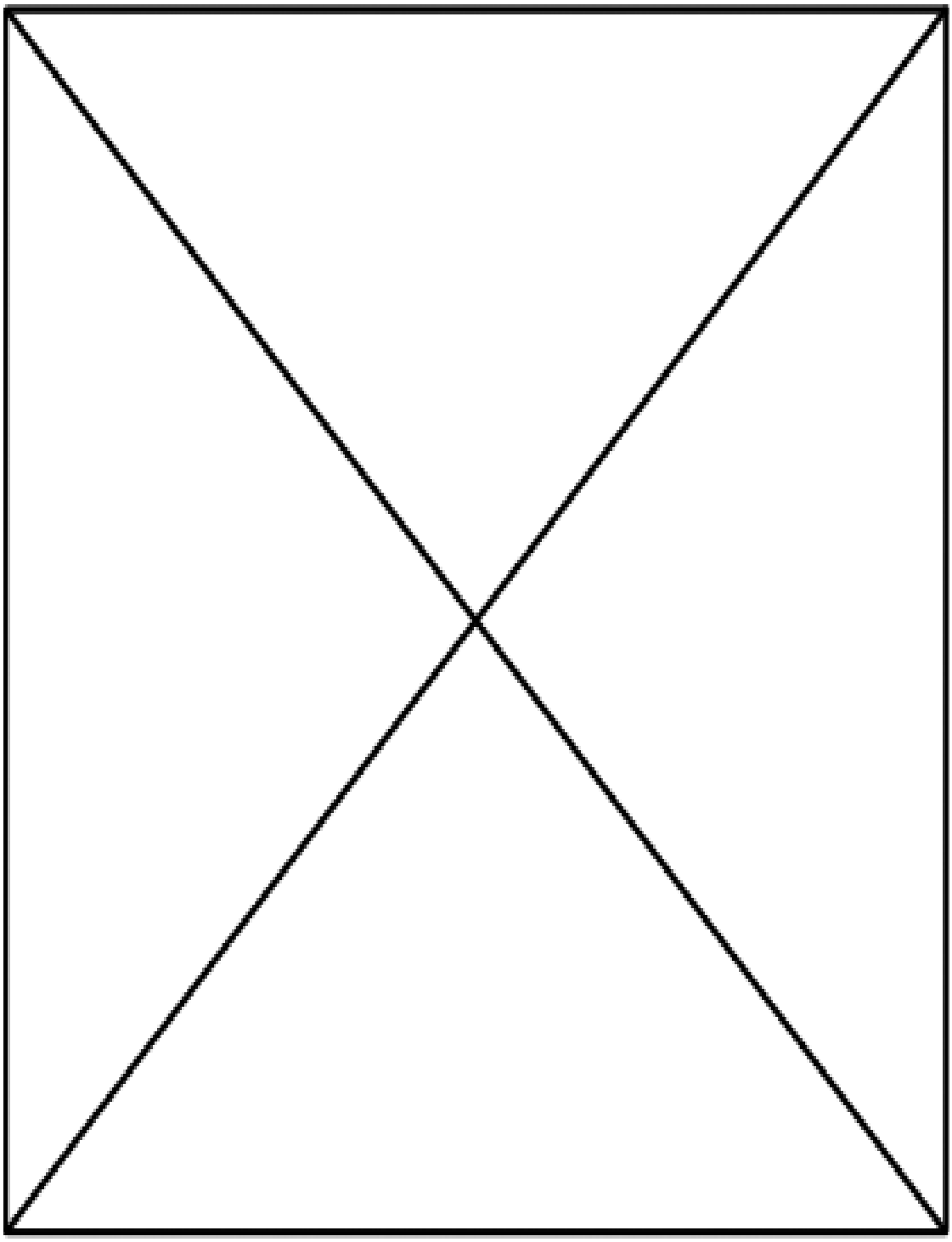
ARMOR

USER'S GUIDE | REVISION -

MODEL X7 HAND-HELD COMPUTER

DRS TECHNOLOGIES

ARMOR X7 HAND-HELD COMPUTER



To learn more about optional ARMOR accessories, please call 1-888-872-1100

Trade Compliance Statement

Other Compliance:

- This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
  - Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced radio/TV technician for help.
- This device complies with Part 15 of the FCC Rules and Industry. Operation is subject to the following two condition:

  (1) This device may not cause harmful interference, and

  (2) This device must accept any interference received, including interference that may cause undesired operation."
- For body-worn operation, this computer has been tested and meets the FCC RF exposure guidelines set forth for an uncontrolled environment when used with ARMOR supplied accessories, or accessories designed specifically for this product. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.
- If both WWAN and WLAN radio modules are installed, they may not be operated simultaneously. These transmitters must not be co-located or operated in conjunction with any other antenna or transmitter.
- This X7 tablet computer has been tested for compliance with ATEX directive 94/9/EC.

DECLARATION OF CONFORMITY

We,

DRS Tactical Systems, Inc.
1110 West Hibiscus Blvd.
Melbourne, FL 32901, USA
Phone: 321-727-3672

Declare under sole responsibility that the product,

Model Number
Armor X10

Product Name
Armor M10

To which this declaration relates to is in conformity with the following standards, specifications and directives:

Standards

- **EN60950-1:2001** (Safety of Information Technology Equipment, EU)
- **UL60950-1:2003** (Safety of Information Technology Equipment, USA)
- **CSA C22.2 60950-1:2003** (Safety of Information Technology Equipment-Part 1, Canada)
- **EN 301 893: V1.3.1 (2005-03)** (Broadband Radio Access Networks (BRAN); 5 GHz high performance RLAN)
- **EN 300 328: V1.7.1** (Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems)
- **EN 301 489-1, V1.6.1 (2002-08)** (Part1; EMC for Radio Equipment and Services, Common technical requirements)
- **EN 301 489-17, V1.2.1 (2002-08)** (Part 17; EMC for Radio Equipment and Services, Specific conditions for Wideband data)
- **EN55022:2006** (Information Technology Equipment-Radio disturbance characteristics-Limits and methods of measurements)
- **EN55024:1998/A1:2001/A2:2003** (Information Technology Equipment-Generic Immunity characteristics-Limits and methods of measurements)
  - **EN 61000-3-2: 2000+A2:2005** (Limits for Harmonic Current Emissions)
  - **EN 61000-3-3:1995+A1:2001** (Limits, Limitations of Voltage Fluctuations and Harmonic Flicker)

Directives

- **DIRECTIVE 2006/95/EC** (Low Voltage Directive)
- **DIRECTIVE 2004/108/EC** (EMC Directive)
- **DIRECTIVE 2002/96/EC** (Waste of Electrical and Electronic Equipment)
- **DIRECTIVE 2002/95/EC** (Restriction of Hazardous Substances)
- **DIRECTIVE 1999/5/EC** (Radio and Telecommunications Terminal Equipment)

Lary Beaulieu, Senior Vice President
Printed Name and Title

Signature and Date

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WARNING SUMMARY

This device is a Class I, Division 2, Groups A-D, T5 product. The ARMOR X7 complies with all applicable industrial health and safety requirements. However there are certain safety considerations such as battery safety that you need to be aware of. Please read and comply with all warnings and cautions in this guide and in all other X7 documentation.

A "  **Warning!"** notice indicates a condition or action that could possibly result in injury or death to the user. A "  **Caution!"** notice indicates a condition or action that could result in loss of data or damage to equipment.

WARNING!

EXPLOSION HAZARD – DO NOT DISCONNECT WHILE CIRCUIT IS LIVE UNLESS AREA IS KNOWN TO BE NON-HAZARDOUS.

AVERTISSEMENT-RISQUE D'EXPLOSION. NE PAS DÉBRANCHER TANT QUE LE CIRCUIT EST SOUS TENSION, À MOINS QU'IL NE S'AGISSE D'UN EMPLACEMENT NON DANGEREUX.

WARNING!

EXPLOSION HAZARD – BATTERIES MUST ONLY BE CHANGED IN AN AREA KNOWN TO BE NON-HAZARDOUS.

AVERTISSEMENT-RISQUE D'EXPLOSION - AFIN D'ÉVITER TOUT RISQUE D'EXPLOSION, S'ASSURER QUE L'EMPLACEMENT EST DÉSIGNÉ NON DANGEREUX AVANT DE CHANGER LA BATTERIE.

WARNING!

Do not drop or mishandle the batteries, immerse them in water, or subject them to high heat. Doing so could increase the risk of explosion or leakage, and possibly cause injury.

WARNING!

The lithium-ion batteries used in this equipment contain material that is hazardous to your health. If battery contents come in contact with the eyes, IMMEDIATELY flush the affected area with clean water for 15 minutes and have someone else summon medical attention for you. Unaffected persons should assist the affected individual in the vital first flushing of the eyes.

WARNING!

If battery material comes in contact with the skin, flush the affected area with clean water and seek immediate medical treatment.

WARNING!

Place all shipping bags and packing materials safely out of the reach of small children, especially infants and toddlers. These items may pose a choking or suffocation hazard.

WARNING!

Changes or modifications not performed by, or expressly authorized by, DRS Tactical Systems, Inc could be hazardous to your health, could cause damage to the equipment, could void your warranty, could void your authority to operate the equipment, or could result in all of the above.

CAUTION!

Use this product only in vehicles with a +11 to +16 VDC ± 2%. Voltages outside this range could cause unstable operation or result in permanent damage to the computer.

CAUTION!

DO NOT connect the DC power supply from a Rapid Battery Charger into the computer or docking mechanism. This power supply is 24 VDC and will cause permanent damage to the computer.

CAUTION!

DO NOT connect the computer to more than one power source at a time such as with the AC adapter connected to the computer and vehicle power connected to the docking station. Permanent damage to the X7 batteries or to the computer itself may result.

CAUTION!

When using the provided AC adapter, the maximum safe ambient operating temperature is 40°C.

CAUTION!

Use only the battery originally supplied with your ARMOR X7 or one recommended by DRS. The use of any other battery could create a hazardous condition and possibly damage your computer.

CAUTION!

Recharging the battery must only be carried out in a non-hazardous area using the supplied AC adapter. The definition of hazardous areas can be found in Standard EN 60079-10.

CAUTION!

DO NOT use this unit in classified areas unsuitable for its safety ratings. NE PAS UTILISER CETTE UNITÉ EN ZONES AINSI CLASSÉES IMPROPRES À SA COTE DE SÉCURITÉ

CAUTION!

When using IEEE 802.11a wireless LAN [in Canada], this product is restricted to indoor use due to its operation in the 5.15- to 5.25-GHz frequency range. Industry Canada requires this product to be used indoors for the frequency range of 5.15 GHz to 5.25 GHz to reduce the potential for harmful interference to co-channel mobile satellite systems. High power radar is allocated as the primary user of the 5.25- to 5.35-GHz and 5.65 to 5.85-GHz bands. These radar stations can cause interference with and/or damage to this device.

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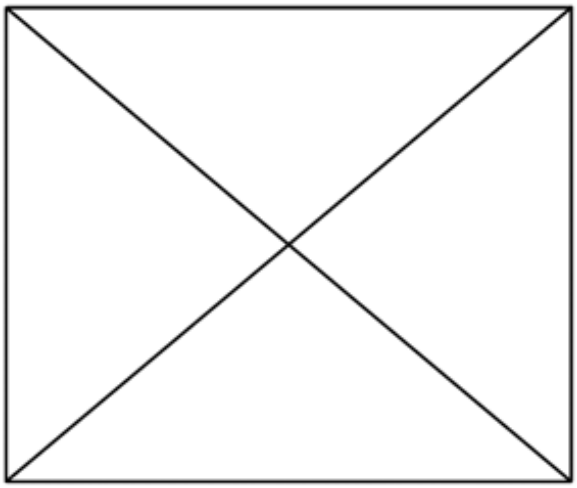
1. WELCOME AND INTRODUCTION

Thank you for purchasing the ARMOR X7 ruggedized tablet computer with Intel® Mobile technology. Your X7 is the first of a new line of durable, reliable, and easy-to-use small form factor tablet computers.

The X7 is housed in a light-weight magnesium alloy frame surrounded by a durable plastic case, and has sealed external connectors that are rated IP 67 level protection from dust, dirt, water and other damaging elements.

Your batteries are hot-swappable, which means you can change them without the need for tools and without interrupting normal computer operations. In addition, you now have both a touch screen and an active pen screen at your fingertips.

The ARMOR X7 ruggedized tablet computer can be mounted in a vehicle dock or desk docking station (shown here in a desk dock.



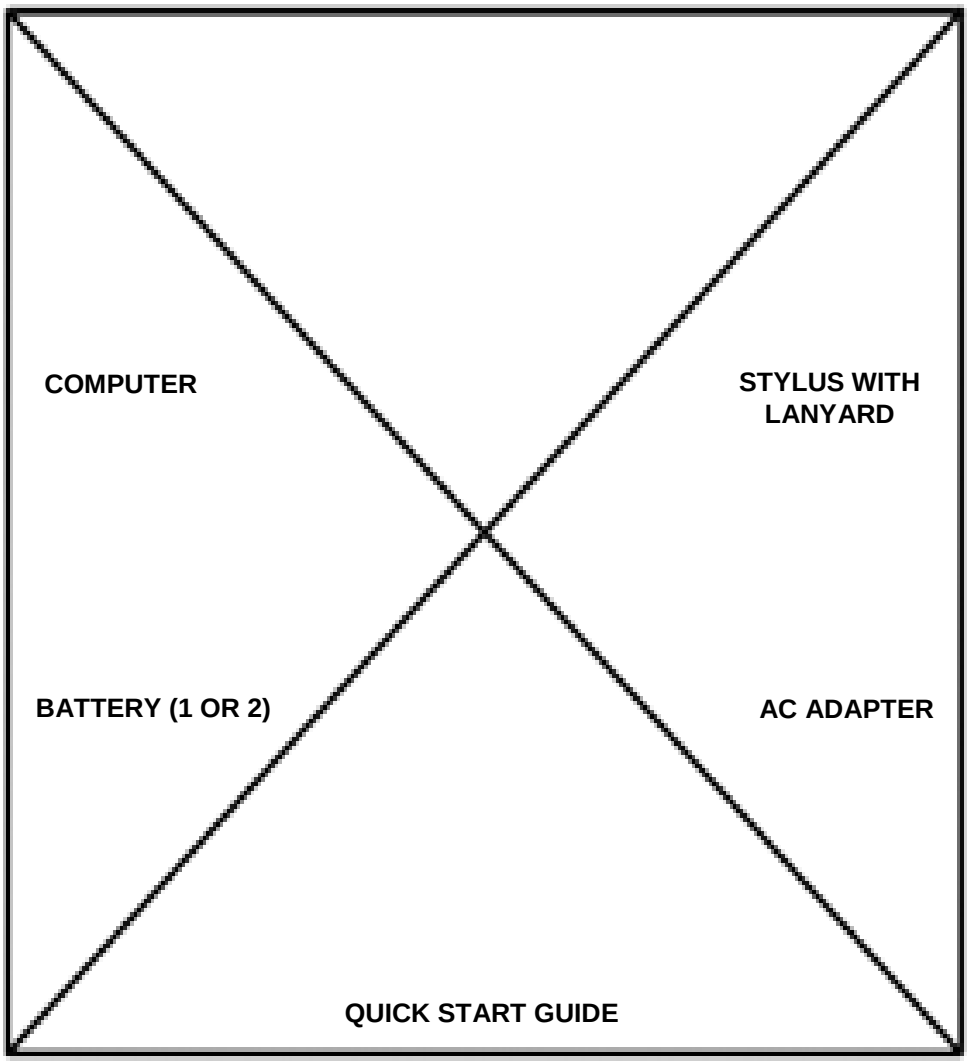
We take pride in providing high-quality products and superior customer service. Thank you for choosing the DRS ARMOR X7, and for your trust in the ARMOR line of products.

The ARMOR Team

Your ARMOR X7 Purchase

Your purchase includes the items and accessories shown below. Please confirm that all of these items are present and in good condition. **NOTE:** If your X7 includes a solid state drive, it is shipped already installed in the computer.

Contact your ARMOR X7 computer sales representative if any item is missing or damaged.



ARMOR X7 Included Components and Accessories

About This Guide

This user's guide contains virtually all of the information required to setup and maintain your ARMOR X7 computer. However, should you need additional technical information, please visit our web site at: www.drsarmor.com, or call DRS Technical Support toll-free at 1-888-872-1100.

Viewing, Navigating, and Printing this Guide

This User's Guide is installed on your ARMOR X7 computer in PDF format. To access it, double-click on the icon on the desktop. You can click on any Figure or Table reference and on the blue underlined text (links) to navigate within the guide or to access resources on the Internet. Links to internet resources will change color after the first access to indicate the link has been recently used; links to information within the document will not change color. The latest version of Adobe PDF Reader is available for downloading free from www.adobe.com.

For best print results, use the Adobe Reader "Print "menu options.

Terminology Used in this Guide

As the result of long use and the evolution, some functions and buttons may be called by more than one name and some of these names are used interchangeably, which can lead to confusion. The following are some of the more common examples you may encounter in this manual:

Standby = Stand By = Sleep

Windows Security Key Button = SAS Button = OEM Button = Side Button

Please Help Us Maintain Top Quality Documentation

This guide was produced with the latest information available and verified for accuracy at the time of its release. However, mistakes are possible, and product updates may supersede the information in this guide. We encourage you to contact DRS Technical Support toll-free at 1-888-872-1100 with suggestions and corrections so that we can maintain the highest possible quality documentation for you and for future customers.

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2. GETTING TO KNOW YOUR ARMOR X7

The X7 is a rugged full-feature tablet PC. Its compact size and low weight, coupled with a high-contrast display for use in bright sunlight, make it ideal for field use. The X7 is rated IP67 for protection from dust, dirt, water and other contaminating elements.

It is specifically designed to support a full 8-hour shift operating on one set of batteries. However, its hot-swap battery access means you can change the batteries without the need for tools and without interrupting normal computer operations.

Like its big brother, the X10gx, the X7 has a dual mode Touch and Pen screen supporting both finger navigation and detailed graphic positioning using a pen or stylus. Your X7 is ready for use anywhere, any time.

Processor and Operating System

The X7 contains an Intel® 1.6GHz Pineview-M single core processor with up to 2 GB of 667 MHz DDR2 memory and 512 kb of level 2 cache. Your X7 comes with either the Microsoft Windows7 Professional® or Windows 7 Ultimate® 32 bit operating system.

Data Storage

The X7 has a number of flexible solutions for data storage. It currently comes with 32 GB of mSATA solid state mass storage when configured with the Gobi WWAN radio. If the WWAN radio is not installed, the X7 is equipped with a 1.8” solid state drive of 32GB or 80GB capacity in addition to the mSATA memory

Dual Screen Display

The X7 display has both an active pen screen and a touch screen combined into one display that leverages the latest bonded LCD technologies. The pen screen allows you to navigate without touching the screen surface and provides greater accuracy in handwriting or signature capture. An active pen is provided with the X7. The touch screen allows using either a fingertip or passive stylus for navigation and input.

The display defaults to touch mode until the pen screen digitizer senses the presence of an active pen within approximately 1 cm of the screen surface and activates the pen screen. When the active pen is moved away from the screen for a few seconds, the display will revert back to touch mode.

Video Graphics

The 200 MHz graphics controller is DirectX 9 compliant and supports both LVDS and VGA video standards for an internal screen resolution of 1024 x 600 pixels (WSVGA) at 32 bpp color depth.

The X7 also provides dual monitor support at the following resolutions:

- SVGA (800x600)
- WSVGA (1024 x 600)
- XGA (1024x768)
- WXGA (1280x720, 1280x800)
- SXGA (1280x1024)

Wireless

Your ARMOR X7 comes equipped with WLAN capabilities. A WWAN radio and GPS receiver are also available as options. .

Wireless LAN

The X7 is equipped with an 802.11 a/g/n Intel® Centrino® Advanced-N 6200 PCI Express Mini card that can operate on the 2.4 and 5 GHz bands.

Optional WWAN Support

An optional PCI-e WWAN card can be installed in place of the solid-state drive. The X7 WWAN supports the following networks:

- CDMA2000 or EVDO mobile communications at 850/1900 MHz bands
- HSPA on 850/1900/2100 MHz bands
- GSM/GPRS/EDGE 850/900/1800/1900 MHz bands

Optional GPS Capability

The X7 can be equipped with a global positioning system (GPS) receiver. This receiver uses GPS satellites to calculate its current location and elevation. This information is then used by installed applications.

Audio

A single internal speaker is provided, plus two sets of noise-cancelling microphones. An audio jack is provided so you can connect a set of headphones, an external speaker or an external microphone.

Batteries

Two batteries are installed, one on either side of the X7, as shown in Figure 5. The X7 batteries are high efficiency lithium-ion batteries that are “hot swappable.” That is, if you have two batteries, you can replace one battery while the tablet operates on the other battery. With this capability, you do not have to shut down the computer or interrupt your current operating session in order to replace a battery. The X7 can operate for 8 or more hours on two fully charged batteries and up to 4 hours on a single battery. Each battery has an LED “fuel gauge” that indicates the current or remaining charge.

ARMOR Flexspace™

The X7 has additional usable space and a flexible interface that allows for the use of custom cards and modules. Refer to ARMOR Flexspace™ for a more detailed description of these capabilities.

ARMOR X7 Specifications

Operating System	Microsoft Windows7 Professional® or Windows 7 Ultimate® 32 bit
Processor	Intel® Embedded Luna Pier system architecture with Pineview-M 1.6GHz Single Core Processor 512 KB L2 Cache 533 MHz FSB ICH8M I/O controller hub Intel DX9 Graphics, 200MHz 1GB or 2GB, DDR2 667MHz SDRAM
Storage	Removable SATA 3.0 Gb/sec interface (without WWAN Module) 64GB solid state hard drive (SSHD) 1.8” removable (standard) Optional 128GB solid state hard drive (SSHD) Optional 8GB or 16GB SSD nand flash memory Support for optional 8GB, 16GB and 32GB SD/SDHC card
Display & Graphics	7.0” WSVGA 1024 x 600 Transmissive sunlight-readable LCD Bonded and Anti-glare, anti-reflective screen treatments LED backlighting with Automatic Light Sensor Integrated stylus holder Autosense dual mode digitizer, 2540 dots/inch (0.001mm resolution) and resistive touch glass-film-glass, 2048 dots resolution (X&Y), 0.25 mm resolution and integrated polarizer for improved viewablity Intel DX9 Graphics controller, 200MHz
Audio	Integrated enhanced piezoelectric speaker 2 element digital array microphone with dynamic noise cancelling CODEC
Keyboard	On-screen keyboard with Windows® 7 Accepts standard size or compact USB keyboard using mini-USB adapter (not included)
Camera	2.0 megapixel camera

MODEL X7 TABLET COMPUTER

Cursor Control	Touch screen controlled by fingertip or inert stylus Pen screen controlled by inductive (active) pen Optional external mouse using mini-USB adapter (not included)
Interface Connections	Fixed I/O: • DC Power Jack • 2x USB 2.0 • RJ-45 LAN • Display Port Docking I/O: • 10V – 30V DC power input • +5V, 2A auxiliary power output • 3x USB 2.0 • 2x 5V Ground/Open Input Devices (GPIO) • Dock detect/dock enabled discrete • 2 RF connector (SMB or Equiv.) Mechanical features supporting one-handed docking
Wireless	Standard: • 802.11 A/G/N MIMO 1x2 Wireless LAN connectivity (WLAN) • Standard routing of GPS and WLAN to two RF ports Optional: • Integrated GPS • Integrated WWAN Module and Antenna o North America: CDMA2000/1xEVDO Rev A: 850MHz/1900MHz bands o North America: GSM/GPRS/EDGE/UMTS/HSPA 850HMz/900MHz/1800MHz/1900MHz bands o Europe: GSM/GPRS/EDGE/UMTS/HSDPA(2100) 800MHz/900MHz/1800MHz/1900/2100 MHz bands

MODEL X7 TABLET COMPUTER

Flexspace Expansion	Replacement of 2nd/right side battery pack +5V, 1A & +3.3V, 1A power for active modules User accessible open-source interface support for 3rd party or application specific functions: 1x PCIe port SIM Card socket 4x GPIO for remote control/sense 2x USB 2.0 ports 1x RS-232 port RGB video HD Audio +5V, 1A & +3.3V, 1A power for active modules
Power Supply	Battery support • Twin hot-swappable lithium polymer battery pack (2S2P, 5600mAh each) one or two battery pack operation • Battery operation: 8+ hours • Battery charging time: TBS hours off, TBS hours on AC Adapter: AC 100V-240V 50/60Hz, Auto sensing/switching worldwide power supply
Security Features	Password security Support for encrypted drives TPM security chip v.1.2 Fingerprint scanner ISO 7816 Smart Card (FIPS 201) compliant
Durability Features	MIL-STD-810G certified (6' drop) IP67 certified including battery pack Injection molded plastic housing with internal magnesium frame and rubber over mold in hand grip areas

MODEL X7 TABLET COMPUTER

Operational Features	-20 to +60°C operating/-40 to +70°C storage 20°C/min temperature shock (operating) +5°C to 60°C, 95% RH 20,000 feet altitude Composite wheeled vehicle vibration 30g, 11ms, half-sine operational shock IP67 IEC 60529 egress Compatibility with DRS Environmental fluids: Cat II Chemical Solvents, Cat III Cleaners and Cat IV Industrial Chemicals UV exposure ESD 22 kV air Optional: ISAFE: UL 1604 Class I, Division 2, Groups A, B, C and D; CSA C22.2 No. 213-M1987; EN60079-0, EN60079-15:2005 (ATEX)
Regulatory Certifications	TUV CSA FCC Part 15 CE Mark E-Mark C-Tick Energy Star EPEAT (Gold Level) I-SAFE/ATEX
Weight and Dimensions	2.5 lbs / 1.13 Kg (including strap, handle and one battery) 8.9” x 5.9” x 1.4” (center) 2.1” (Hand Grips) / 225 x 150 x 35 mm (center) 54 mm (Hand Grips)
Warranty	3-year limited warranty, parts & labor

MODEL X7 TABLET COMPUTER

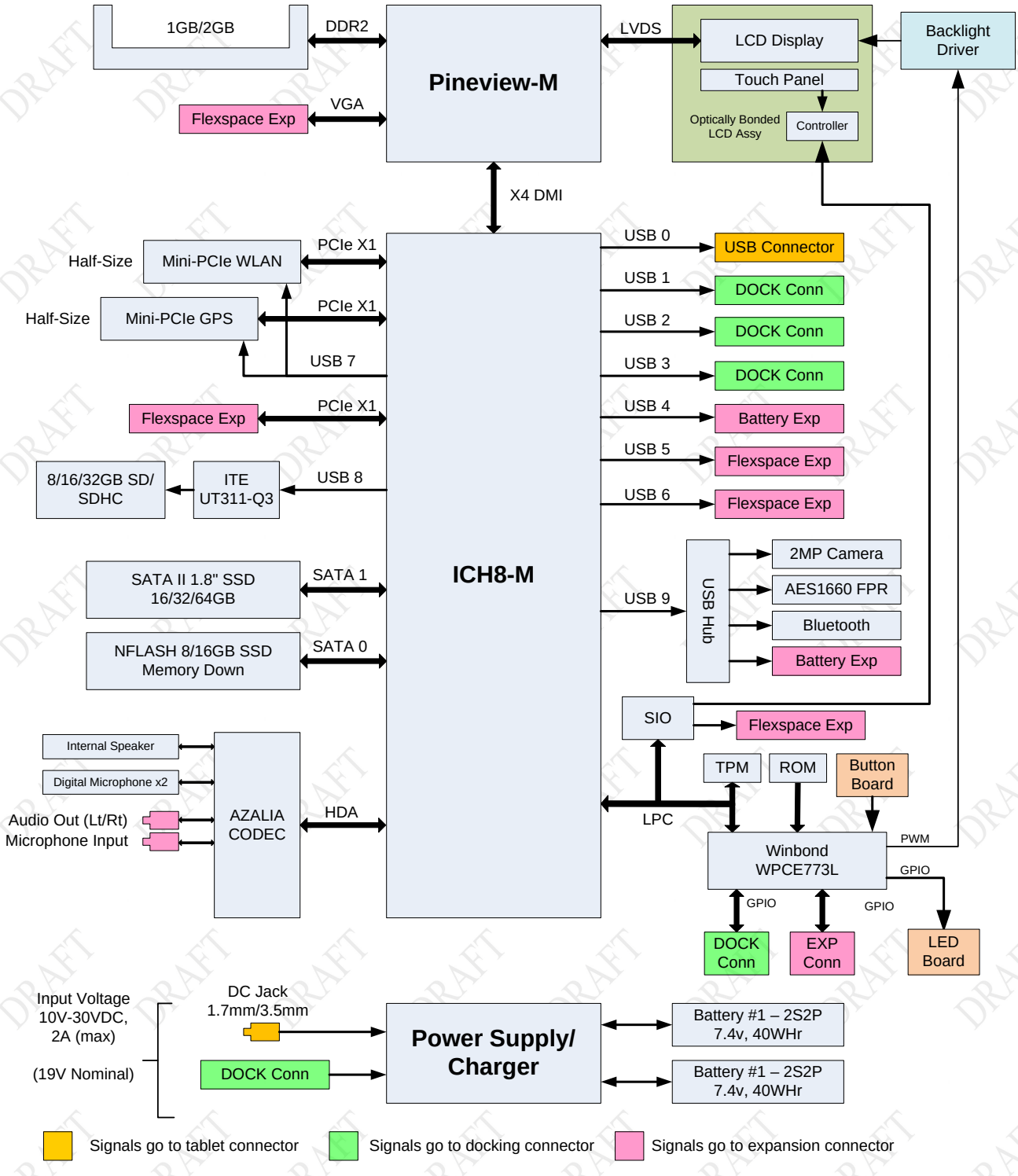

Figure 1. X7 Internal Block Diagram

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MODEL X7 TABLET COMPUTER

Front Panel Features

NOTE

All references to front/back, top/bottom and left/right are relative to the face-on view as shown in Figure 2 .

