stylus, or a plastic-tipped pen intended for use with a resistive touch screen.
- Never use a regular pen, pencil, screwdriver, or other sharp object on the touch screen.
- Avoid impacts of sharp or hard objects with the touch screen.

Water

The Titan RT is considerably water-impermeable. Its impermeability depends on the extent of exposure to water or humidity, and on how

well its housing is secured. For example, you can use the tablet computer with neither port cover installed in humid weather, but if precipitation begins, you should promptly ensure you securely install both port covers.

You can expose the Titan RT (with port covers well secured) to precipitation. However, even though the tablet computer meets the requirements of IP67 (submersion in three feet of water for 30 minutes with no leaks), it is *not* for use underwater. If the unit is accidentally dropped into liquid, remove it immediately and continue working. When the tablet computer is no longer exposed to water or precipitation, dry it thoroughly with a soft cloth.



WARNING: The DC adapter is *not* waterproof. You should *never* immerse it in water, as you might damage the Titan RT, and cause electrocution or death. Do not submerge the Titan RT in water while it is connected to a power source through a DC adapter or AC adapter, as this might damage the tablet computer and might cause electrocution or death.

Impact and Electrical Current

The Titan RT has passed rigorous shock tests, including mechanical shock, vibration, impact and drop tests (see “Environmental Qualifications” of this product guide). Advised precautionary measures are:

- Reinstall tablet computer port covers, whenever possible, to avoid damage to the ports, connectors, PC Card slot, PC Cards, or CF cards and adapters.
- Take care not to drop the tablet computer or to subject it to strong impact. Each impact will decrease the tablet computer’s ability to withstand future impacts.
- Do not use extreme force when setting the Titan RT down.
- Do not connect or disconnect a serial communication port cable while the tablet computer is on or attached to a DC adapter or AC adapter.
- Attach a DC or AC adapter securely to the tablet computer *before* you connect it to an electrical power source.
- Do not use a DC adapter other than one supplied by Farm Works Software, or by an authorized Farm Works dealer.
- Do not connect a DC adapter or AC adapter to a tablet computer set to output greater than 15 volts DC.
- Do not connect two DC adapters or AC adapters to the tablet computer at the same time.
- Do not plug an AC adapter connected to the tablet computer into an electrical outlet during an electrical storm.
- Do not immerse the DC adapter in water or immerse the Titan RT in water while it is connected to a DC adapter or AC adapter.

Heat and Cold

You can use the Titan RT indoors or outdoors. However, where temperatures can be extreme:

- Do not use or leave the tablet computer near a heat source like a blast furnace, fireplace, radiator, wood-burning stove, or oven.
- Do not use the tablet computer when temperatures drop below -20° C (-4° F) or rise above 60°C (140° F).



WARNING: Exposing the Titan RT to temperatures above 60° C (140° F) will risk battery failure, or even fire or explosion.

Battery Disposal

When you must discard Titan RT battery packs:

- Discard the used Lithium Ion battery according to the regulations of your local or state government agencies.
- Dispose of the battery by dropping it off at a used battery collection facility or a hazardous waste facility. (Consult your local authorities regarding laws regulating proper disposal of Lithium Ion batteries.)

Service Information

Please contact Farm Works Software for warranty and non-warranty repairs using the following fax, phone, or e-mail address. See the section “Warranty” of this product guide for further information.

Technical support via fax or e-mail is available free of charge from Farm Works Software. Send a facsimile with your questions or requests to (260) 488-3737. To receive an answer via electronic mail, send an e-mail message to *farmwork@farmworks.com*.

Technical support via telephone is available at a reasonable cost. To purchase phone support for a 30 days or a year, call our sales team toll free at (800) 225-2848.

Note: The phone number to call for technical support is (260) 488-3492. The toll-free number is reserved for sales inquiries and orders only.

Safe Use of the Titan RT

The Titan RT has received certifications in multiple safety tests (see “Environmental Qualifications”). However, even certifiably safe products are a potential source of injury if used improperly, so you should take certain precautions:

- Use only a Farm Works Software supplied DC adapter with the tablet computer. Use of another DC adapter might damage the device, or cause a fire or an explosion.
- Always connect a DC adapter or AC adapter first to the tablet computer, before plugging it into a vehicle’s electric cigarette lighter.
- Provide a properly grounded supply of electric current, voltage and amps for a DC adapter or AC adapter to avoid electrical shock.
- Before plugging a DC adapter or AC adapter into a power source, make sure the voltage and frequency of the power source match that of the adapter.
- If using an extension cord with a DC adapter or AC adapter, make sure the total current rating of the product does not exceed the current rating of the extension cord.
- Never put the tablet computer into a fire, or place it near a heat source, as it might explode.
- Never immerse a DC adapter or AC adapter in water, or immerse the tablet computer in water while it is connected to a DC adapter or AC adapter.
- See “Setting Up the Titan RT” for more information regarding safe use of the DC adapter.