Figure 2. ARMOR X7 Key Features – Front View

Left and Right Control Panels

There are 6 momentary contact push buttons and a fingerprint scanner sensor located on two control panels on either side of the X7 display, as shown in Figure 3.

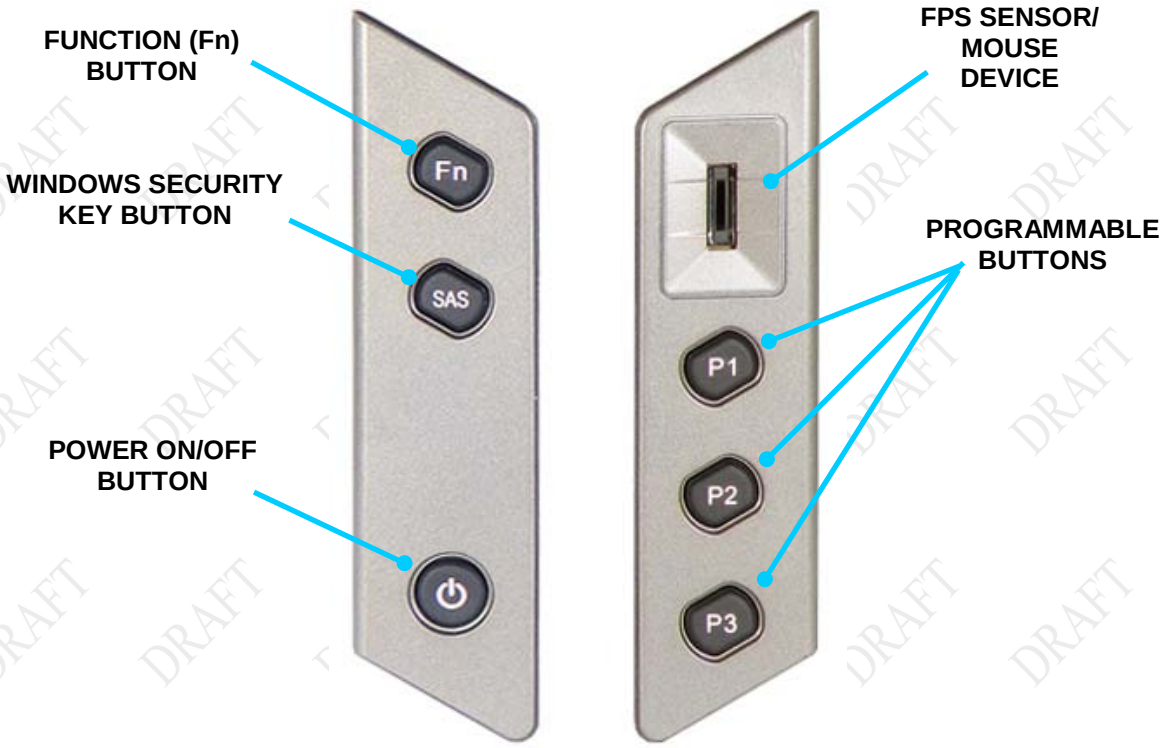

Figure 3. X7 Control Panels

Programmable Buttons P1, P2, P3

These buttons can be used to control different functions such as controlling brightness or changing volume level. Press and release a button to activate or toggle the function. Refer to the description of the Programmable Button Settings for information on how to select available options.

Fingerprint Scanner (FPS)

The fingerprint scanner sensor is used with security software to allow you to log onto the computer or gain access to specific applications. Use of the scanner requires specialized software that is not provided with the X7.

It can also be used to steer the on-screen cursor and perform some simple mouse functions. Normally, this requires third-party software that does not come with the X7. However, we have provided some introductory software that will allow you to explore this feature. Refer to Using the FPS as a Simple Mouse Device.

Fn (Function) Button

This button is used with programmable buttons P1, P2 and P3 to activate three additional functions. Press and release the **Fn** button and then press and release **P1**, **P2** or **P3** to activate

the function. Refer to the description of the Programmable Button Settings for information on how to select available options for each combination.

Windows Security Attention Sequence (SAS) Button

This button is also called the "Side Button" or "OEM" Button. Pressing this button generates the SAS scan code and invokes the **CTRL-ALT-DEL** command, which opens the Windows Task Manager screen.

Power Button

The **Power** button is primarily used to turn the computer on or off, but it also performs other functions when the computer is running and when the computer is in sleep or hibernate mode, as detailed in Table 1.

To turn the computer off when in normal operation, use the available Windows shutdown procedures from the desktop.

Table 1. Power Button Actions

Operating State	Power Button Action	Result
Computer powered off	Press and release	Computer turns on and boots up into new Windows session.
Computer powered on and awake	Press and release	Computer goes into Sleep mode and saves your current session.
Computer in Sleep mode (powered on)	Press and release	Computer wakes up and restores your current session.
Computer in Hibernate mode (powered off)	Press and release	Computer turns on and restores your previous session.
Computer powered on	Press and hold for 4 or more seconds (emergency shutdown)	Computer shuts down immediately and does not save your session.

You can change the default action of the **Power** button through the **Power Options** settings in Windows Control Panel. **NOTE:** This change affects only the powered-on state; the Power button still works the same when the computer is powered off or is in sleep or hibernate mode.

Refer to Changing the Power Button for instructions.

Indicator Panel

There are 4 LED status indicators located on the indicator panel at the upper right of the X7 display, as shown in Figure 4 (**NOTE:** The fifth object to the far right on the panel is the ambient light sensor (ALS), not an LED). The intensity of the status indicators will vary as the screen brightness is varied.

The functions of these indicators are described below.

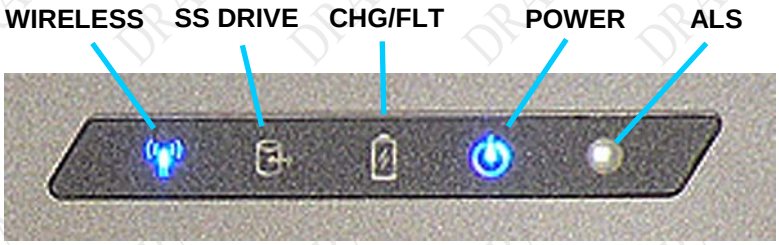

Figure 4. Indicator Panel

Wireless Activity Indicator

A blue LED that is on steady whenever any wireless radio is transmitting.

Solid-State Drive Activity Indicator

A blue LED that is on intermittently when the SSD is being accessed.

Charging/Fault Indicator

A dual LED that can be amber or red and has the following conditions:

- Off when the computer is off.
- Off when the computer is powered on, no faults are detected and the batteries are fully charged.
- A steady amber color when external power is connected and the batteries are charging.
- Flashing at a 1 second rate when charging has stopped due to battery temperature.
- A steady red color if a power system fault occurs such as an overvoltage, undervoltage or overcurrent condition or a battery charger or battery internal failure.

Power On Indicator

A blue LED that is on steady whenever power is applied to the ARMOR X7 and is off when power is shut down.

Ambient Light Sensor (ALS)

The ALS is located on the indicator panel (see Figure 4). It senses changes in surrounding light levels and adjusts the display brightness accordingly. If the surrounding light level increases, the display brightness will increase proportionally; if the light level decreases, the display brightness will decrease proportionally.

Speaker

A single high-volume speaker is located on the top left of the front panel, as shown in Figure 2.

Noise Cancelling Stereo Microphones

Two noise-canceling microphones are located at the bottom of the front panel. These microphones support simultaneous analog and 4-channel digital recording.

Rear Panel Features

The rear panel of the X7 houses a built-in webcam, a cooling register, bays for two batteries and a compartment that provides access to installed radio modules, a SIM card socket, and a micro SD socket. A slot for the active pen is also built into the back panel with posts to secure the lanyard.

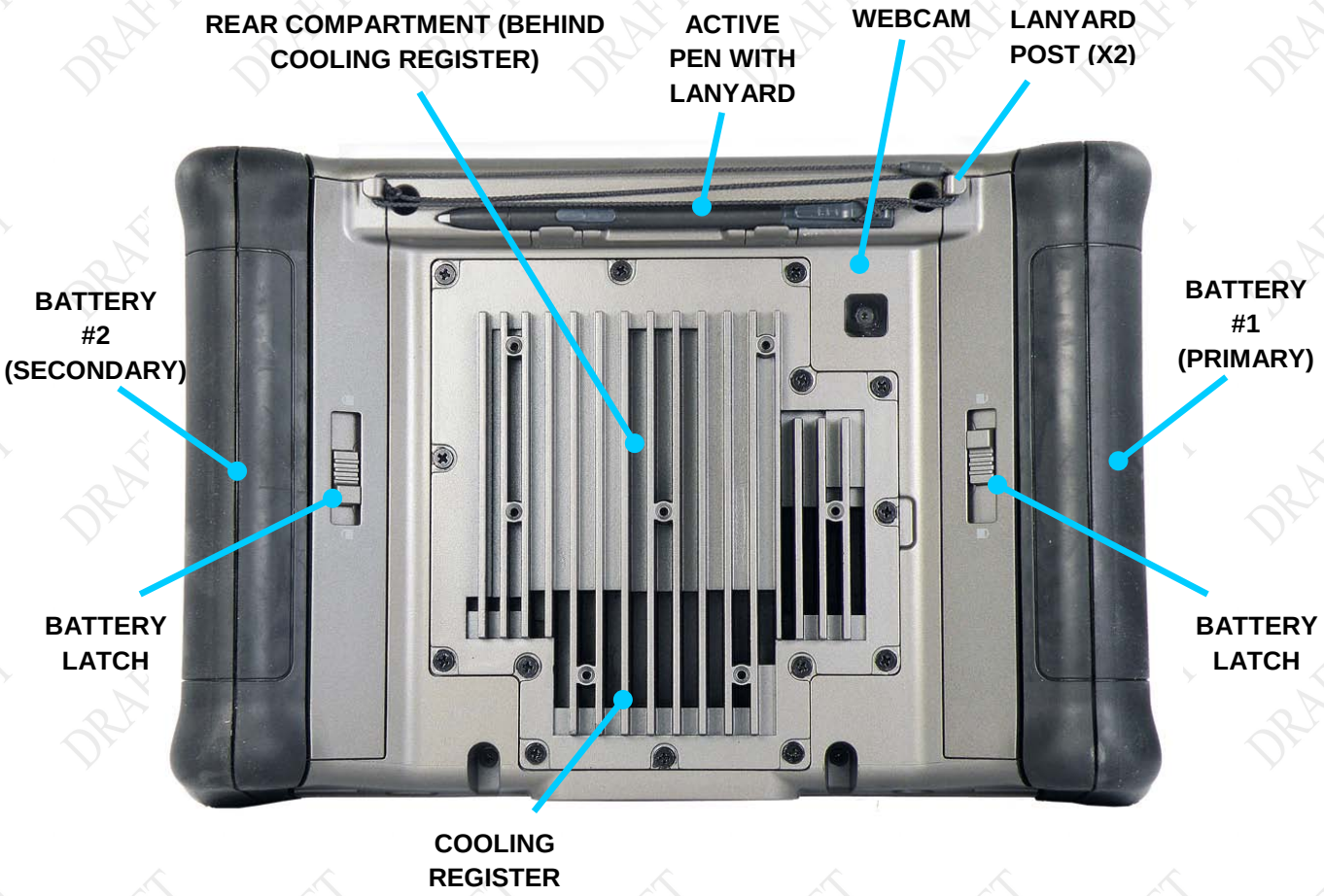

Figure 5. Key Features - Rear Panel

Cooling Register

ARMOR computers are designed to operate in dirty and moist environments under extreme temperatures. Because the tablet is sealed against contamination, the X7 incorporates passive cooling which channels the internal heat to the cooling register at the back of the unit. The register dissipates the heat evenly and feels only mildly warm to the touch.

The cooling register also acts as a cover for a sealed compartment which provides access to modules and card sockets within the unit.

Batteries

Your X7 is shipped with two 5900 mAh batteries that are installed in bays on either side of the X7, as shown in Figure 6 . These batteries are high efficiency lithium-ion batteries that are “hot swappable.” That is, if you have two batteries installed, you can replace one battery while the computer operates on the other battery. With this capability, you do not have to shut down the computer or interrupt your current operating session in order to replace a battery.

The X7 can operate for 8 hours or longer on two fully charged batteries and up to 4 hours on a single battery.

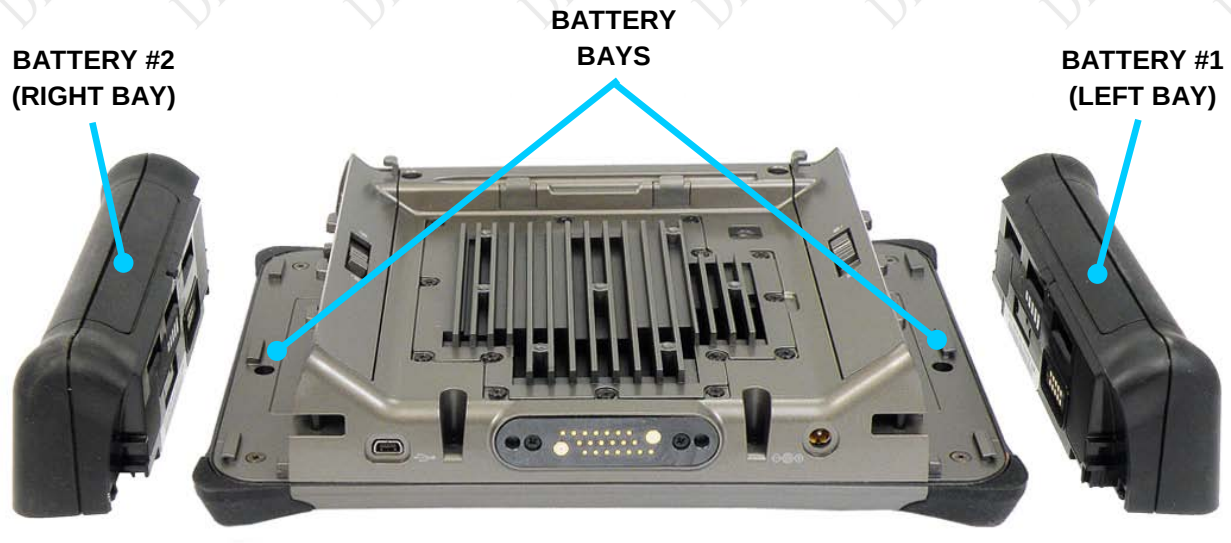

Figure 6. X7 Battery Bays

Battery “Fuel Gauges”

A multi-LED battery charge indicator, or “fuel gauge”, is located on each battery pack, as illustrated in Figure 7. Each multi-LED array consists of 5 LEDs and each LED represents approximately 20% of the total charge of the battery as follows:

LED #5 - 81-100% (far right LED)
LED #4 - 61-80%
LED #3 - 41-60%
LED #2 - 21-40%
LED #1 - 01-20% (far left LED)

Activating the Fuel Gauges

The fuel gauge indicators are not visible when the battery is installed. When a battery is disconnected, however, you can press the battery button to activate the fuel gauge and check the current charge level.

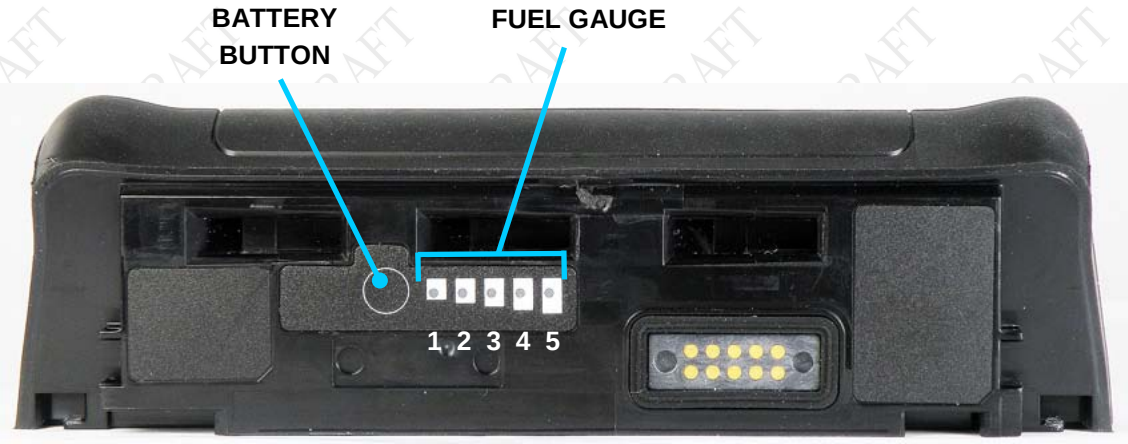

Figure 7. Battery Fuel Gauge

"Smart Batteries"

Your X7 batteries have built-in "smart" technology to monitor their charging functions and internal conditions. These batteries are self-calibrating and self-regulating. Should a problem occur, even a short circuit, the X7 battery will disconnect itself from the computer to prevent any damage. Since the batteries are literally the handles for the X7, you can keep a defective battery in place until you obtain a replacement.

Webcam

Your X7 has a built-in 2 megapixel camera located on the back side of the unit (see Figure 8). The camera is equipped with an autofocus lens and can be used to capture still images or movies, or to scan barcodes. The camera saves still images in JPEG format at 1280 x 1024, 800 x 600 and 640 x 480 pixel resolutions. Movies are saved in Windows Media Video (.wmv) format.

Refer to Using the Webcam for instructions on capturing still images and video and scanning bar codes.

Figure 8. X7 Webcam

Bottom Panel Features

The bottom panel houses an AC adapter jack, a mini-USB connector and a 20-pin docking connector. The docking connector contains two RF ports to connect the X7 to external GPS and wireless antennas.

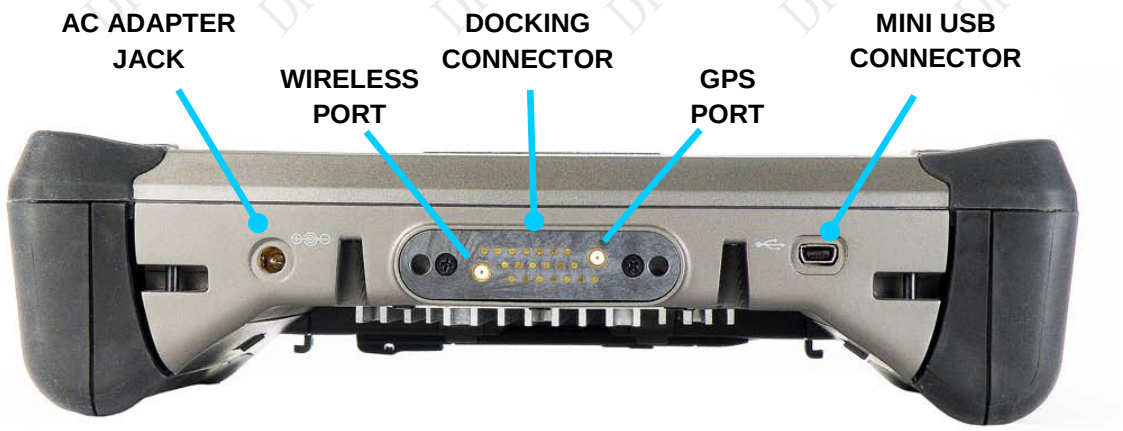

Figure 9. Key Features – Bottom Panel

Included Components, Accessories and Support

Active Pen with Tether

The pen that comes with your X7 (Figure 10) has circuitry in the tip that interacts with the digitizer assembly built into the tablet display. The digitizer detects the pen tip close to the screen and activates certain functions like steering the cursor or performing a right click action if the pen is allowed to hover for a few seconds.

The pen also has a side button that can be programmed for a number of different functions (refer to the Pen Tablet Properties Utility). It's default function is **Right-Click**. The pen is stored in the tablet's carrying handle and is secured to the handle by a flexible tether.

Figure 10. The ARMOR X7 Pen

AC Adapter

Included with your ARMOR X7 is a +19 VDC ± 5%, 2 amp AC power adapter, or "AC Adapter". This external power supply can be plugged in to any 100-240 VAC outlet and is used to recharge your computer's battery packs or to provide power to the computer without draining the batteries. A European AC power cord is also available.

Figure 11. ARMOR X7 AC Adapter

ARMOR Cloth

This microfiber cloth is specially designed to clean the display screen of dust and fingerprints. See **Error! Reference source not found.** for important information about using this cloth with the X7 display.

Figure 12. ARMOR Microfiber Cleaning Cloth

Subscriber Identity Module (SIM) Card Support

The X7 is equipped with a SIM card socket. A SIM card is a small electronic card that contains your subscriber ID, billing information, and network permissions. The card allows you to easily transport your subscriber information to another computer or subscriber device.

You must have a SIM card installed in order to use your Gobi radio to connect to a WWAN network. For instructions on installing your SIM card, see Installing the SIM Card.

Secure Digital (SD) Card Reader Support

The ARMOR X7 also provides a card reader for a micro SD or SDHC card. These cards can provide enhanced features such as extended communications capabilities, access authorization and additional memory capacity. The SD card slot is located inside the rear compartment.

Trusted Platform Module (TPM) Support

The X7 supports the Infineon SLB 9635 TPM controller module. This module meets the requirements of the Trusted Computing Group (TCG) Trusted Platform Module Specification 1.2. The TPM module is connected to the low pin count (LPC) bus.

For more information on TPM capabilities with the ARMOR X7, contact DRS Tactical Systems, Inc. toll free at 1-800-872-1100.

Optional Accessories for Your X7

There are a number of optional accessories that extend the capabilities of the X7 or make it easier to use.

Compact Keyboard

A reduced-size USB keyboard (Figure 13) is available for use with the ARMOR X7 computer. The keyboard is approximately half the size of a standard keyboard and can be connected directly to the X7 or to a desk docking station to conserve space on a table or desktop.

Figure 13. Compact Keyboard

Desk Dock

The X7 desk dock is designed to fit on your desktop without taking up a lot of space. It is made of light-weight but rugged plastic and houses connectors for 3 USB ports, 2 GPIO ports, an Ethernet port, an RS-232 serial port and 5 VDC external power. The X7 slips easily into the cradle and locks into place with the spring-loaded top clamp. Just lift up on the clamp slightly to release the tablet.

Figure 14. X7 Desk Dock

Vehicle Dock

The X7 dock is made of UV-resistant high-impact plastic that weighs less than 2 lbs. It is designed to be attached to any mount that accepts the Video Electronics Standards Association (VESA) 75 mm hole pattern. The dock has a locking mechanism that can withstand over 50,000 lock/unlock cycles and the latch can be locked with a key to prevent tablet removal. The floating docking connector is field-replaceable.

The dock has connections for 3 USB ports, 2 bi-directional GPIO ports and external 5 VDC power. The tablet slips easily into the cradle and can be inserted and latched with one hand.

The X7 vehicle dock is rugged and light weight and can be adapted to just about any mounting situation from console and dashboard installation to bulkhead and cab roof installation (see Figure 16), or it can be floor mounted using a special mounting assembly.

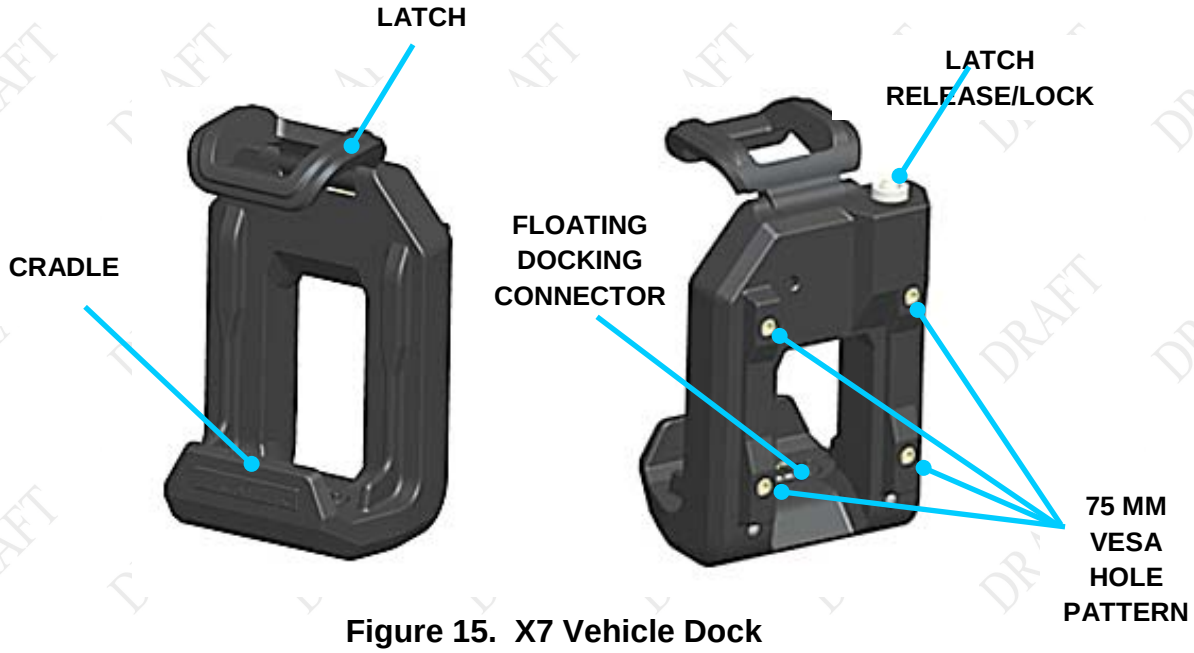

Figure 15. X7 Vehicle Dock

Figure 16. Examples of X7 Vehicle Dock Mounting Configurations

ARMOR Flexspace™

The X7 computer provides additional space and a flexible I/O connectivity to accommodate a custom card or module such as a radio frequency ID (RFID) tag reader, contactless card reader or satellite communications module. It can also be used to provide additional interface ports.

The X7 Flexspace consists of a battery-shaped adapter that replaces the right-side battery. Figure 17 shows a conceptual model of a Flexspace adapter that provides additional interface connectors.

For more information on Flexspace capabilities with the ARMOR X7, contact DRS Tactical Systems, Inc. toll free at 1-800-872-1100.

Figure 17. ARMOR X7 Flexspace™ Adapter Concept

For information on these and any other ARMOR X7 accessories, please contact your ARMOR sales representative or call DRS Tactical Systems toll free at 1-888-872-1100.

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3. GETTING STARTED

The information in this section will help you get your X7 set up and operating. Please read all warnings, cautions and notes prior to each procedure or step.

CAUTION!

Use this product only in vehicles with a regulated voltage supply of +10 to +30 VDC. Voltages outside this range could cause unstable operation or result in permanent damage to the computer.

CAUTION!

Use only the external AC Adapter provided with your ARMOR X7 or an equivalent model approved by DRS. Attempting to use a different model power supply could result in equipment damage.

CAUTION!

<u>DO NOT</u> connect the computer to more than one power source at a time (such as to both an AC adapter and docking station) or permanent damage to the battery and/or computer may result.

Installing and Charging the Batteries

The first step to getting your X7 operating is to install and charge the batteries. The batteries are inserted into slots on side of the computer, as shown in Figure 18. Follow the procedure in Table 2 to install the batteries.

CAUTION!

When using the provided AC adapter, the maximum safe ambient operating temperature is 40°C.

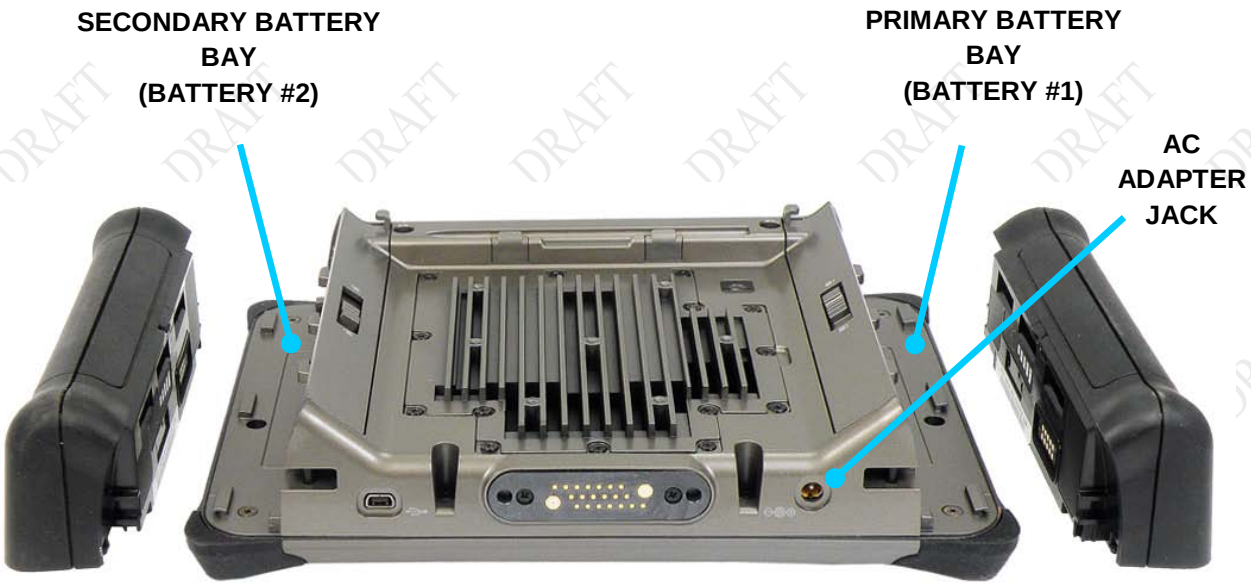

Figure 18. X7 Batteries Positioned for Installation

Table 2. Install the X7 Batteries

STEP	ACTION
1.	Place the flat surface of the first battery on the left side compartment tray with the locking slots facing toward the computer.
2.	Push and hold the battery latch and slide the battery toward the computer until the locking bar engages and the battery is flush against the compartment wall. Rock the battery slightly if necessary to engage the locking bar.
3.	Release the battery latch to lock the battery in place.
4.	Perform steps 1-3 to install the second battery.
5.	Connect the AC adapter to the jack on the bottom of the X7 and plug the adapter power cord into an AC outlet.
6.	Allow the batteries to charge until the Charge/Fault indicator turns off. This could take anywhere from 2 to 4 hours depending on the level of charge when the batteries were received. You can work with your X7 while the batteries charge.

Turning On Your X7 for the First Time

Press the **Power** button on the left control panel. If this is the first time the computer has been started since you received it, the Microsoft Out-of-Box Experience (OOBE) setup instructions will appear after the computer boots up. Follow these instructions to configure your Windows operating system software.

Turning the Computer On Normally

Turn the computer on by pressing and releasing the **Power** button. The ARMOR X7 will perform self-checking routines during the start-up process. All units are configured at the factory to automatically boot to the Microsoft Windows desktop unless a custom configuration has been requested.

Putting the Computer in Sleep Mode

To put the tablet into sleep mode, press and release the **Power** button while the tablet is operating. **NOTE:** This is the default action of the Power button but this can be changed in Windows Control Panel (see Changing the Power Button for instructions).

You can also put the computer to sleep from the Windows desktop. Click on the **Start** button and click the down arrow next to the Shut Down button, then select **Sleep**.

When the computer is in sleep mode, the screen will be dark and all LED will be off except the battery status indicator. This LED will flash at a 1 sec rate to indicate the computer is in sleep mode. The computer will continue to run normally in the background and your session will be held in suspension.

Press and release the **Power** button again to wake up the computer and return to your session.

Turning the Computer Off Normally

To turn the computer off normally, select **Start → Shut down** from the Windows desktop. The computer will perform a normal shutdown.

NOTE

Do not press and release the Power button to turn off the computer. This will only put the computer into sleep mode and the screen will go dark. This could be mistaken for a power off condition while the computer is actually still running and consuming battery power.

Emergency Shutdown

If an emergency condition occurs where the computer needs to be shut down immediately, press and hold the **Power** button for more than five seconds. The computer will bypass the normal Windows shutdown sequence and turn off.

This procedure should only be used in emergencies because improperly shutting down Windows may result in the loss of data and possible corruption of the operating system.

Indicator State Summary

Table 3 lists all states for the various X7 indicators. Refer to Indicator Panel for a description of each LED.

Table 3. LED Indication Summary

LED	IF THE INDICATION IS:	AND THE POWER MODE IS:	AND EXTERNAL POWER IS:	AND BATTERY IS:	THIS MEANS:
Wireless (blue)	On	On	N/A	N/A	A radio is transmitting.
	Off	On	N/A	N/A	No radio is transmitting
Solid State Drive (blue)	Flashing intermittently	Power on	Connected or Disconnected	Installed	Processor is accessing the hard drive
Charging/Fault (amber/red)	Off	Power on	Disconnected	Installed	No power faults are detected
	Off	Power off	Connected	Installed	Batteries are not charging
	On steady amber	Power on/off	Connected	Installed	Batteries are charging
	Flashing amber at 1/2 Hz rate (1 sec on/one sec off)	Power on/off	Connected	Installed	Battery charging has stopped due to extreme battery temperature

LED	IF THE INDICATION IS:	AND THE POWER MODE IS:	AND EXTERNAL POWER IS:	AND BATTERY IS:	THIS MEANS:
	On steady red	Power on/off	Connected	Installed	Power system fault (overvoltage, undervoltage or overcurrent condition or battery failure)
Power (blue)	On	On	N/A	Installed	Computer power is on
	Off	Off	N/A	N/A	Computer power is off
Fuel Gauge (blue)	Single LED on steady	N/A	N/A	Removed	Total charge is maximum for that level (20%, 40% etc.)
	LED # 1 (far left) blinking at 1 second on/one second off rate	N/A	N/A	Removed	Battery is below 10% charge level (almost depleted)

Activating your Wireless Radios

Refer to Networking for instructions on activating and using your wireless radio connections.

Installing a Micro SD or SDHC Card

The micro SD card socket is located inside the rear compartment, as shown in Figure 19. Follow the procedure in Table 4 to install the card.

CAUTION!

Do not remove the rear compartment cover while the unit is powered up as internal voltages are exposed to possible short circuit.

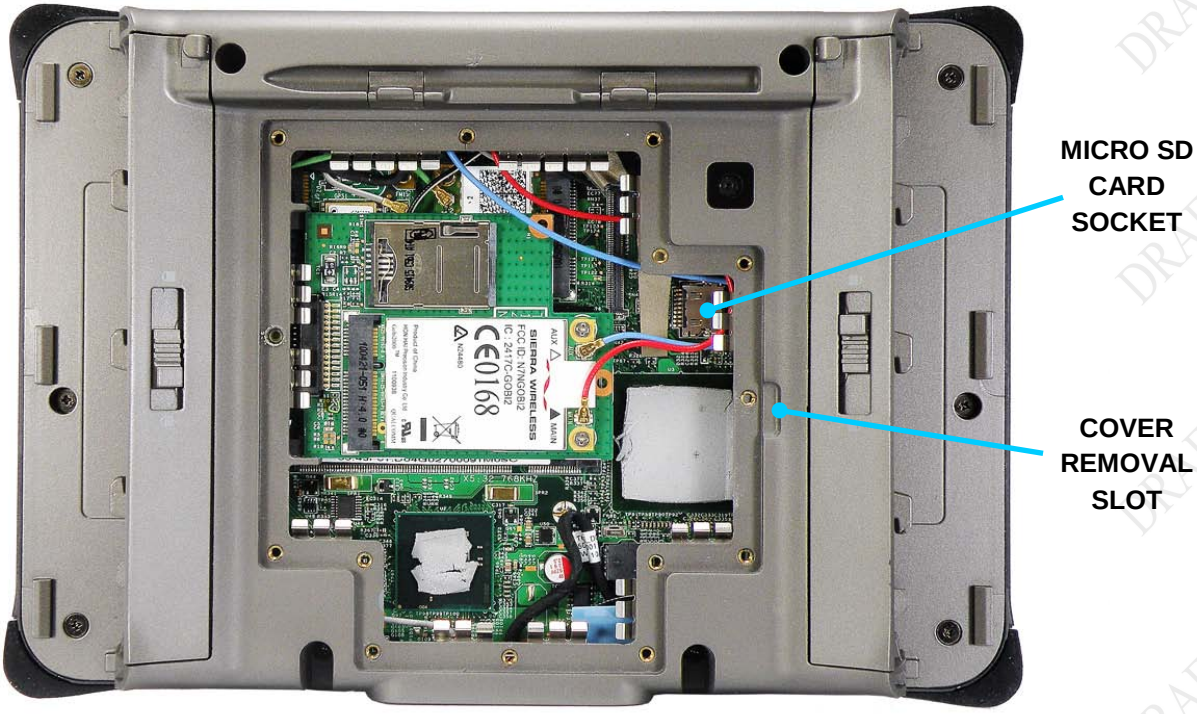

Figure 19. Micro SD Card Socket

Table 4. Installing the SC Card

STEP	ACTION	CONDITION OR INDICATION
1.	Power down the computer and disconnect any external power.	
2.	Remove the batteries.	

STEP	ACTION	CONDITION OR INDICATION
3.	Place the computer face down on a clean surface and remove the 14 Philips screws securing the cooling register.	
4.	Carefully pry up the cooling register at the slot provided (Figure 19) and remove.	
5.	Carefully lift the socket cover and insert the SD card all the way into the cover.	
6.	Press the card down until it locks in place.	
7.	Replace the cooling register and secure with 14 Philips screws.	
8.	Reinstall the batteries and re-connect external power if desired.	

Accessing and Using the GPS Receiver

Click on the U-Center™ desktop icon or select **Start → All Programs → u-center**. The U-Center application opens as shown in

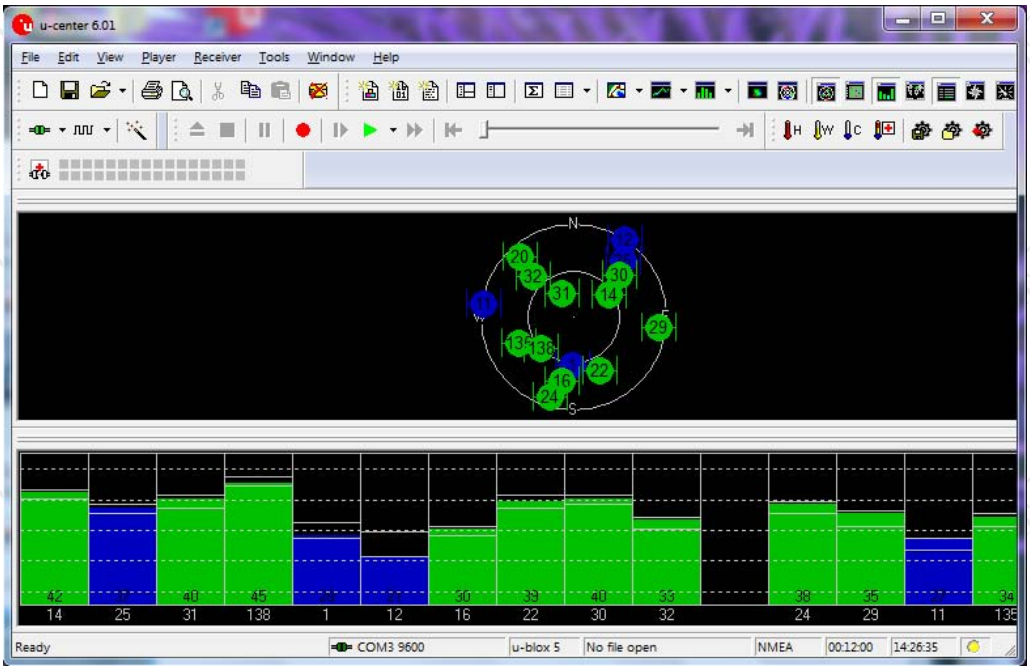

Figure 20. U-Center GPS Application Window

The diagram in the center shows the approximate positions of satellites that are within range of the receiver. The graph at the bottom of the page shows the relative signal strength of each satellite. A green bar indicates acceptable signal strength; a blue bar indicates marginal reception. You must have at least four satellites with acceptable signal strength to generate reliable position data.

Click on the **Help** tab for guidance on accessing, interpreting and using the GPS information.

Operating the X7 Display

Adjusting the Screen Brightness

The brightness of an LCD display is controlled by adjusting the intensity of the backlight. The backlight intensity level for the X7 can be controlled manually or automatically.

Manual Brightness Adjustment

Your ARMOR X7 Tablet Computer is pre-set for manual adjustment of screen brightness (backlight level). The brightness can be adjusted manually in two ways: by repeatedly pressing P1 or P2 on the right control panel or by adjusting the slider in the Backlight Setup dialog window of ARMORutils.

Using P1 and P2

When you first receive your X7, the P1 button is programmed to increase the screen brightness in 10% steps and the P2 button is programmed to decrease brightness in 10% steps. Press and release a button to change the brightness level.

Using the ARMORutils Backlight Setup Page

Double-click on the ARMORutils desktop icon and select the **Backlight Setup** button. The Backlight Setup dialog opens as shown in **Error! Reference source not found.**.

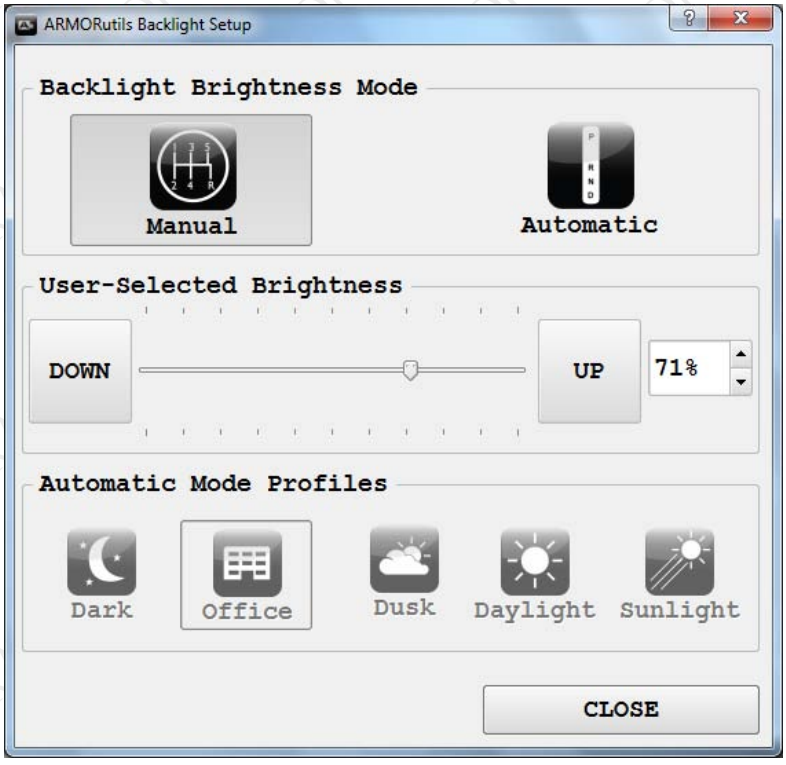

Figure 21. Armor Utilities Screen – Backlight Tab

Press the **UP** or **DOWN** buttons repeatedly with the pen or a fingertip to move the slider and adjust the backlight level. The % brightness is displayed in a field on the right. You can also use the up and down arrows next to this field to adjust the slider.

Automatic Adjustment

Open the **Backlight Setup** dialog in ARMORutils and click on the **Automatic** button. The backlight level will now be controlled by the ambient light sensor (ALS). If the surrounding light decreases, the brightness will also decreases proportionally; if the surrounding light increases, the brightness will increase.

NOTE

You must keep the ALS uncovered to allow proper automatic brightness adjustment.

Automatic Mode Profiles

Select one of the profiles that best controls the range of backlight levels for your work environment.

Working with the Pen Screen

When the pen screen is active, you can steer the cursor and perform many functions by simply hovering close to the screen without actually touching it. Other functions are initiated by pressing the tip to the screen surface to activate the tip switch or by pressing the side button switch (refer to Table 5 for more information).

Your X7 Active Pen

The pen that comes with your X7 (Figure 10) is stored in a slot on the back panel (see Figure 5) and has circuitry that interacts with the digitizer assembly built into the pen screen. The digitizer detects the pen tip close to the screen and activates certain functions like steering the cursor or performing a right click action if the pen is allowed to hover for a few seconds. Pressing the tip to the screen activates a tip switch that performs a left-click action.

Using the X7 Pen with the Pen Screen

Table 5 lists mouse-type objectives you can perform using the X7 pen with the pen screen.

NOTE

This description assumes the side button is set for the (default) right-click function.

Table 5. Pen Screen Actions.

MOUSE OBJECTIVE	PEN ACTION
Select option or tab or open submenus. Fill selection boxes. Activate buttons. Deselect highlighted objects (touch next to the object).	Tap once
Selects multiple objects.	Touch pen tip to display and drag box around objects
Highlight object or option.	Hover over object or option
Move object on the desktop.	Touch an object and move it with the pen.
Start application or open folder.	Tap twice
Highlight option, open menus (right click).	Hover tip near screen until option menu opens -or- Press side switch and touch object or option (see Pen Tablet Properties Utility for other side switch options).

Pen Screen Adjustments

You can change attributes related to use of the pen with the pen screen by selecting **Start → Control Panel → Hardware and Sound** → and clicking on one or more of the following utilities:

- **Pen and Touch** utility
- **Pen Tablet Properties** utility
- **Tablet PC Settings** utility

Refer to Your ARMOR X7 Software for information about these utilities.

Pen Screen Calibration

After a period of normal usage, the screen may need to be calibrated with the pen to ensure the pen tip is aligned with the cursor over the entire screen area. Refer to **Error! Reference source not found.**.

Working with the Touch Screen

When the touch screen is active, the pressure of a stylus tip or fingertip against the screen is used to duplicate actions with a two-button mouse.

NOTE

Tapping with a stylus tip requires only light to moderate pressure. It is possible to damage the pen tip and/or the display by pounding the tip against the surface with too much force.

Working with the Touch Screen

Table 6 lists mouse-type objectives you can perform using a passive stylus (not provided) or fingertip with the touch screen.

Table 6. Stylus Actions.

MOUSE OBJECTIVE	STYLUS ACTION
Select tabs or open sub-menus. Highlight a label or option. Fill selection boxes. Activate buttons. Deselect highlighted objects or release multiple objects	Tap once Tap outside the object(s)
Start an application or open a folder.	Tap twice
Move an object on the desktop.	Press over an object, hold contact with display, drag pen and release pressure.
Open menu options.	Press over icon or option and hold contact with display without moving pen.
Select multiple objects.	Press and hold contact with display, drag box around objects.

Touch Screen Adjustments

You can change attributes related to use of a fingertip or passive stylus with the touch screen.

Select **Start → Control Panel → Hardware and Sound** → and click on the **Touch Settings** utility, **Pen and Touch** utility and the **Tablet PC Settings** utility.

Refer to **Your ARMOR X7 Software** section in the **X7 User's Guide** for an explanation of these attributes.

Touch Screen Calibration

NOTE

You will not be able to use the pen that came with your X7 to calibrate the touch screen since the calibration routine will detect the active pen tip and not allow you to proceed. Use your fingertip or a passive stylus designed for touch screens.

You will need to calibrate the touch screen using a fingertip or a passive stylus (not included with the X7) to ensure the actual touch point matches the position of the cursor. For calibration instructions, refer to **Error! Reference source not found.**.

Entering Data Using the Input Panel

The input panel is a virtual keyboard and handwriting entry tool that is located on your desktop. It is accessed differently depending on the operating system.

Accessing Input Panel

The Input panel keyboard is normally hidden just off the left side of the display, as shown in Figure 22. The edge appears in the upper left corner when you tap near it on the screen with a fingertip, stylus or the active pen,.

When it appears, tap once or twice on the edge of the input panel icon to fully open it on the desktop as shown in Figure 23.