Ergonomic Recommendations

To eliminate or minimize the risk of ergonomic injury, follow the general recommendations listed below. Consult with your physician to prevent injury.

- Provide a suitable working environment and adjustable workstations with adequate clearance.
- Maintain a natural posture, avoiding awkward positions.
- Perform tasks at appropriate heights.
- Keep frequently used objects within easy reach.
- Reduce or eliminate repetitive movement, excessive force, and vibration.
- Improve work procedures and take periodic rest breaks.

To eliminate or minimize the risk of ergonomic injury while working with, or carrying, the Titan RT, follow these recommendations:

- Place the device in a position that lets you view and touch the display without strain.
- Place the tablet computer in a position where the sun's rays or artificial lights do not adversely reflect on the touch screen, causing eyestrain.
- Do not place the device on a surface where vibrations can cause difficulty of use.
- If you have trouble selecting items on the touch screen, open the Stylus program in the Control Panel and recalibrate.
- Install the tablet computer's handle on the side that makes carrying the tablet computer easier and offers less chance for the tablet computer to encounter objects that you pass.
- When carrying the tablet computer, set it down on a stable surface whenever possible to avoid strain.

Environmental Qualifications

The Titan RT has passed numerous tests that prove it can withstand extreme environmental conditions as well as rough handling. The following paragraphs enumerate the multiple environmental qualifications that the tablet computer has earned.

Operating Temperature

The Titan RT has an established operating temperature range of -20° to 60° C (-4° to 140° F), having passed test Nb of the IEC 60068-2-14 standard, "Environmental testing - Part 2: Tests. Test N: Change of temperature." These IEC tests determine the ability of equipment to withstand rapid changes of ambient temperature.

Storage Temperature

The Titan RT has an established storage temperature range of -20° to 60° C (-4° to 140° F), having passed test Bb of the IEC 60068-2-2 standard, "Environmental testing - Part 2: Tests. Tests B: Dry heat." This IEC test determines the ability of non-heat-dissipating equipment to withstand dry heat with a gradual change of temperature.

Humidity

The Titan RT has been proven to withstand 95% non-condensing per the IEC 60068-2-3 standard, "Environmental testing - Part 2: Tests. Test Ca: Damp heat, steady state," severity 10 days.

Vibration

The Titan RT has been proven to withstand the severity of 2.0g of accelerated (10-150 Hz) sinusoidal vibration on each axis, per the IEC 60068-2-6 standard, "Environmental testing - Part 2: Tests - Test Fc: Vibration (sinusoidal)."

The tablet computer also passed the Vibration test per method 514.5, procedure I, 10-500 Hz, each axis of MIL-STD-810F, "United States Department of Defense Test Method Standard for Environmental Engineering Considerations and Laboratory Tests."

Mechanical Shock

The Titan RT has been proven to withstand the severity of 50g for 11 ms, half sine on each axis, per the IEC 60068-2-27 standard, "Environmental testing - Part 2: Tests - Test Ea and guidance: Shock." This IEC test applies to equipment, which, during transportation or in use, can be subjected to relatively infrequent, non-repetitive shocks.

Seal Testing (With Port Covers On)

The Titan RT meets the NEMA 4 rating as per the NEMA 250 standard, "Enclosures for Electrical Equipment (1000 Volts Maximum)," which covers descriptions and applications, features and test criteria, and design tests of all NEMA style enclosures (except for a rotary apparatus).

The tablet computer meets the IP67 rating as per the IEC 60529 standard, "Degrees of protection provided by enclosures (IP Code)," which classifies the degrees of protection provided by enclosures for electrical equipment with rated voltages not exceeding 72.5 KV.

The tablet computer passed the Sand and Dust seal test per NEMA 250.

Impact

The extreme ruggedness of the Titan RT's touch screen was proven via high-level impact testing and strength verification using the British Standard EN 50021 standard, "Electrical apparatus for potentially explosive atmospheres – Type of protection 'n'.", High Level Impact, with 500g load, 20 times.

Drop Testing

The Titan RT passed a Drop Test consisting of a four-foot drop, twenty six times on a single unit per MIL-STD-810F, "United States Department of Defense Test Method Standard for Environmental Engineering Considerations and Laboratory Tests." method 516.5, procedure IV.

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