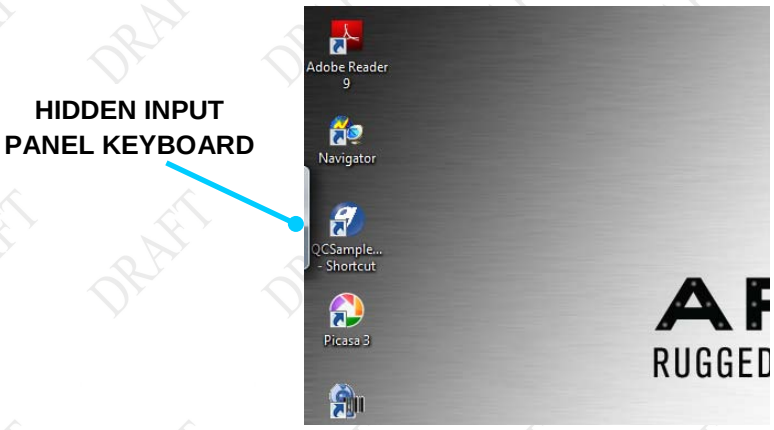

Figure 22. Location of the Input Panel

Figure 23. Input Panel Keyboard Opened on Desktop

The input panel has two modes: handwriting and keyboard entry. These are selectable by the two mode icons at the upper left corner. **NOTE:** The panel will always open in the last mode used.

Click on the Tools menu for handwriting options and for information on how to set up and use Input Panel.

Opening Input Panel with a Gesture

You can also use a side-to-side gesture to open the input panel. **Select Start → Control Panel → Hardware and Sound → Pen and Touch**, then highlight **Start Tablet PC Input Panel** in the Pen Actions panel and click on **Settings**.

When the Start Input Panel Gesture Settings window opens, check the **Enable start Input Panel gesture** option.

Editing Documents

When you tap on an open text document such as a WordPad document, a keyboard icon will appear on the screen. Tap on the icon to open the input panel.

Using the FPS as a Simple Mouse Device

The FPS mouse function is activated as soon as you start up the computer. It places an icon in the task tray that you can used to access options and make adjustments. Follow the procedure in Table 7 to configure the FPS mouse function.

Refer to Table 8 for a list of available mouse functions using the FPS sensor.

Table 7. Configuring the FPS Mouse Function

STEP	ACTION	CONDITION OR INDICATION
1.	Right-click on the **AuthenTec icon** in the task tray.	The **TruePrint Sensor Properties** dialog window opens with the **Swipe Navigation tab** displayed, as shown in Figure 24.
2.	If not already selected, click on the **Cursor Nav** option at the top of the window.	

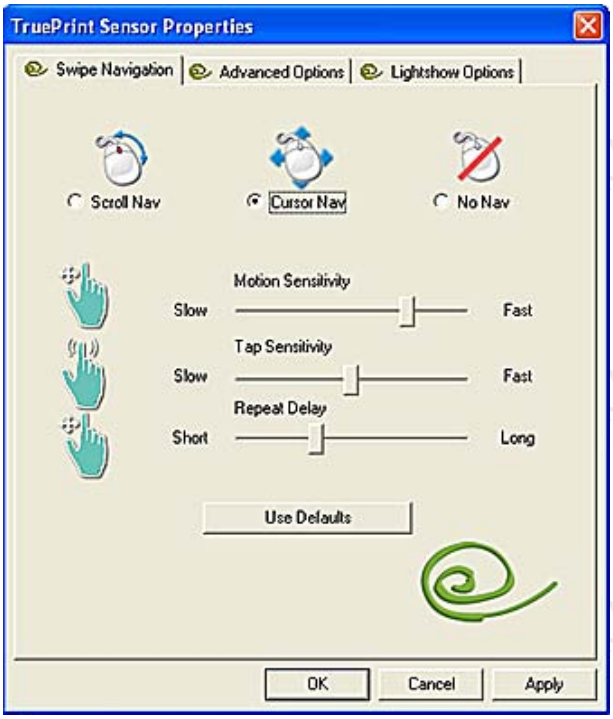

Figure 24. FPS Sensor Properties Window

STEP	ACTION	CONDITION OR INDICATION
3.	Move the **Motion Sensitivity** slider to the right to about 80% of the scale.	
4.	Click on the **Advanced Options tab** at the top of the window and change the **Orientation** to **270°**.	This aligns the mouse movement axes with finger movement over the FPS sensor.
5.	Click on the Lightshow Options tab and de-select **Enable Lightshows**.	
6.	Select **Apply** and then select **OK**.	

Table 8. FPS Mouse Actions

MOUSE OBJECTIVE	FPS SENSOR ACTION
Move cursor	Keep thumb flat on sensor and move in long swipes.
Select tabs or open sub-menus. Highlight a label or option. Fill selection boxes. Activate buttons. Deselect highlighted objects or release multiple objects	Tap once. Tap outside the object(s).
Start an application or open a folder.	Tap twice.
Move an object on the desktop.	- Function not available -
Open menu options.	Move cursor over icon or option and press thumb down on sensor for a few seconds.
Select multiple objects.	Drag cursor to create box around objects.

Configuring Your Speakers

Table 9. Configuring Your Speakers

STEP	ACTION	CONDITION OR INDICATION
1.	Double-click on the orange speaker icon in the task bar tray.	The Realtek® HD Audio Manager window opens with the **Speakers** main tab (top of page) open and the **Speaker Configuration** sub-tab displayed, as shown in Figure 25
2.	Adjust your speaker/headset volumes as desired.	
3.	Select the **Sound Effects** sub-tab to select special effects.	
4.	Select the **Default Format** sub-tab to choose your default sound format.	

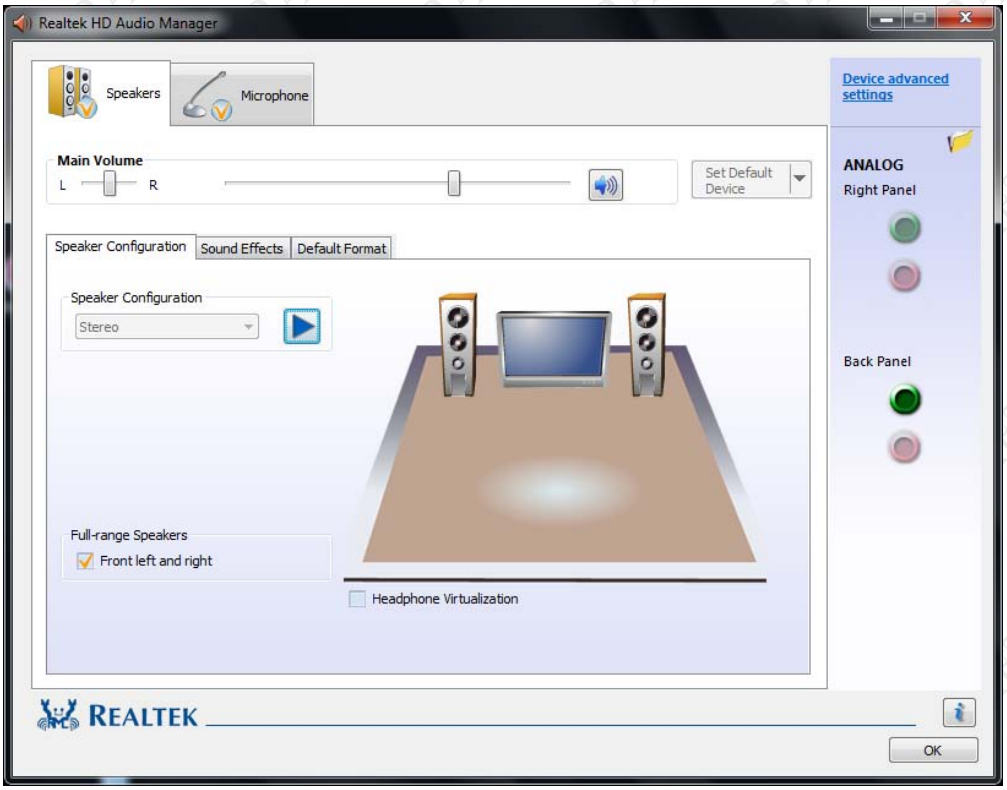

Figure 25. Realtek HD Audio Manager - Speakers Main Tab

Configuring Your Microphones

Table 10. Configuring Your Microphones

STEP	ACTION	CONDITION OR INDICATION
1.	Click on the **Microphone** main tab at the top of the page.	The Microphone main tab opens with the **Microphone Effects** sub-tab displayed, as shown in Figure 26.
2.	Set up and adjust your microphones.	
3.	Click on the **Default Format** sub-tab to select a default sound format for your microphones.	

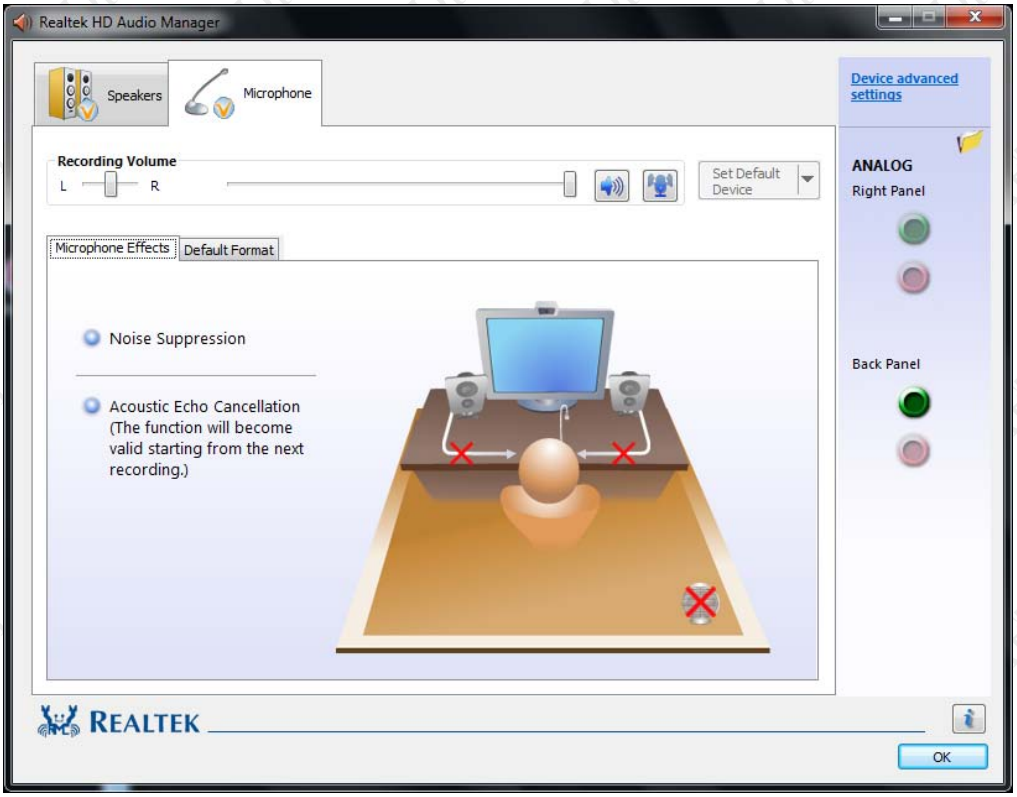

Figure 26. Microphone Main Tab

Operating with the ARMOR X7 Vehicle Dock

X7 RF and Non-RF Vehicle Docks

Two versions of the X7 vehicle dock are available: the RF version and the Non-RF version. The RF version has two coaxial cables attached to the docking connector to route the WWAN radio and GPS receiver antenna connections to external antennas mounted in a vehicle. The Non-RF version does not have the coaxial cables.

Both have an automatic power switching feature that turns off power to the X7 docking connector when the X7 is undocked and turns it back on when the tablet is docked.

Automatic Power Switching Feature

In earlier X10 series tablets, the 5 VDC power pins in the docking connector were always active to ensure power to the docking stations. Both the RF and Non-RF docks have a “dock sense” pin that tells the X7 when it is docked. This allows the X7 to turn off power to the docking connector pins when the tablet is undocked, and turn power back on when it is docked.

Using the X7 Vehicle Dock

Place the X7 in the docking cradle and press down on the top latch until it locks. To remove the X7, press on the latch locking mechanism until the latch snaps up.

If you have the RF version of the dock, you will be able to connect your X7 tablet to external WWAN and GPS antennas, which will dramatically improve reception. These antennas are automatically switched into the tablet antenna circuits by an RF multiplexer when the tablet is docked and switched out when it is undocked.

Either one or both antennas can be enabled using the Wireless Devices dialog in ARMORutils (Figure 27). Follow the instructions in Table 11 to configure the external antennas.

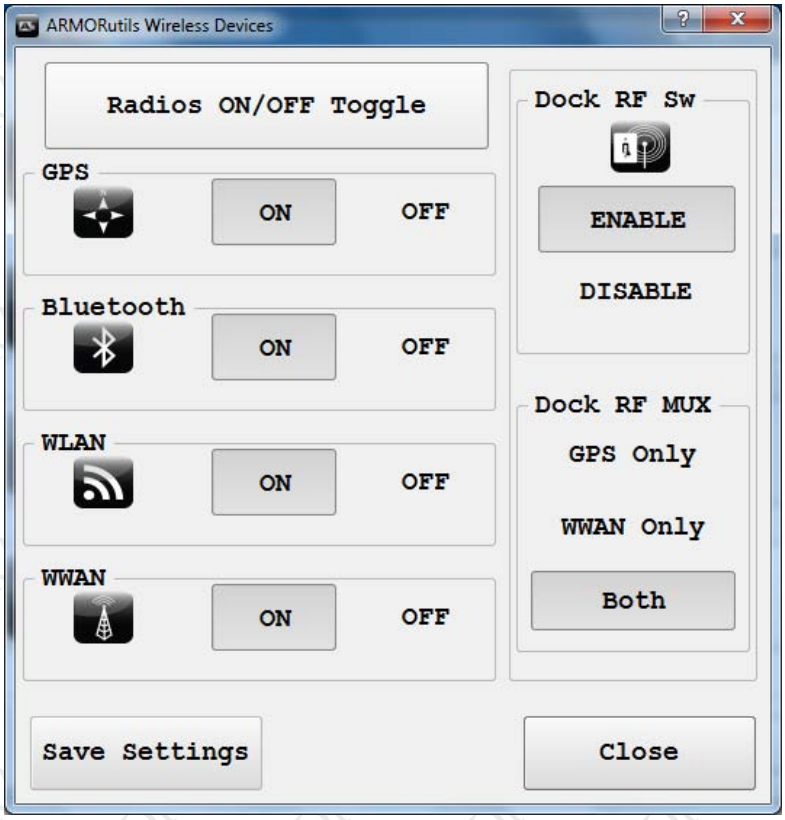

Figure 27. External Antenna Selection Options in ARMORutils

Table 11. Configuring the External Antennas

STEP	ACTION	CONDITION OR INDICATION
1.	In the **Dock RF MUX** panel, select **GPS Only**, **WWAN Only** or **Both**	When the tablet is docked, only the antennas that are selected will be utilized.
2.	Press the **Docking RF Sw Enable** or **Disable** button to enable or disable the antenna configuration that is selected in the **Dock RF Mux** panel.	

NOTE

If you have an X7 RF dock installed but are <u>not</u> using external antennas, you must set the Dock RF Sw to "Disable" in order to use the tablet's internal antennas.

The X7 Non-RF Dock

The Non-RF dock (DRS P/N 9800F26200-1000) has all the features of the RF dock but without the external antenna connections.

NOTE

If you have an X7 Non-RF dock installed, you must set the Dock RF Sw to "Disable" in order to use the tablet's internal antennas.

Using the Webcam

Capturing Images and Video

Image and video capture is performed using the built-in webcam and image capture software. Your X7 is provided with a version of Picasa 3™ image editor to demonstrate the image capture process.

Follow the procedure in Table 12 to capture and save a still image or movie using this software.

NOTE

Remove the blue protective film from the webcam lens before using the camera.

Table 12. Capturing a Still Image or Video

STEP	ACTION
1.	Double-click on the **Picasa 3 icon** on the desktop to open the Picasa application window, as shown in **Error! Reference source not found.**.
2.	Click on the "Capture photos or video…" button in the options bar. A Capture dialog window will open displaying the current webcam image.
3.	To capture the image as a **still image**, click on the **camera** button below the image. Each capture will appear as a thumbnail at the bottom of the window.
4.	When finished, click on the **Done** button to access editing and correction options or to save or upload your images.
5.	To capture moving video, click on the **Record** button below the image. The capture window will change to a viewer with options to view, save and upload your captured video.
6.	To return to the main window, click on the **Back to Library** button.
7.	Refer to the Picasa Help resources for detailed instructions.

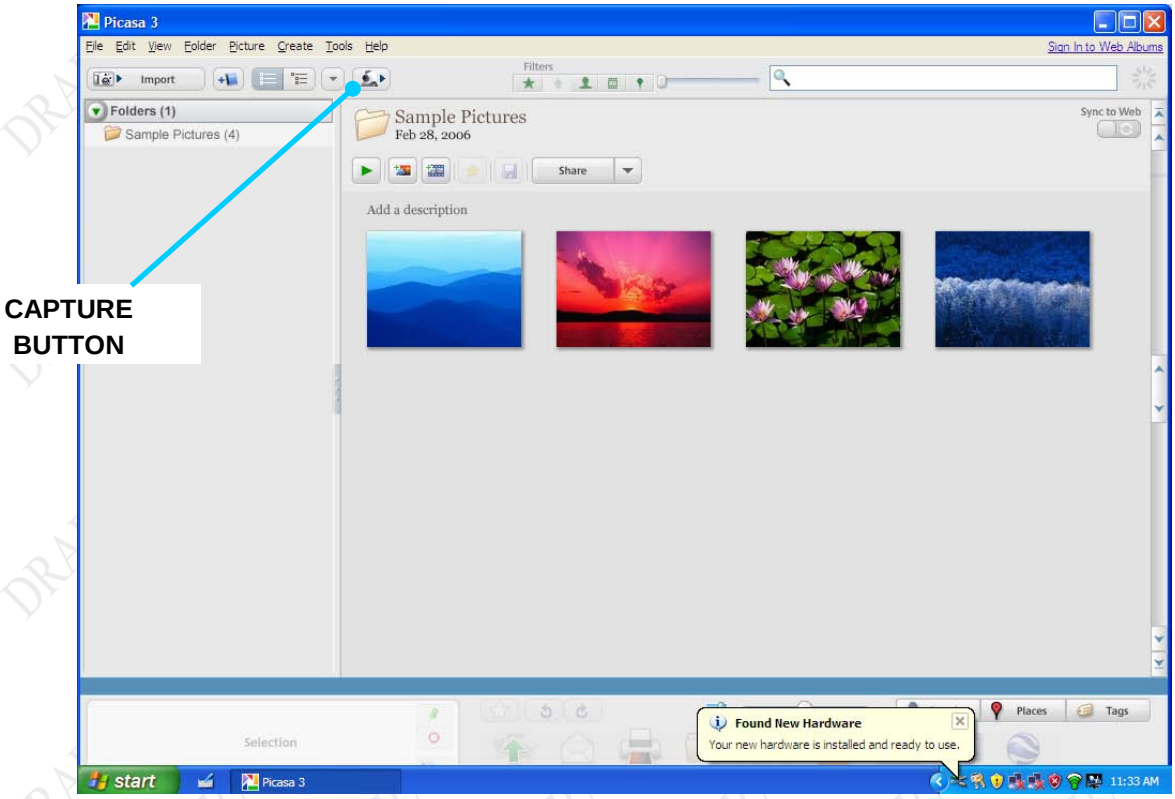

Figure 28. Picasa Application Window

Scanning a Barcode

The built-in webcam and application software of your choice allows you to scan various types of barcodes and incorporate them in to your documents. We have included two simple applications to demonstrate the barcode scanning capabilities of the X7.

NOTE

Ensure that adequate light can reach the barcode to be scanned.

Linear Barcodes Such as UPC-10, EAN-13 and ISBN

Figure 29 shows a sample of a linear barcode. Follow the procedure in **Error! Reference source not found.** to scan a linear barcode.

Figure 29. Sample Linear Barcode

Table 13. Scan UPC-10, EAN-13 and ISBN Barcodes in Windows 7

STEP	ACTION
1.	Double-click on the **Webcam Barcode Scanner** icon on the desktop to open the application window, as shown in Figure 30.
2.	Hold the barcode to be scanned 2-3" from the camera and hold it steady. A tone will announce successful barcode capture, and the barcode number will appear at the bottom of the window. The captured barcode is stored in the Windows clipboard.
3.	To use a barcode in an application, open the application, place the cursor in a field and paste.

Figure 30. Webcam Barcode Scanner® Barcode Scanner Application Window

2D Barcodes in Datamatrix or QR format

A sample 2D barcode is shown in Figure 31. Follow the procedure in **Error! Reference source not found.** to scan a 2D barcode.

Figure 31. Sample 2D Barcode

Table 14. Scan Datamatrix and QR Format Barcodes in Windows 7

STEP	ACTION
1.	Double-click on the **QuickMark** icon on the desktop to open the QuickMark® application window, as shown in Figure 32.
2.	Hold the barcode to be scanned 2-3" from the camera; an audible signal will sound upon capture and the barcode information will be displayed in the application window, as shown in Figure 33.
3.	To return to the camera mode, click door icon at the lower right corner of the window.

Figure 32. QuickMark® Barcode Scanner Application Window

Figure 33. A Captured 2D Barcode

Using the Screen Magnifier

Some text and images on a tablet computer can be so small they are difficult to see clearly. Your X7 has a handy application that will magnify a portion of the screen and help you see more effectively. The program is called Virtual Magnifying Glass™.

- To start the application, click on the **Virtual Magnifying Glass icon** on the desktop or select **Start > Programs > Virtual Magnifying Glass.**
- Use the Scroll wheel to increase or decrease magnification. The application will return to the last magnification when restarted. Left click to close the magnifier.
- To configure the magnifier, right-click on the icon in the task bar.
- A magnified example is shown in Figure 34.

Figure 34. Virtual Magnifying Glass at Work

Tips for Proper Use and Care Of Your X7

There are certain precautions you should take to ensure that your ARMOR X7 computer continues to provide you with reliable service:

- Do not subject the computer to heat by placing it on the dashboard of a vehicle with the display facing the sun.
- Do not store the computer in temperatures below -40 degrees C.
- Do not pile tools or heavy objects on top of the computer.
- Avoid severe impacts, especially to the display.
- Do not try to take the computer apart. Disassembly of the unit by unauthorized personnel may void your warranty.
- Do not use excessive force when inserting PCMCIA cards. They are keyed to go in only one way and inserting the card incorrectly or using excessive force could result in damage to the cards or the computer.
- Keep your screen clean and calibrated.

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4. NETWORKING

Your ARMOR X7 comes with Wi-Fi™ (wireless fidelity) network capabilities. The Wi-Fi network is primarily used for higher bandwidth connections such as Internet or a company LAN.

Managing the WI-FI Radio

Your WI-FI (WLAN) radio is already configured and operating. Refer to Table 15 for instructions on how to establish and manage your WLAN connections.

CAUTION!

Do not remove the rear compartment cover while the unit is powered up as internal voltages will be exposed to possible short circuit.

NOTE

The Windows Network and Sharing Center will show you all of your radios and the networks they are connected to. However, It's best to let the Sierra OneClick connection manager application control your WWAN network connection. For information, refer to Connecting to a WWAN.

Table 15. View and Manage Network Connections

STEP	ACTION	CONDITION OR INDICATION
1.	Select **Start → Control Panel → Network and Internet → Network and Sharing Center**.	The window shown in Figure 35 opens.
2.	Click on the "**Connect to a network**" link to open the window shown in Figure 36. Click outside this window to close it.	The label "Connected" will appear beside each network you are currently connected to. Any other available networks are also listed. The green signal bars indicate the relative strength of the wireless signal. A yellow shield indicates those sites that do not have security enabled. Use caution when connecting to these sites.
3.	To connect to a network, click on the network name and select **Connect**. To disconnect from an active network, click on the name and select **Disconnect**.	
4.	For more detailed information on the options and settings for these windows, click on the **Help** icon	

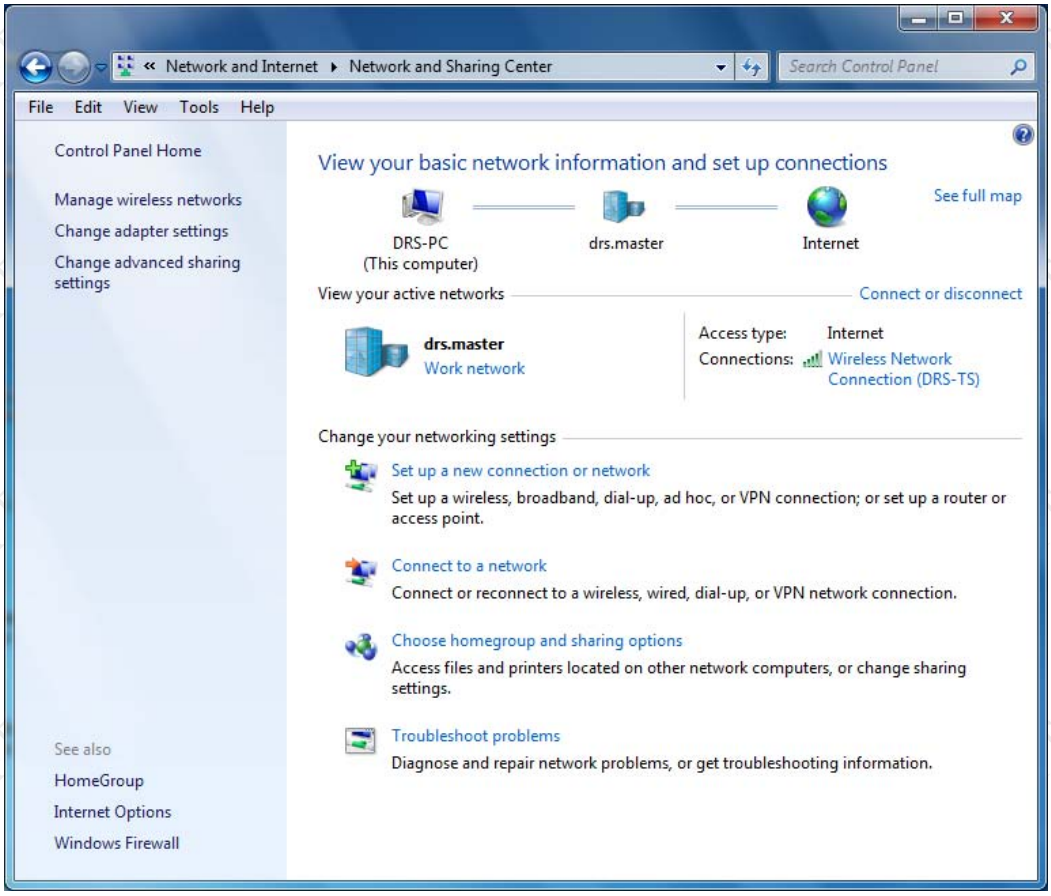


Figure 35. Windows Network and Sharing Center

Figure 36. Currently Connected and Available Wi-Fi Networks

Controlling Your Wireless Radios

You may want to turn off one or more of your radios to save power, to avoid interfering with other radio systems, or just to ensure your privacy. Or you may want to turn off all of your wireless radios at one time but keep working on your computer, as when travelling on an aircraft.

Click on the **ARMORutils icon** on the desktop and select the **Wireless Setup** option. This will open the Wireless Devices page, as shown in Figure 39.

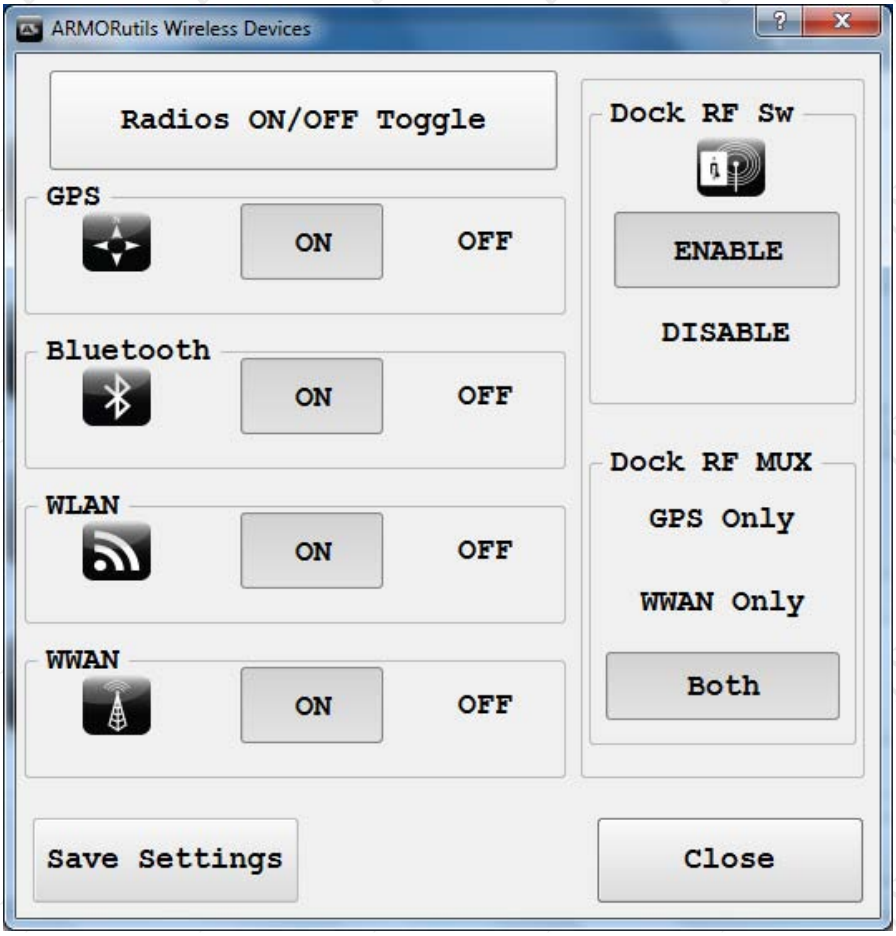


Figure 37. ARMORutils Wireless Devices Page

Click on the **ON** or **Off** button to enable or disable each individual radio that is installed, then click the **Save Settings** button to save your configuration. Click on the **Radios ON/OFF Toggle** button to turn off all enabled radios at one time. Click it again to turn them all back on.

For use of the **Dock RF Sw** and **Dock RF MUX** options, see

Managing the WWAN Radio

Installing the SIM Card

Before you can activate and use your WWAN radio, a valid SIM card from your network service provider needs to be installed. The SIM card is installed in a socket located inside the rear compartment, as shown in **Error! Reference source not found.**.

Follow the procedure in **Error! Reference source not found.** to access the rear compartment and install the SIM Card.

NOTE

This procedure should only be performed by a qualified technician in a controlled environment.

CAUTION!

Circuit boards containing electrostatic discharge (ESD) sensitive devices are exposed in this compartment. Static-free handling is required to prevent possible damage to the components.

Table 16. Installing a SIM Card

STEP	ACTION	CONDITION OR INDICATION
1.	Power down the computer and disconnect any external power.	
2.	Remove the batteries.	
3.	Place the computer face down on a clean surface and remove the 14 Philips screws securing the cooling register.	
4.	Carefully pry up the register at the slot provided (**Error! Reference source not found.**) and remove.	

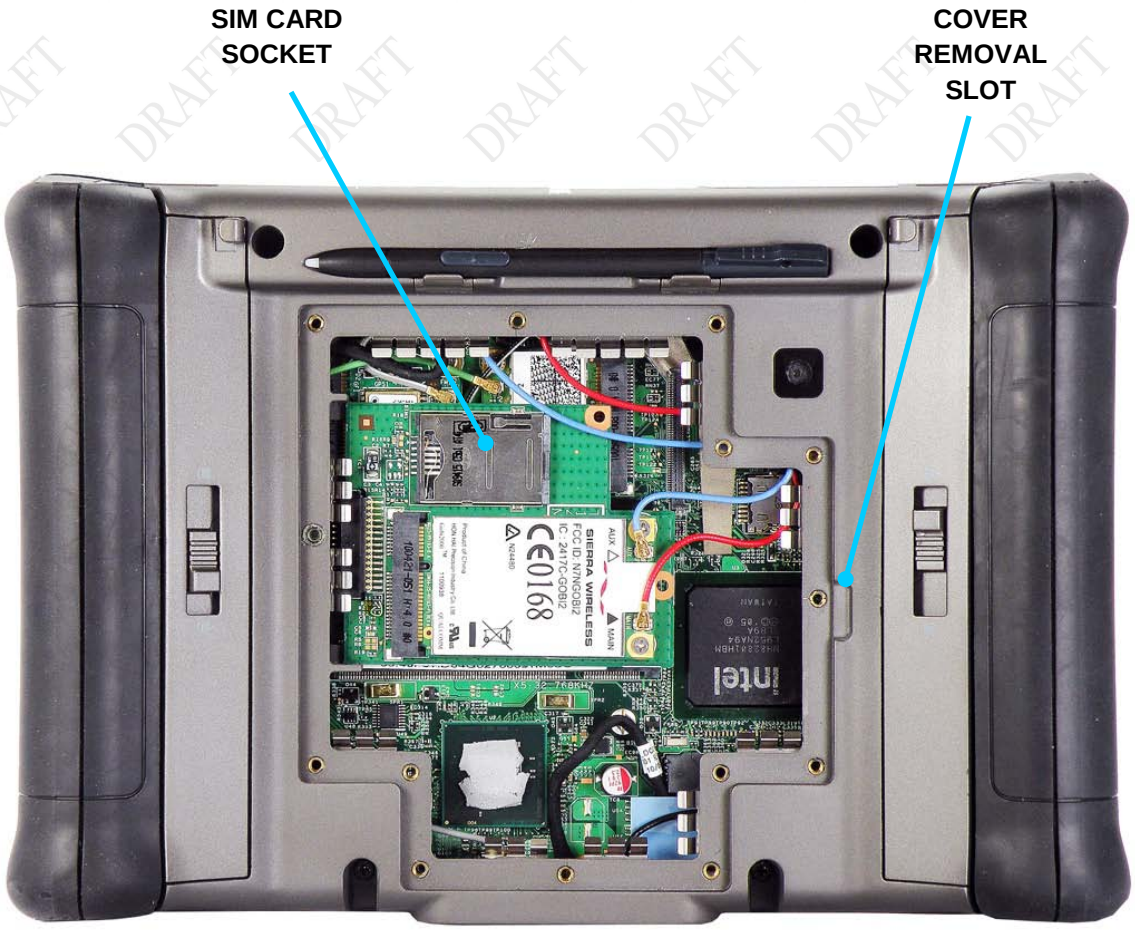
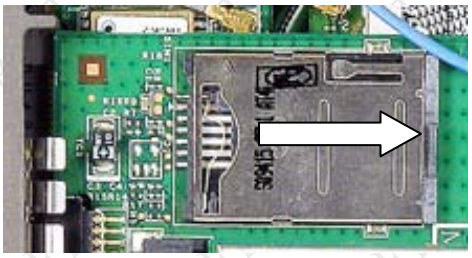
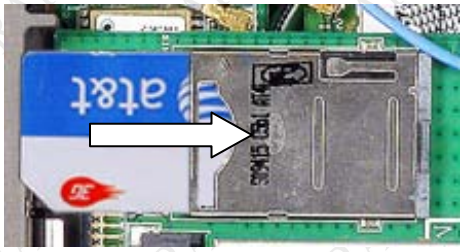
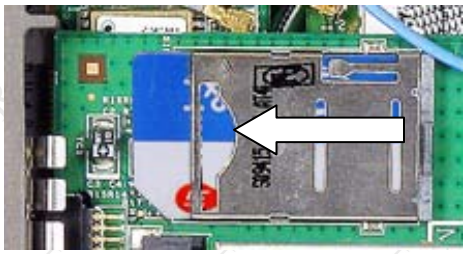


Figure 38. X7 Rear Compartment

STEP	ACTION	CONDITION OR INDICATION
5.	Place a fingertip in the notch on the left side of the SIM socket cover and slide the cover to the right until you feel an indent, then lift up.	
6.	Insert the SIM card with the corner notch at the lower left.	

7.	Gently press the cover down and slide to the left to lock in place.	
8.	Reinstall the cooling register and secure with the 14 Philips screws. Be careful not to over-tighten the screws.	

Connecting to a WWAN

Once your card is installed, you are ready to activate your network connection. Follow the procedure in **Error! Reference source not found.** to connect to a WWAN.

Table 17. Connecting to a WWAN

STEP	ACTION	CONDITION OR INDICATION
1.	Select **Start → All Programs → OneClick Internet Connection Manager**	The Sierra® OneClick™ Internet Connection Manager window opens, as shown in Figure 41.
2.	Select **Settings** and then click on the **General** tab.	The Settings window opens, as shown in Figure 42.
3.	Select the **Gobi NDIS Auto Connect** option.	This option automatically controls launching the connection application, connecting to the network, reconnecting if you lose contact, and roaming.
4.	If you wish to be alerted when roaming, select the Roaming Alert option.	The connection is made and a list of connection statistics is displayed in the right panel.

NDIS Notes:

- NDIS turns the WWAN radio on even before the OS starts. This is not always a desirable state, so choose NDIS only if needed.
- Because NDIS enables the Gobi WWAN hardware to connect, reconnect and roam automatically, those selections are ignored if chosen in conjunction with NDIS.
- Auto Launch is not recommended for use with NDIS – it will launch the Connection Manager application upon reboot, restarting the connection.

Click on the Help button on the OneClick Internet main page for detailed information on operating and troubleshooting your WWAN connection.

Refer to **Managing Your Network Connections** in the ARMOR X7 User's Guide for instructions on how to monitor and control your other wireless and Ethernet connections.

Figure 39. Sierra OneClick Connection Manager Window

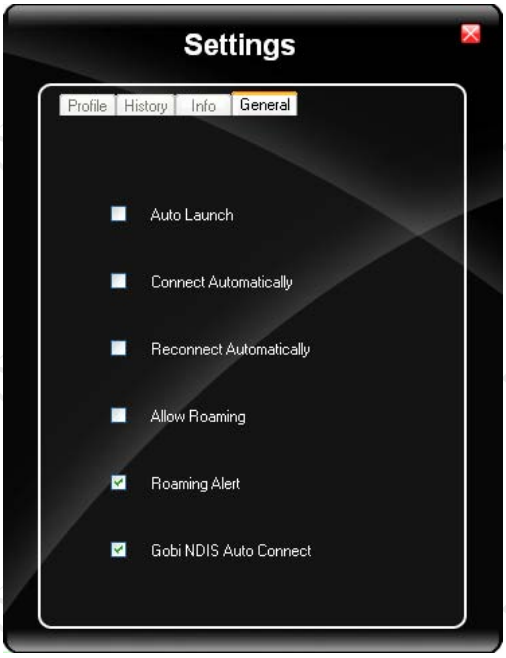


Figure 40. Settings Window

Wireless Signal Quality

Wireless signal quality is affected by several conditions:

- Distance from the access point (wireless transmit and receive antennas).
- Access rights (set up through an administrator).
- Your security settings.
- Orientation of the wireless antennas.

If you are having difficulty connecting to your network, try the following steps:

1. Open the Wireless Devices page in ARMORutils and verify that the radio is enabled.
2. If your tablet is not locked in a vehicle mount, try turning the unit in various directions to improve signal quality.
3. Try to get closer to the access point.
4. Move away from obstacles such as trees and metal objects which may be between you and the Access Point.
5. Verify that the access point is operating.

   If none of these actions solves the problem, contact your Network Administrator for assistance.

5. YOUR ARMOR X7 SOFTWARE

Your ARMOR X7 comes with a variety of software and utility applications. Many of these are standard with the Windows 7 operating system, some are provided by DRS to improve your configuration and control of the computer and some may be custom software provided for your special requirements.

The following paragraphs provide you with an introduction to those software applications that you will need to properly configure and begin using your X10 computer.

Getting Started with Windows 7

Click on **Start → Getting Started** to open the Windows welcome page (Figure 43) and access a number of helpful links and resources.

Figure 41. Windows 7 Welcome Page

Help for Windows

For information on using Microsoft Windows features and options, refer to the Microsoft help files and documentation on the X7 computer by clicking on the **Start** button and selecting the **Help and Support** option.

ARMORutils Program

The ARMORutils program is provided to help you configure and manage your X7 computer. It contains settings and information about screen setup, wireless configuration, charging/fault and much more.

NOTE

The screen images in this section are used for reference only and may not reflect the actual configuration of your X7.

To open the ARMORutils main page, click on the **ARMORutils icon** on the desktop.

ARMORutils Main Dialog Window

The ARMORutils main window is shown in Figure 44. Seven buttons provide access to setup and configuration or information dialog windows. Click on a button to access one of these dialog windows.

Figure 42. ARMORutils Main Window

Backlight Setup Dialog Window

The Backlight Setup page (Figure 45) allows you to adjust the screen brightness manually or to select from a series of preset profiles to automatically restrict the brightness range under specific lighting conditions.

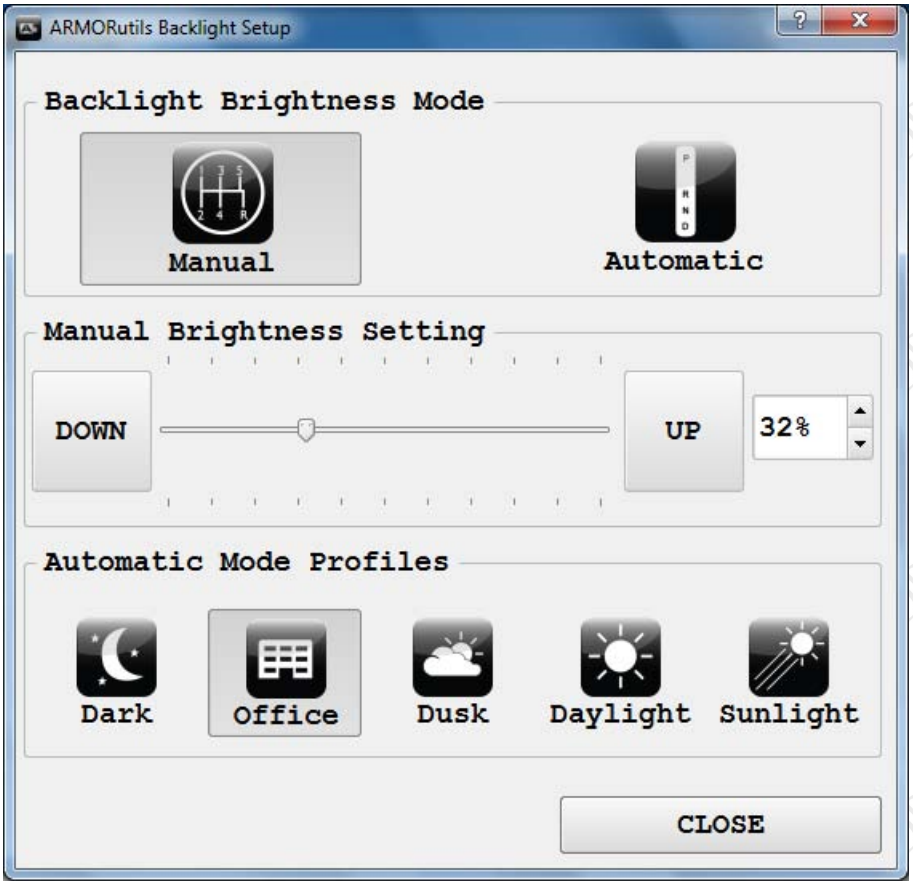


Figure 43. ARMORutils Backlight Setup Page

Manual Adjustment

The **Manual** button is initially activated by default. Drag the slider in the User-Selected Brightness panel to manually adjust the screen brightness from 0% to 100%. You can also click on the **DOWN** and **UP** buttons repeatedly to change the brightness in steps. The current brightness level is displayed numerically in the window to the right.

Automatic Adjustment

Click on the **Automatic** button to activate the automatic brightness control mode. Automatic brightness adjustment is controlled by the ambient light sensor (ALS) located on the front of the X7 tablet. This sensor monitors the surrounding light level and automatically adjusts the screen brightness according the adjustment profile selected.

Automatic Mode Profiles

Everyone's eyes react differently to changes in light levels and there may be times when the full range of automatic brightness adjustment is uncomfortable for you.

You can tailor the automatic brightness adjustment by selecting one of the 5 pre-configured brightness profiles: Dark, Office, Dusk, Daylight, and Sunlight. These profiles control the range of brightness levels to values based on typical surroundings or times of day.

For example, if you typically work in an office environment but the automatic brightness doesn't make the display bright enough for you, you can select the Dusk, Daylight or Sunlight profile to increase the brightness range proportionally. Similarly, if the normal brightness control results in displays that are too bright, you can select the Office or Dark profile to reduce the brightness range.

Switching Between Brightness Modes

If you are in Manual mode and you click on one of the automatic profile settings, the brightness mode will switch to Automatic mode. Conversely, if you are in Automatic mode and click on the Manual mode **UP** or **DOWN** button, or one of the up/down arrows, the brightness mode will switch to Manual mode.

Wireless Devices Dialog Window

The Wireless Devices page allows you to enable or disable all of the installed wireless devices in your ARMOR X7.

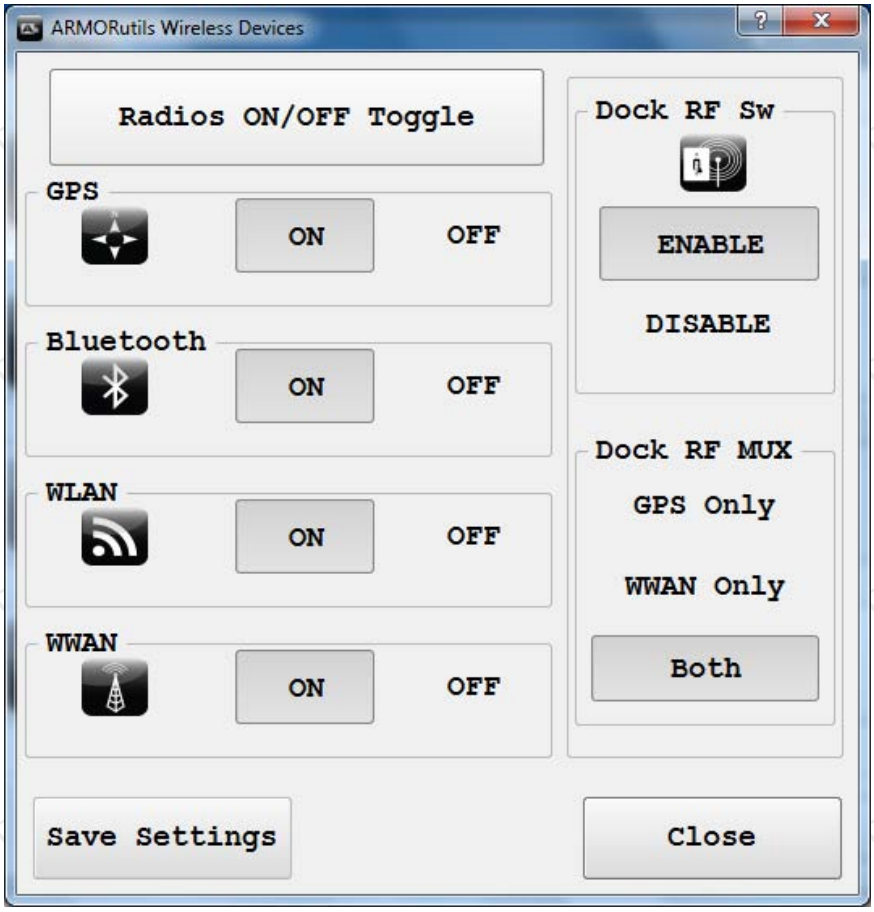


Figure 44. ARMORutils Wireless Devices Page

Radio ON/OFF Buttons

There is an **ON** and **Off** button for each radio that can be installed in the X7. When you first start your ARMOR X7, all installed radios are enabled (default condition). Each radio can then be disabled by pressing its **OFF** button and re-enabled by pressing its **ON** button.

Docking RF Switch Button

There are RF docking connectors on the X7 dock for an external wireless antenna and an external GPS antenna. These connectors route external antennas (if installed) through the dock to the X7. Pressing the **Docking RF Sw ON/Off** button enables or disables the antenna configuration that is selected in the Dock RF Mux panel. The initial default option is “Enable”.

Dock RF MUX Options

These options allow you to select which external antennas will be used by the X7. You can select GPS only, WWAN only, or both antennas. If only one external antenna is selected, the other radio will operate on its internal antenna. The initial default option is “Both”.Save Settings Button.

Regardless of how you configure your radios and the Dock RF Switch during your session, they will return to their default settings the next time you restart the computer unless you save your settings using the **Save Settings** button.

Once you configure each radio and the RF switch to suit the way you normally use them (ON or OFF), you can press the **Save Settings** button to save the current configuration as your new default settings.

Save Settings Button

Regardless of how you configure your radios and the Dock RF Switch during your session, they will return to their default settings the next time you restart the computer unless you save your settings using the **Save Settings** button.

Once you configure each radio and the RF switch to suit the way you normally use them (**ON** or **OFF**), you can press the **Save Settings** button to save the current configuration as your new default settings.

Radios ON/OFF Toggle Button

Click on the **Radios ON/OFF** button to turn off or turn on all radios currently enabled. This is particularly handy if you’re on a commercial aircraft and you want to continue working with the computer without interfering with the aircraft electronic systems.

When you arrive at your destination, just click on the **All Radios ON/OFF** button again to turn on the radios you previously had enabled.

Programmable Button Settings Dialog

This page is shown in Figure 47. It allows you to preset up to 6 different functions using the three programmable buttons **P1–P3** on the tablet control panel.

You can configure and activate an additional function for P1-P3 by pressing and releasing the **Fn** button and then pressing and releasing one of the programmable buttons (**Fn+P1, P2, P3**). This provides a total of 6 preset functions that can be activated from the control panel.

The currently programmed function is shown in the field next to the button or button combination. Click on the down arrows to select a function. The available functions are shown in Figure 48.

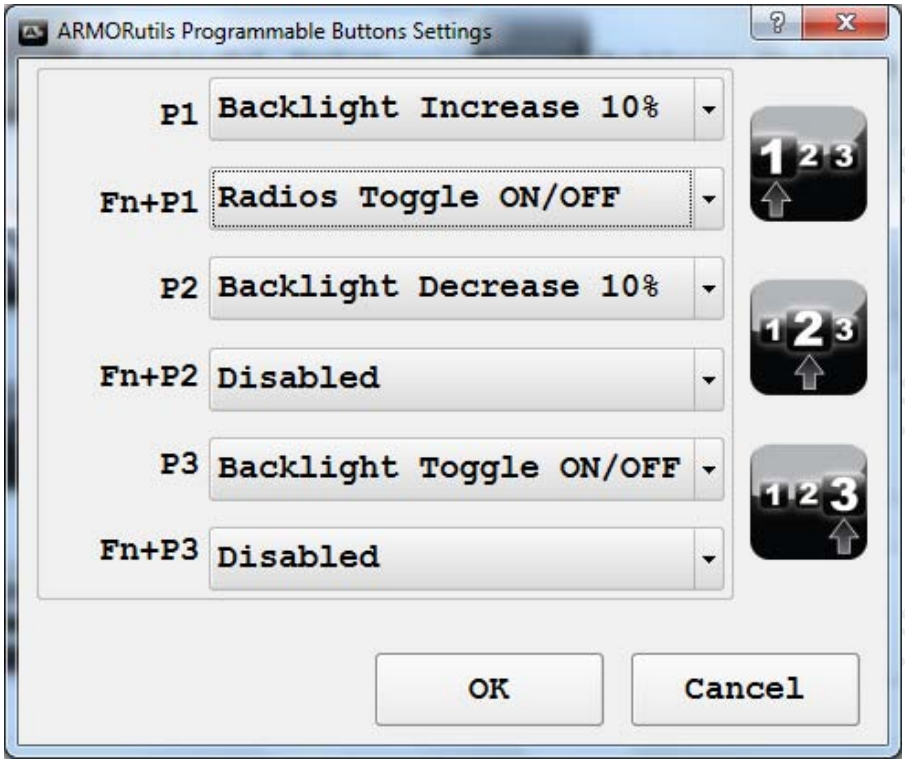


Figure 45. ARMORutils Programmable Button Settings Page

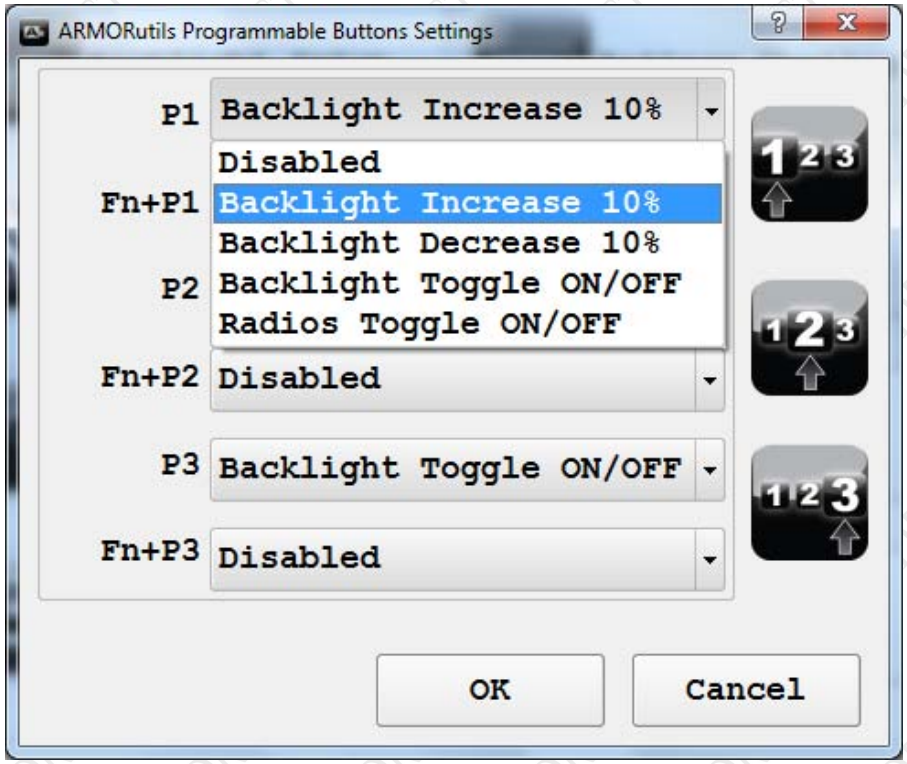


Figure 46. ARMORutils Programmable Button Settings Page Menu Options

Additional Capabilities

P1, P2 and P3 generate scan codes for F13, F14 and F15. Pressing the Fn button and then P1, P2 or P3 generates scan codes for Shift+F13, Shift+F14 and Shift+F15. These button presses or button combinations can be re-mapped to do such tasks as start an application, switch applications or perform other functions dictated by the application software.

To control applications, you will need to search online for freeware programs to re-map the programmable buttons. An example is www.autohotkey.com.

Configuration Dialog Window

Installed Options

The Configuration Page provides visual confirmation of those wireless radio and display options that are installed in your X7. For those options that are installed and available, the associated icons and text will appear in dark contrast. If an option is not installed or available, the icon and text will be grayed out.

Figure 47. ARMORutils Configuration Page

System Information

Important system information is provided in the bottom panel.

Battery Monitor Dialog Window

The Battery Monitor window is shown in Figure 50. This window provides information about:

- Each battery's current charge level
- Whether or not the battery is charging or discharging
- Its estimated remaining operating time
- The estimated time to reach the next charge level
- The estimated time to reach a full charge.

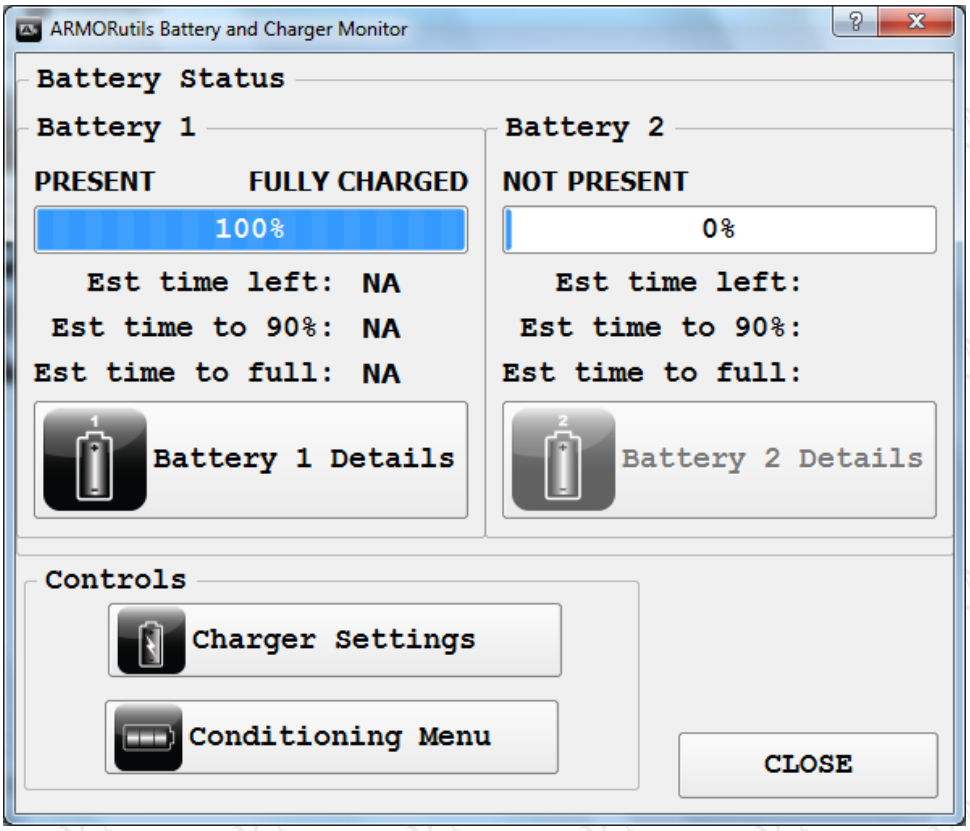


Figure 48. ARMORutils Battery Monitor Dialog

Battery 1 and 2 Information Buttons

Click on the Battery 1 Details or Battery 2 Details button (Figure 50) to open a Battery Information window (example shown in Figure 51). Readings such as percentage of charge, present capacity, remaining capacity and charge cycle count are updated in real time on this page.

If the battery needs conditioning, a message will appear at the bottom of the page indicating that a conditioning is necessary.

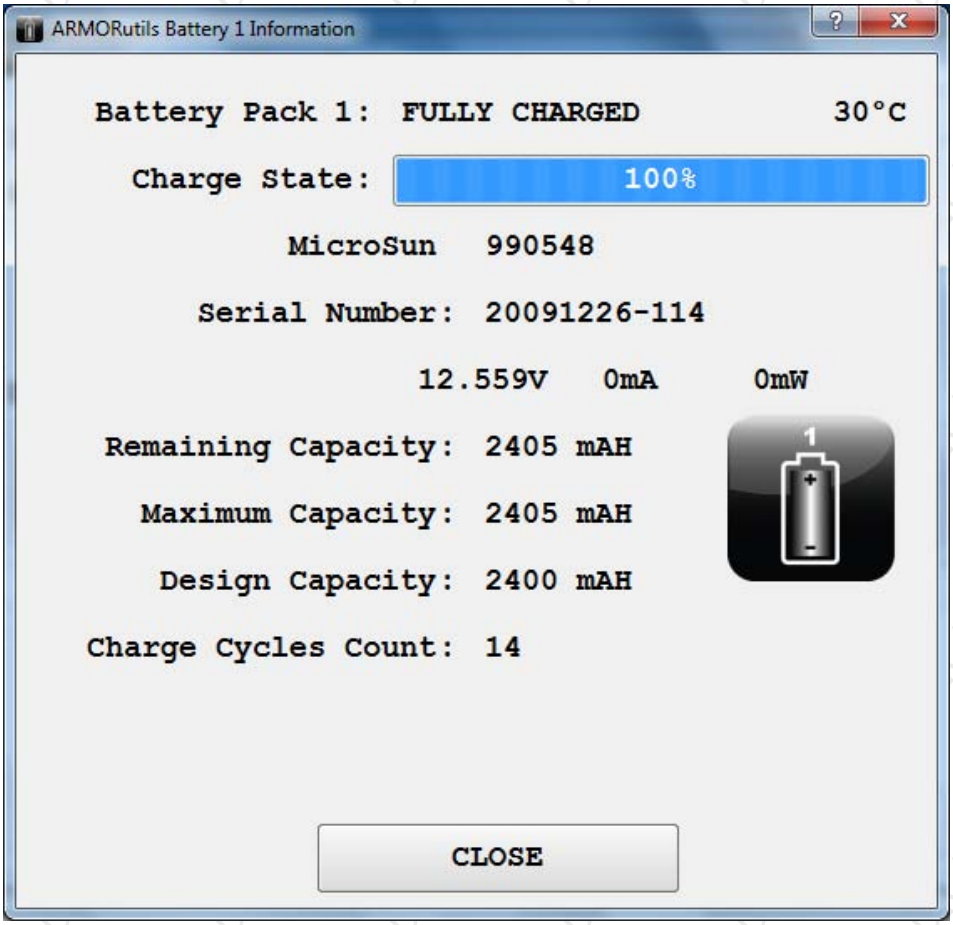


Figure 49. ARMORutils Battery Information Window

Charger Settings Button

Click on the **Charger Settings** button (Figure 50**Error! Reference source not found.**) to open the **Charger Control Settings** window, as shown in Figure 52.

From this window, you can decide what charging policy the system will use when two batteries are installed. Click on **Charge Both** to charge both batteries at the same time or **Charge Lowest First** to charge the battery with the lowest charge first. The default setting is "Charge both".

Click on **OK** to save the new setting. Select **CANCEL** to return to the previous setting.

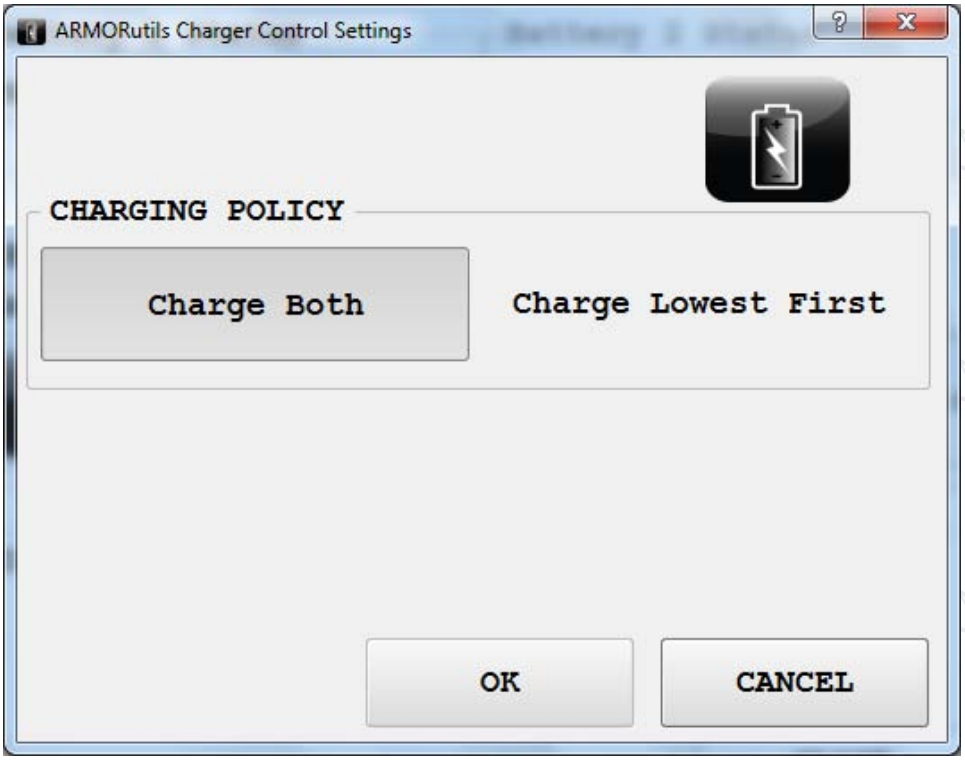


Figure 50. ARMORutils Charger Control Settings Window

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Screen Mode Setup Dialog Window

This window is currently not available.

Diagnostics Dialog Window

The Diagnostics dialog window provides internal temperature information that can be used by DRS to diagnose possible system problems. It displays three internal temperatures of the processor and one for each battery, as shown in Figure 53. These temperatures vary widely depending on the operation of the tablet and may not necessarily correlate with outside (ambient) temperatures.

If you suspect a temperature related problem, contact DRS Technical Support for assistance in troubleshooting and resolving the problem.

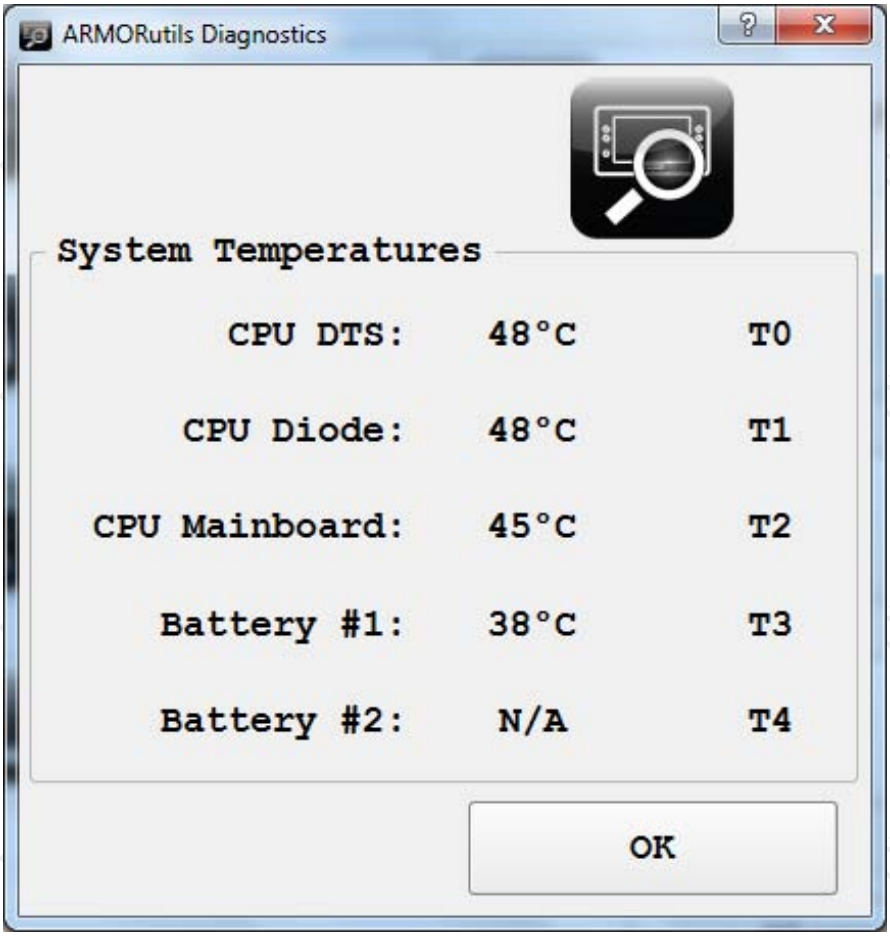


Figure 51. ARMORutils Diagnostics Dialog

ARMORutils About Window

The About window (Figure 54) displays the current version and release date of the ARMORutils software. It also provides a contact telephone number for the DRS Tactical Systems Technical Support call center and the internet address to the ARMOR website where you can log on to access support information.

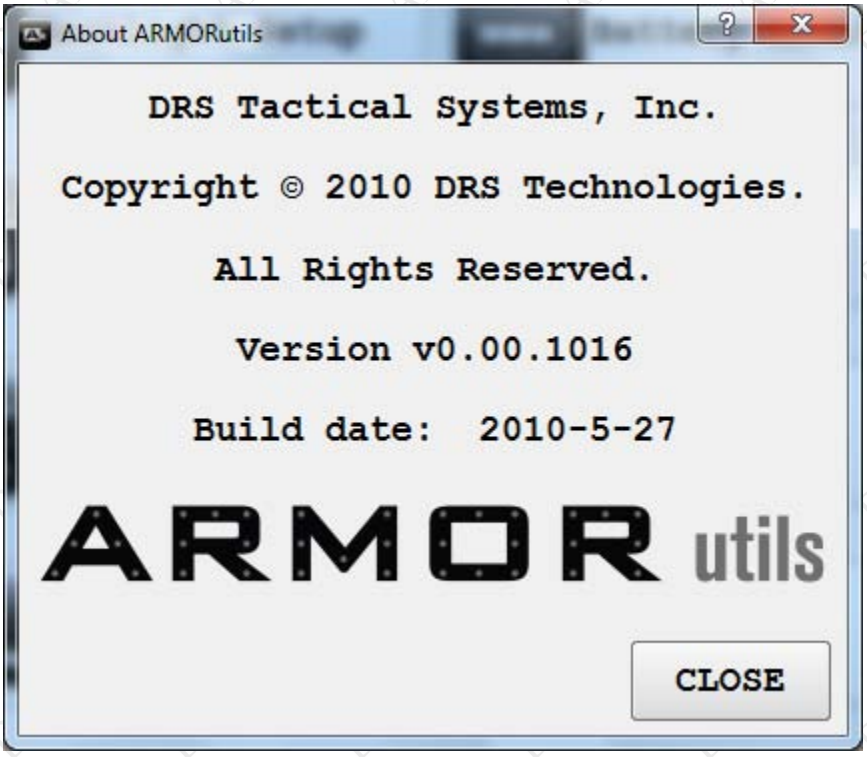


Figure 52. ARMORutils About Window

Pen and Touch Utility

The Pen and Touch utility is a Windows utility that provides settings that effect how the pen works for both the active pen screen and the touch screen.

To open this utility, select **Start → Control Panel → Hardware and Sound → Pen and Touch**. The Pen and Touch utility opens, as shown in Figure 55.

Pen Options Tab

The Pen Options tab provides settings that are applicable to the pen screen only.

Pen Actions Panel

Highlight an action from the **Pen Actions** list and click on the **Settings** button (if active) to open a settings window, then select options or make adjustments.

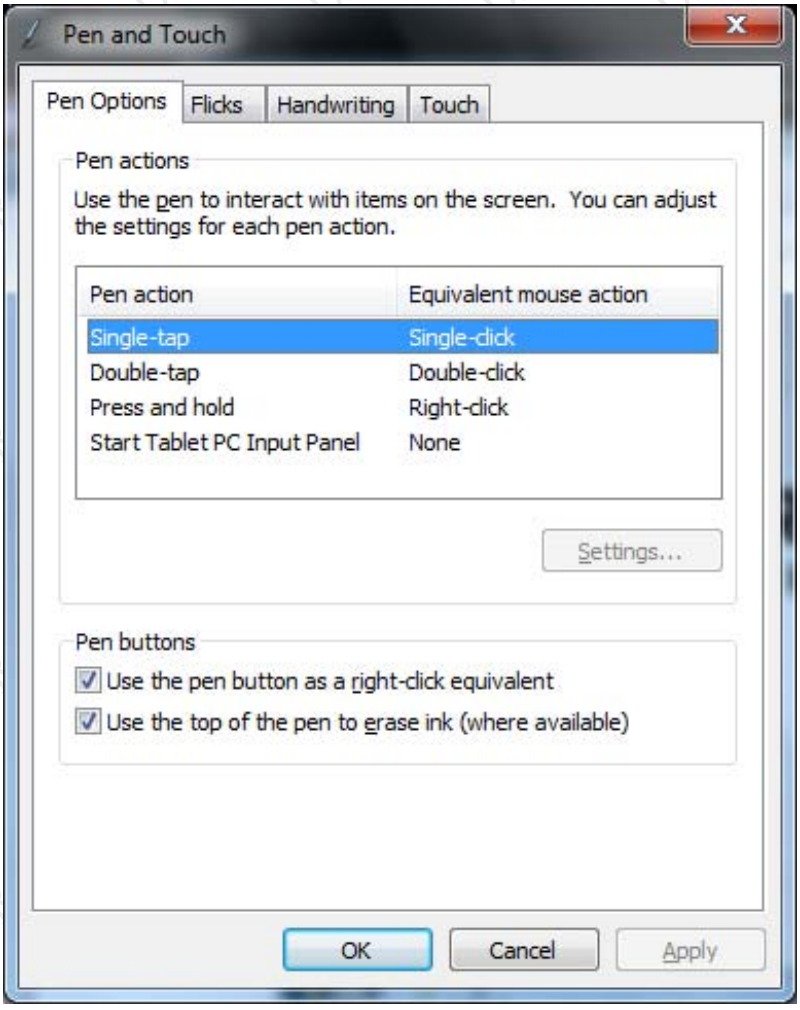


Figure 53. Pen and Touch Utility – Pen Options Tab

Pen Buttons Panel

Use the Pen button as a right-click equivalent option – This option is overridden by the pen button options in the **Pen tab** of the Pen Tablet Properties utility, regardless of whether it is checked or not.

Use the top of the pen to erase ink option – The erase function is not supported in the X7 from any utility option.

Flicks Tab

The Flicks tab provides settings that are applicable to both the pen and touch screens.

Flicks are short quick gestures either up, down, left or right that produce common actions such as scrolling through a document, dragging an object, or opening a folder. Click on the **Practice using flicks** link at the bottom of the window to access a tutorial.

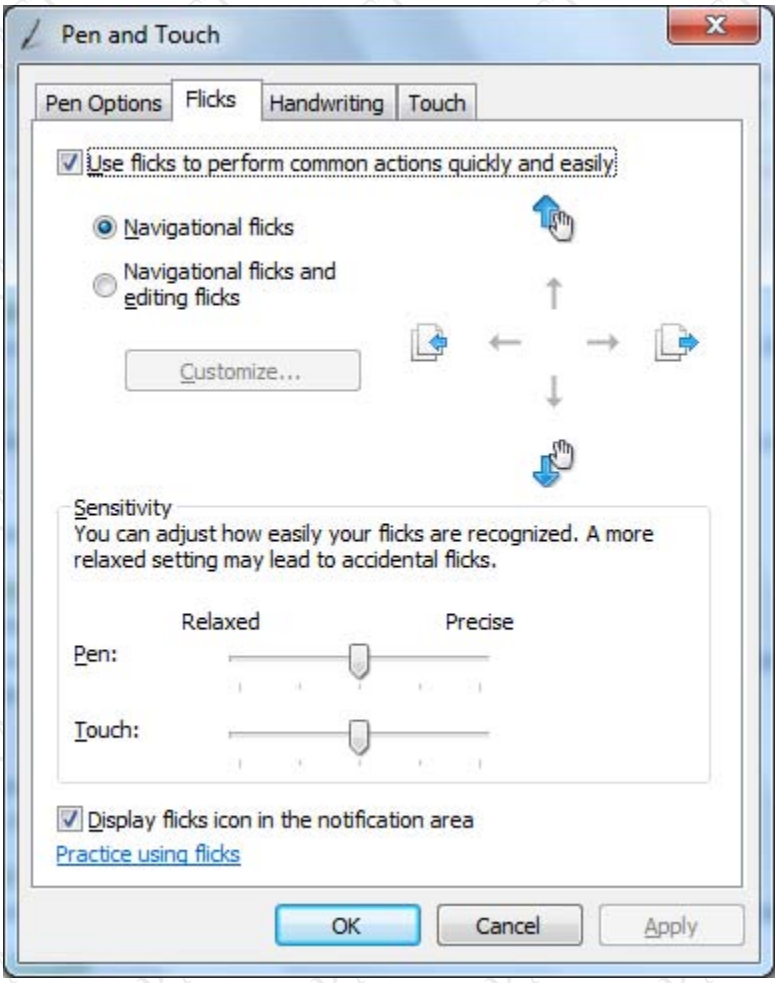


Figure 54. Pen and Touch Utility – Flicks Tab

Handwriting Tab

The Handwriting tab provides settings that are applicable to both the pen and touch screens.

The options on this tab allow you to enable or disable the automatic handwriting learning feature. Click on the "Learn about handwriting personalization link at the bottom of the window for information about automatic learning and how to train your tablet to recognize your personal handwriting style.

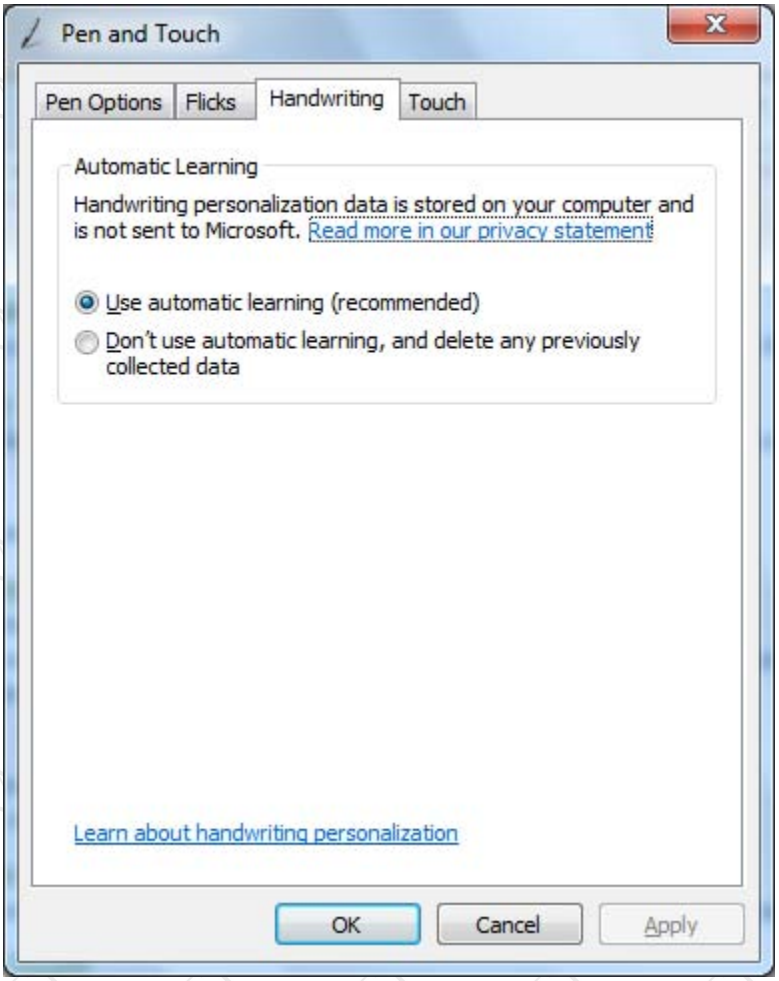


Figure 55. Pen and Touch Utility – Handwriting Tab

Touch Tab

The Touch tab provides settings that are applicable to the touch screen only. The options on this tab affect how the pen, or your finger, interacts with the touch screen.

NOTE

You must have the "Use your finger as an input device" option checked to use either your finger or the pen on the touch screen. If you are in Dual Mode, you can still use the active pen, but the touch screen will be disabled.

Check the **"Use your finger as an input device"** option to use either the pen or your finger with the touch screen.

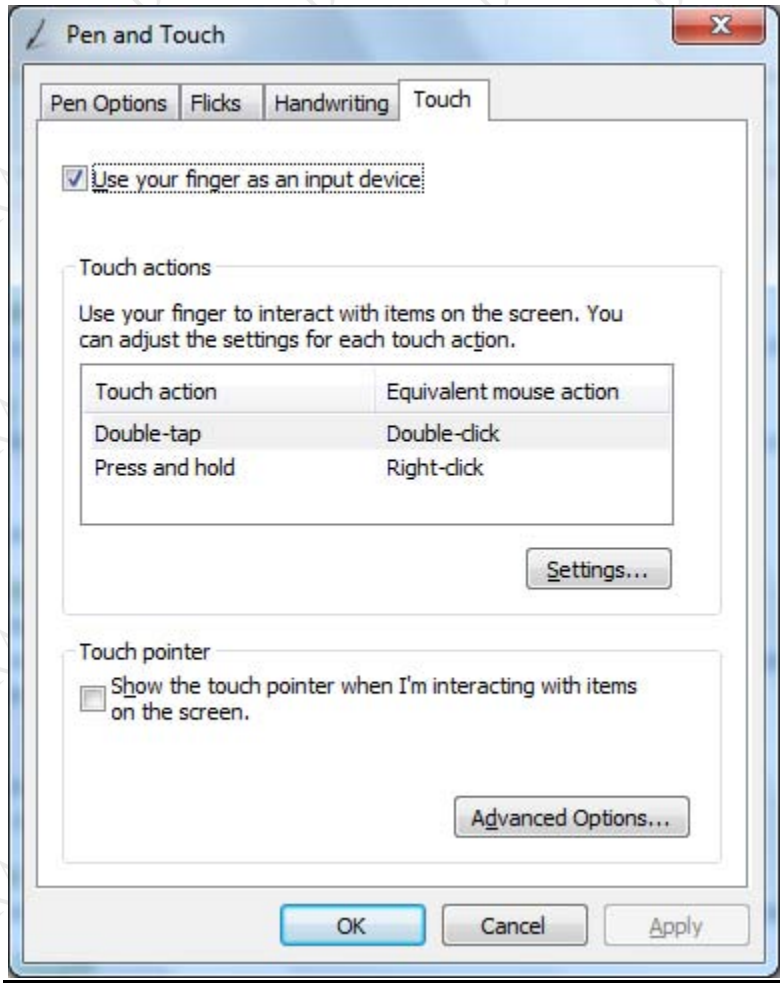


Figure 56. Pen and Touch Utility – Touch Tab

Touch Actions

Highlight a touch action and click on the **Settings** button to open an adjustment window.

Touch Pointer

Select this option to place a cursor at the touch point. A virtual mouse image will also appear next to the cursor, as shown in Figure 59 . You can then click on the left or right mouse button to produce the appropriate mouse action.

Click on the **Advanced Options** button to open a window where you can adjust the touch pointer position, appearance and behavior.

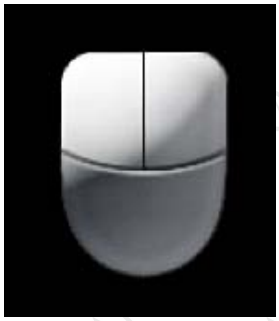


Figure 57. Touch Tab Virtual Mouse Pointer

Tablet PC Settings Utility

If you have a second display with a touch or pen screen, you can use this tab to calibrate or change the screen orientation.

Display Tab

Display Options

Click on the **Display options** down arrow and highlight the display you want to configure.

Configure

Click on the **Setup** button and choose **Pen input** or **Touch input**, depending on the type of display.

Use the **Calibrate** button to calibrate either a pen or touch screen. Click on **Reset** to remove the last calibration.

Go to Orientation

This option is not supported by the X7.

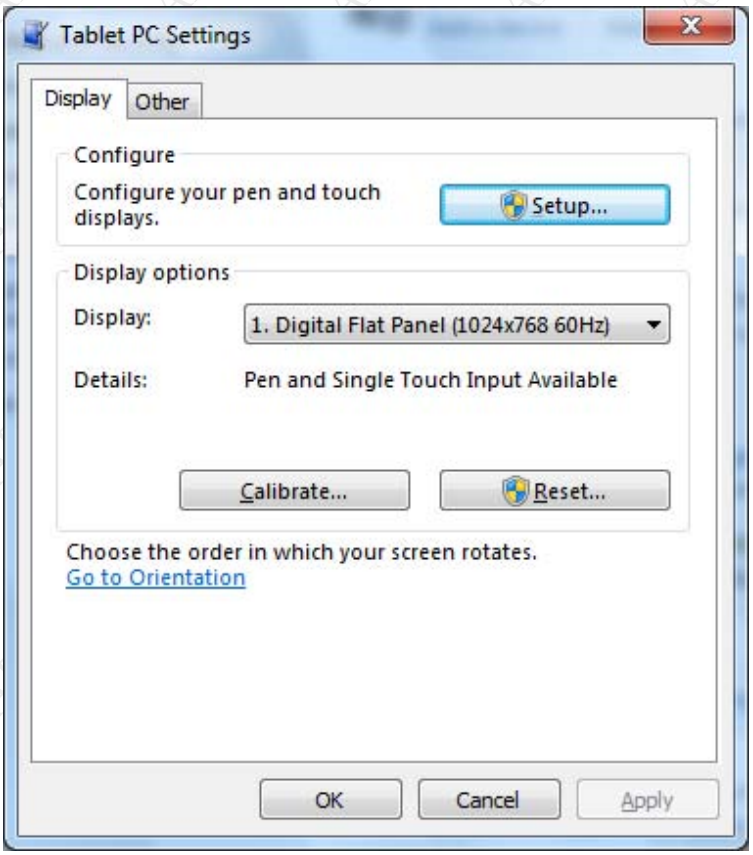


Figure 58. Tablet PC Settings – Display Tab

Other Tab

This tab allows you to change where an on-screen menu appear when you activate the pen or touch displays so that your hand does not block your view of the menu. For example, if you are left-handed, check the **Left-handed** option to have the menus appear to the right of the cursor.

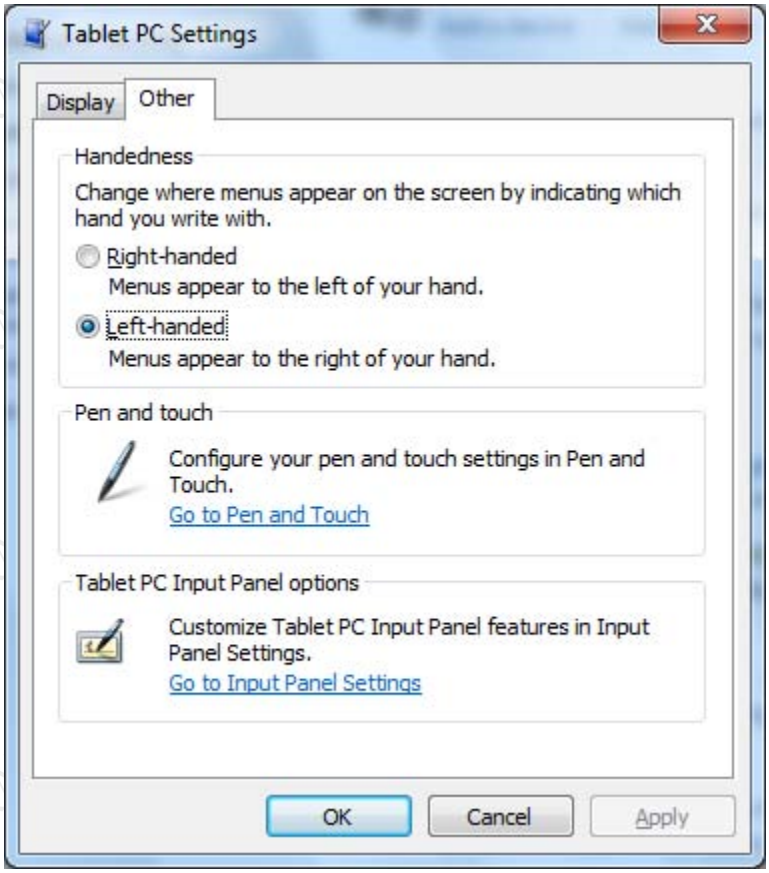


Figure 59. Tablet PC Settings Utility – Other Tab

Pen Tablet Properties Utility

The following paragraphs briefly describe the purpose and actions of the Pen Tablet Properties utility. To open the Pen Tablet Properties window, select **Start → Control Panel → Hardware and Sound** and click on the **Pen Tablet Properties** icon to open the Pen Tablet Properties window shown in Figure 62.

Pen Tab

The Pen tab is displayed by default when the Pen Tablet Properties window opens (Figure 62). The pen pictured in the tab is a WACOM™ pen that is normally used in advanced drawing tablets. Its functionality far exceeds what is practical for your X7 tablet. Consequently, we have provided a simpler active pen.

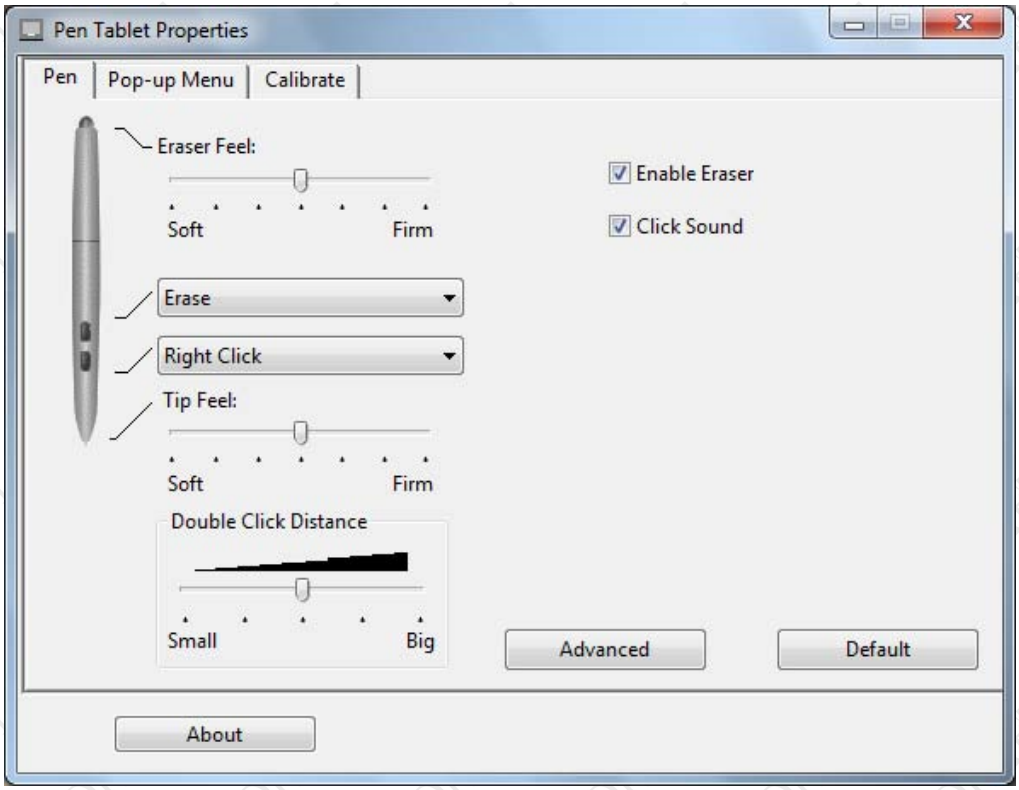


Figure 60. WACOM Pen Tablet Properties Window – Pen Tab

NOTE

The pen that comes with your ARMOR X7 has only one side button and no eraser function.

Supported Options

Figure 63 and Figure 64 highlight those functions and options that are supported by your ARMOR X7 active pen.

> **NOTE**
>
> ***Options not supported by the X7 pen are grayed out in Figure 63 and Figure 64 for illustration purposes only. They are not grayed out on the actual application screen image.***

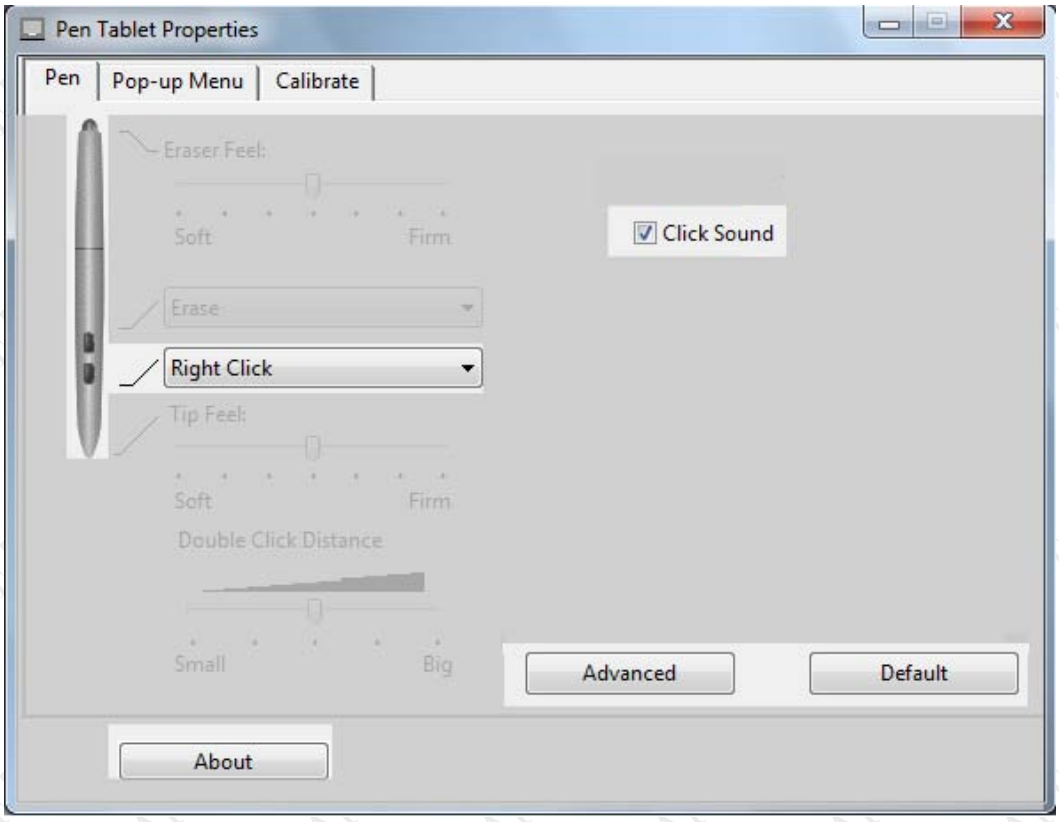


Figure 61. Settings and Options Supported by the ARMOR X7 Active Pen

Click Sound

Check the **Click Sound** option to enable a clicking sound when you perform an action with the pen.

Eraser

The X7 does not support the Erase function.

Side Button Menu Options

The side button can be set to perform different functions that are selected from the pull down menu shown in Figure 64. The default function is “Right Click”.

Only the lower button menu is used with the X7 pen. Refer to Explanation of Side Button Options in the **Appendix** for a description of each menu option.

NOTE

Some side switch settings may work differently in some software applications.

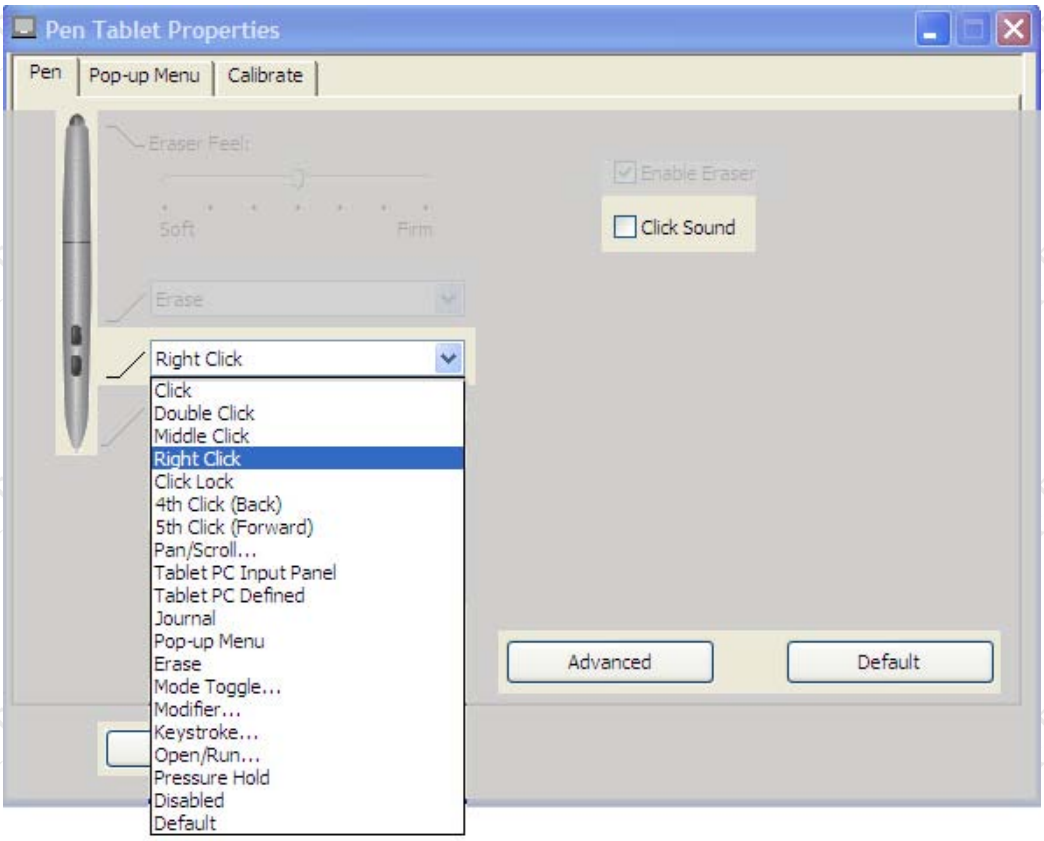


Figure 62. Side Button Menu Options

Default Button

Click on the **Default** button to return the **Pen tab** settings to their default values.

Advanced Button

Click on the **Advanced** button to open the Advanced Settings window, as shown in Figure 65. The two options in this window allow you to set the way the side switch will be used to perform a right click action. **Click & Tap** is the default action.

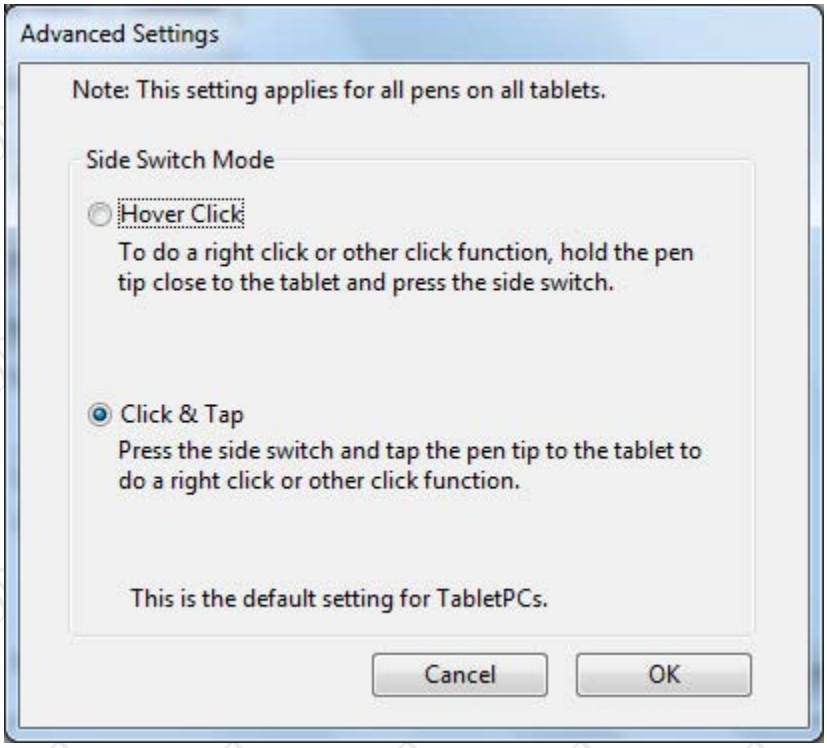


Figure 63. Pen Tablet Properties - Advanced Settings Window

Pop-up Menu Tab

The Pop-up Menu tab is shown in Figure 66. This tab allows you to add additional functionality to the side button. These functions will be displayed in a pop-up menu when the side button is pressed while in an application or working on the desktop. If only one function has been selected, only that function will be available.

NOTE

To use the functions set in the pop-up menu, you must select the "Pop-up Menu" option from the side button menu in the Pen tab.

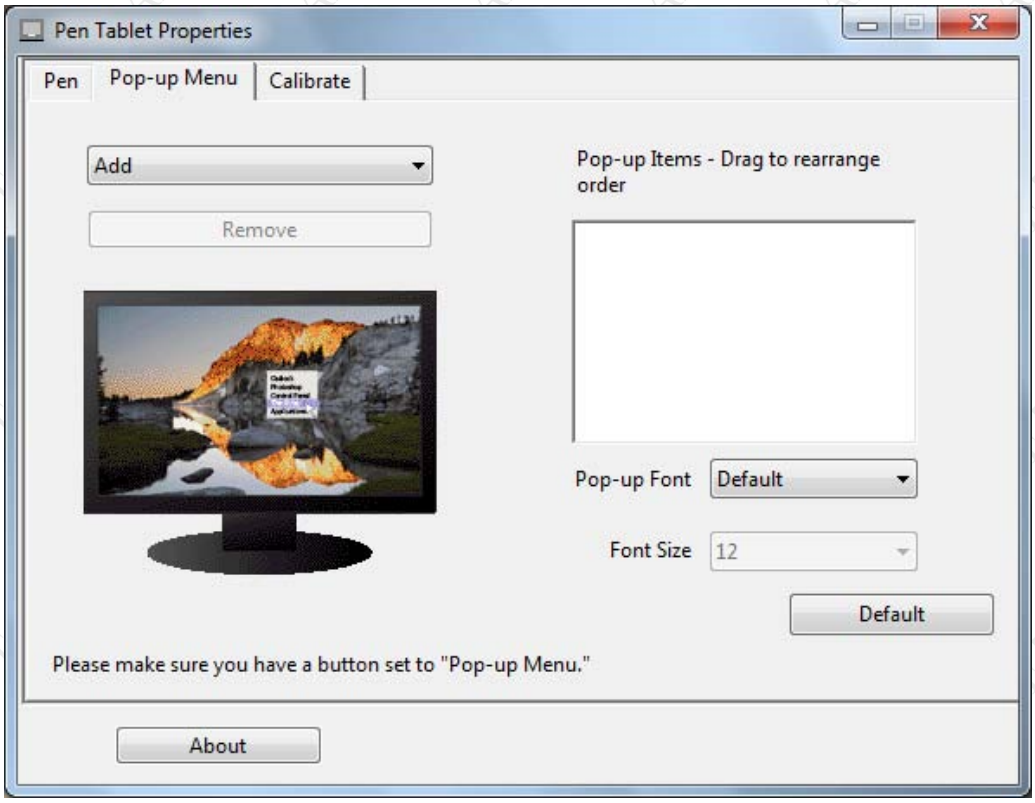


Figure 64. Pen Tablet Properties – Pop-up Menu Tab

Click on the down arrow in the **Add** field to open a list of available functions then select and configure the desired function. Those functions that are selected will appear in the **Pop-up Items** panel to the right of the **Add** field. Click on the **Remove** button to delete a function.

When you are using the pen in an application or on the desktop and you press the side button, a small menu is displayed with the options you have configured.

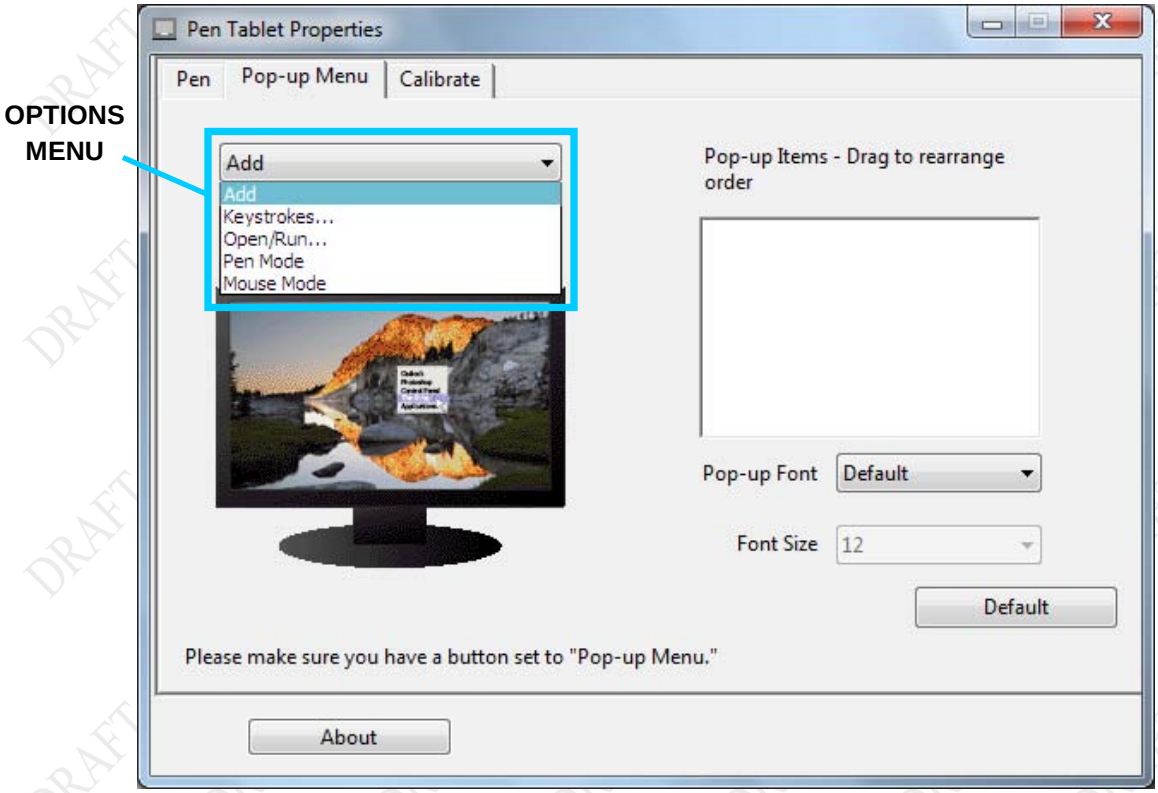


Figure 65. Pop-up Menu Add Options

Calibrate Tab

The Calibrate tab is shown in Figure 68. Click on the **Calibrate** button to access the screen calibration routine. Follow the on-screen instructions.

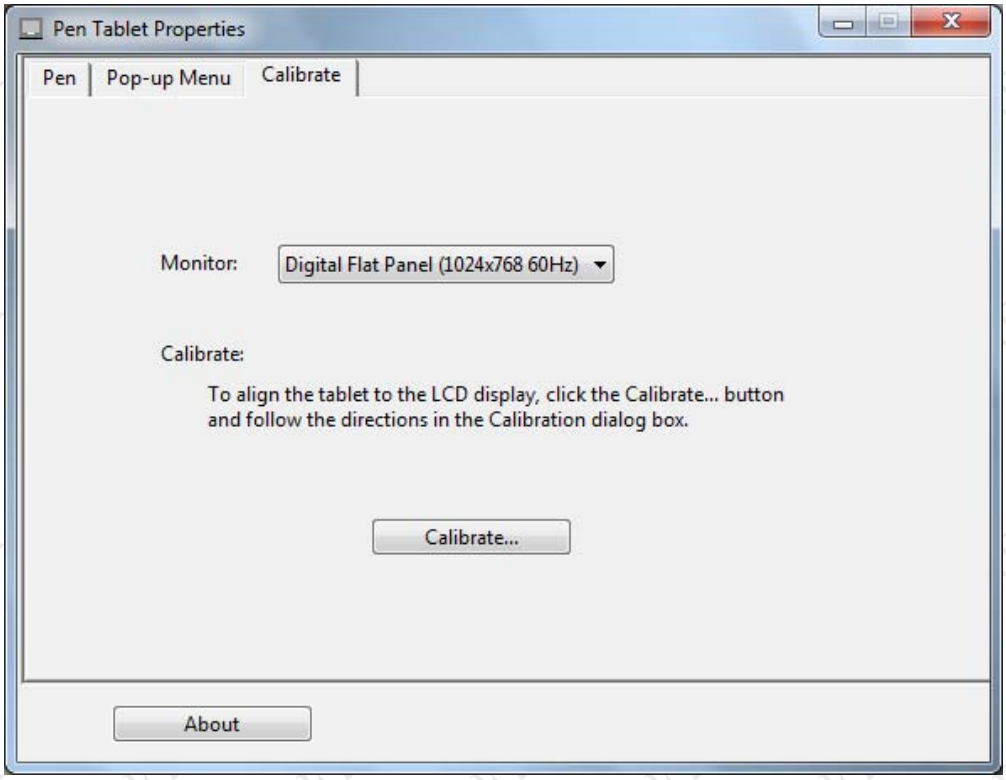


Figure 66. Pen Tablet Properties Window – Calibrate Tab

Picasa 3®

Picasa 3 is an image capture program that allows you to use the webcam for taking still pictures and movies and for capturing barcodes. Refer to Capturing Images and Video for instructions on how to use this application.

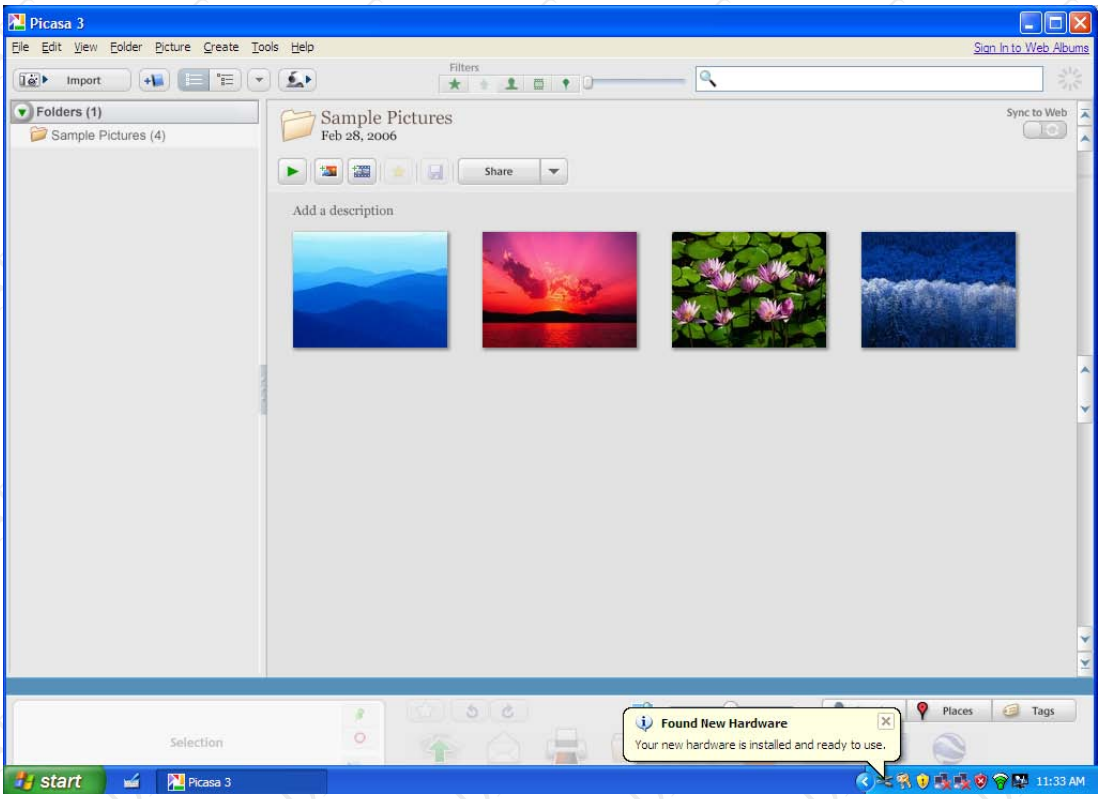


Figure 67. Picasa 3 Image Capture Application

Virtual Magnifying Glass™

This handy utility allows you to magnify portions of the screen that are too small to see clearly. It projects a virtual magnifying glass over a portion of the screen, as shown in Figure 70. Refer to Using the Screen Magnifier for instructions on how activate and use this application.

Figure 68. Virtual Magnifying Glass Application

6. TROUBLESHOOTING

This section addresses only those problems that can be corrected by replacing a removable component such as a hard drive or battery, by replacing or reseating an external cable, or by changing a configuration setting. Any other failure will require the tablet be returned to DRS Tactical Systems.

For each problem that occurs with your ARMOR X7 computer, there are specific steps that will isolate the problem to a failed component or to a configuration option that may be set incorrectly. In many cases, a single action step will isolate or correct the problem. In others, a troubleshooting flowchart with multiple actions may be needed.

Determine the Problem

Table 19 lists some possible symptoms pointing to problems with your ARMOR X7. It then provides actions to correct a problem. In some cases, you will be directed to a troubleshooting flow chart to further isolate the problem.

Use the Symptom and Problem Area columns to identify the problem you are having, then follow any directions in the Action column or go to the indicated troubleshooting flowchart to begin troubleshooting.

Table 18. ARMOR X7 Trouble Symptoms

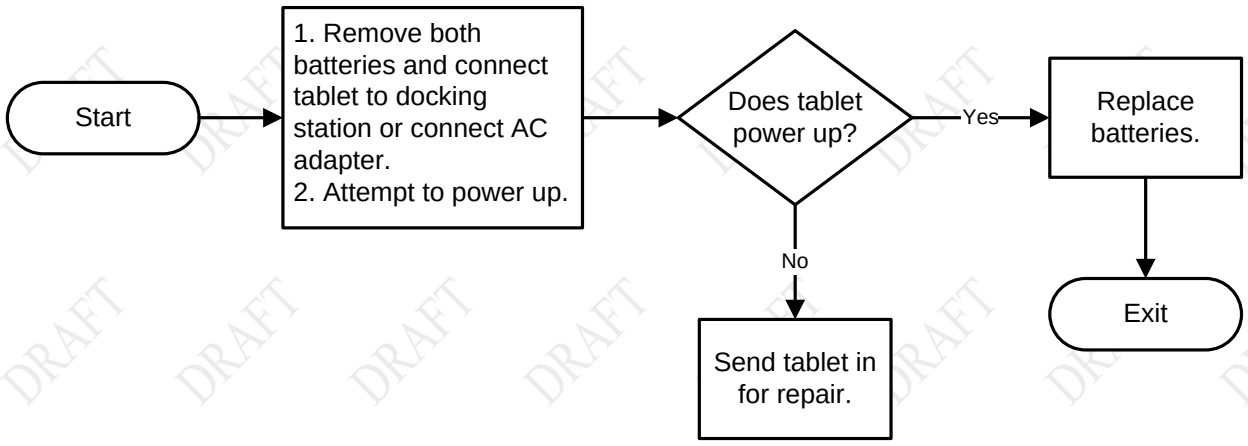
SYMPTOM	PROBLEM AREA	ACTION	FLOWCHART
Tapping with the pen or stylus does not select or activate an option, or the cursor does not align with stylus or pen point.	Display (touch or pen screen)	1. Follow the instructions in **Error! Reference source not found.** or **Calibrating the Display in Windows XP** to calibrate the screen. Repeat up to 5 times if necessary. 2. If screen still does not calibrate correctly, send tablet in for repair.	
Backlight goes on and off.	Display	1. Default the BIOS. 2. If not fixed, flash H8. 3. If not fixed, send tablet in for repair.	

SYMPTOM	PROBLEM AREA	ACTION	FLOWCHART
Pen does not right-click when held against the screen.	Display	1. Select **Start → Control Panel → Hardware and Sound → Pen and Touch**. 2. Highlight the **Press and hold** option in the Pen Actions panel and click on **Settings**. 3. Ensure the **Enable press and hold for right clicking** option is checked. 4. If problem is not fixed, replace pen.	
Pen does not right click when side button is pressed (default setting).	Display	1. Select **Start → Control Panel → Hardware and Sound → Pen Tablet Properties**. 2. Verify/change setting to Right Click in bottom side button menu.	
Pen not working in center of display.	Display	Send tablet in for repair.	
Pen opens and closes folders and programs without touching screen.	Display	Send tablet in for repair.	
Tablet will not recognize a battery.	Battery		TS-04
Battery will not hold a charge.	Battery	Perform the procedure in What to Do for Overly-Discharged Batteries.	
Tablet will not power up.	Power		TS-01
Tablet is locked up.	Run		TS-05

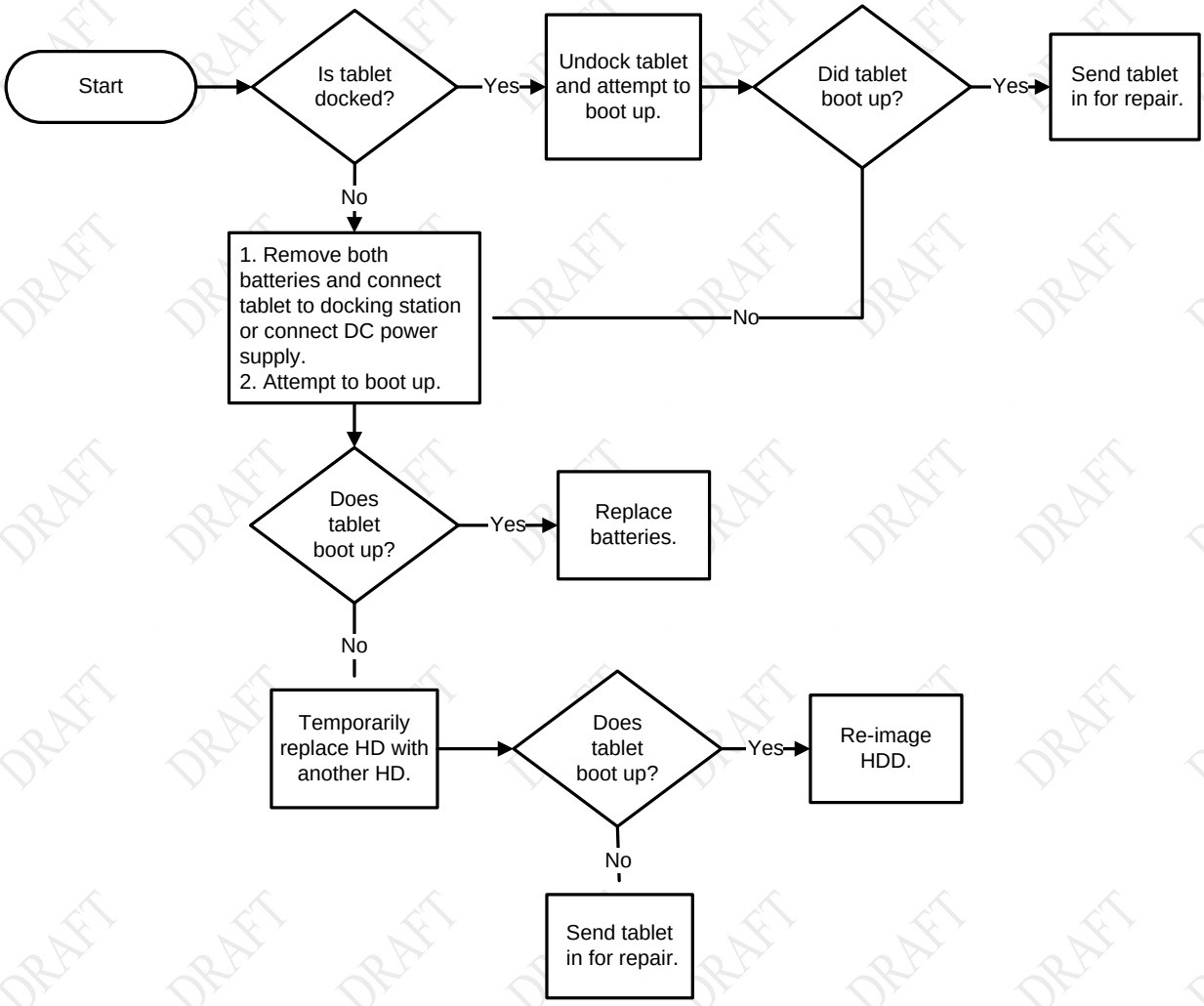
SYMPTOM	PROBLEM AREA	ACTION	FLOWCHART
Screen rolls, flashes, and then tablet freezes up.	Run	1. Remove both batteries and connect AC adapter. 2. Reboot the tablet. 3. If tablet works normally, reinstall one battery at a time and reboot until problem reoccurs. 4. Replace one or both batteries as applicable.	
Tablet shuts down on its own.	Run	1. **Start → Control Panel → Power Options** and check if the computer has a shut down setting to save power. 2. If no shut down option is enabled, return tablet for repair.	
Tablet will not start boot process. Power ok.	Boot Up		**TS-02**
Tablet will not boot into Windows.	Boot Up		**TS-03**
Cannot connect to a wireless network.	Wireless		**TS-06**
Ethernet or USB ports not working.	Ethernet/USB	Perform the procedure in **Error! Reference source not found.** to reset the BIOS.	

Troubleshooting Flowcharts

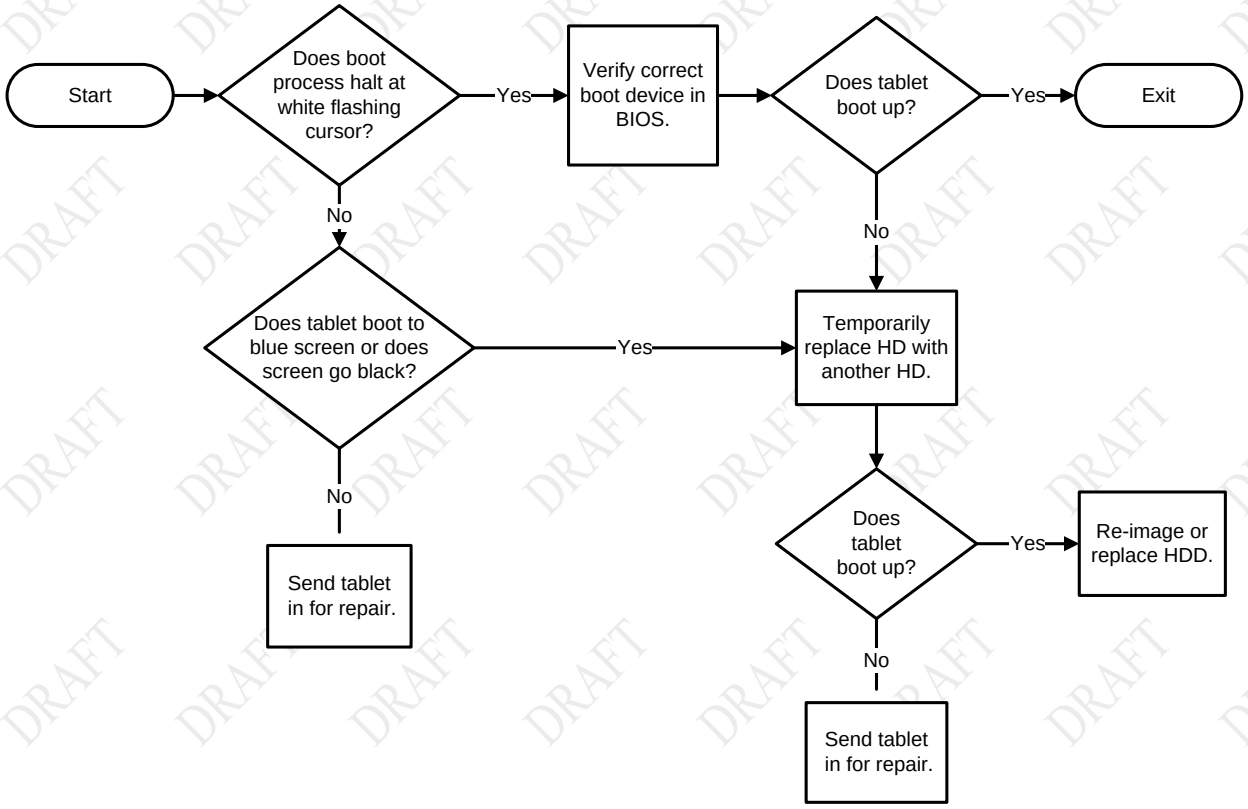
TS-01 Tablet will not power up



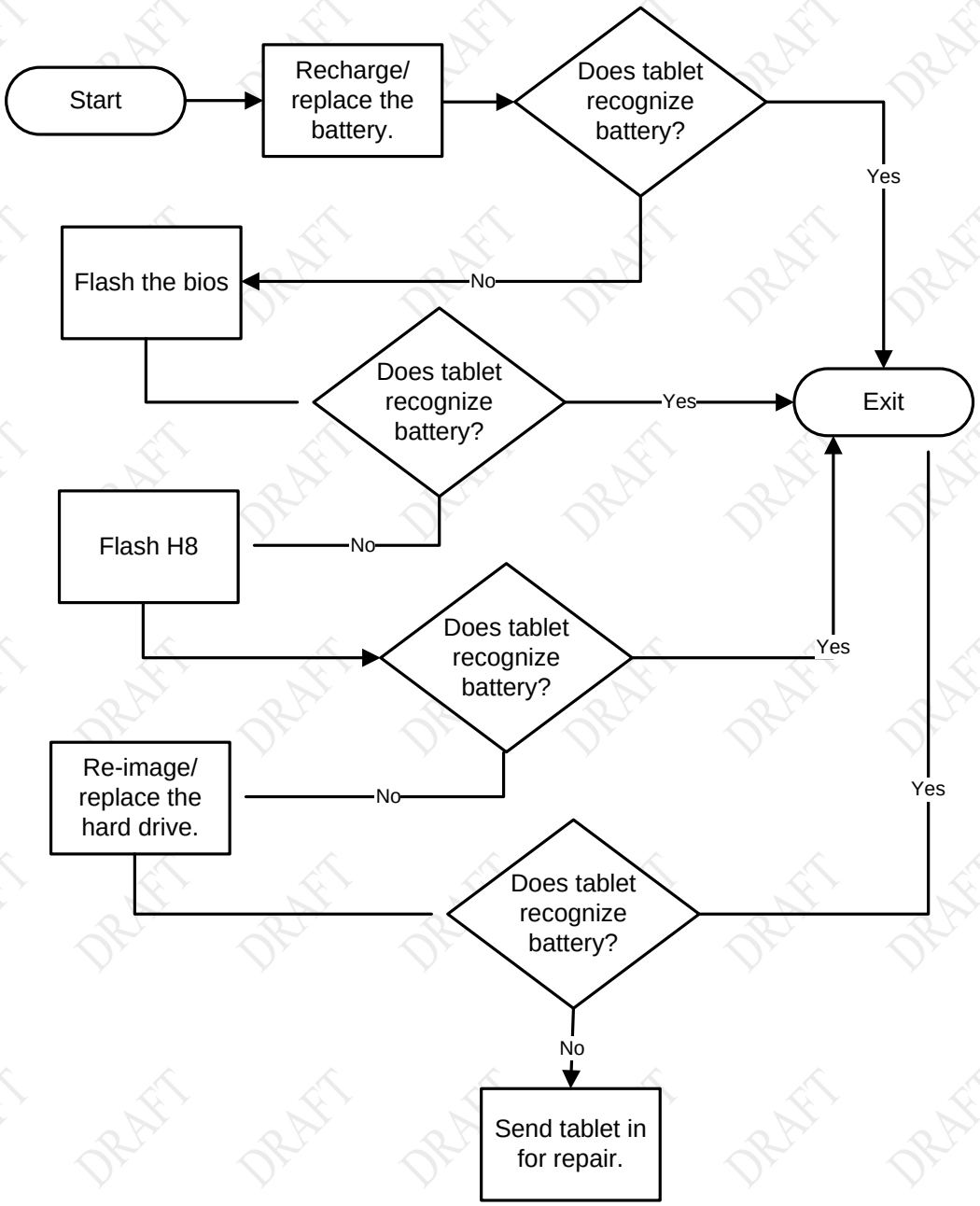
TS-02 Tablet will not start boot process. Power is ok



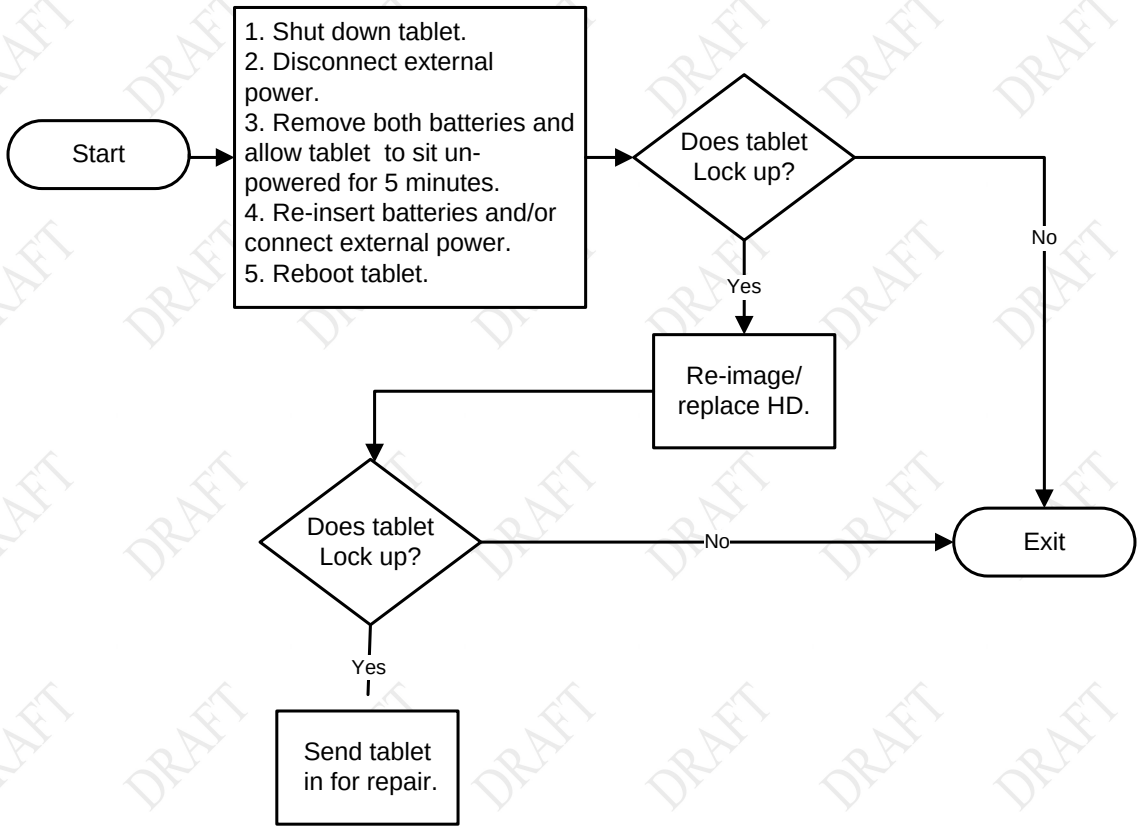
TS-03 Tablet will not boot into Windows



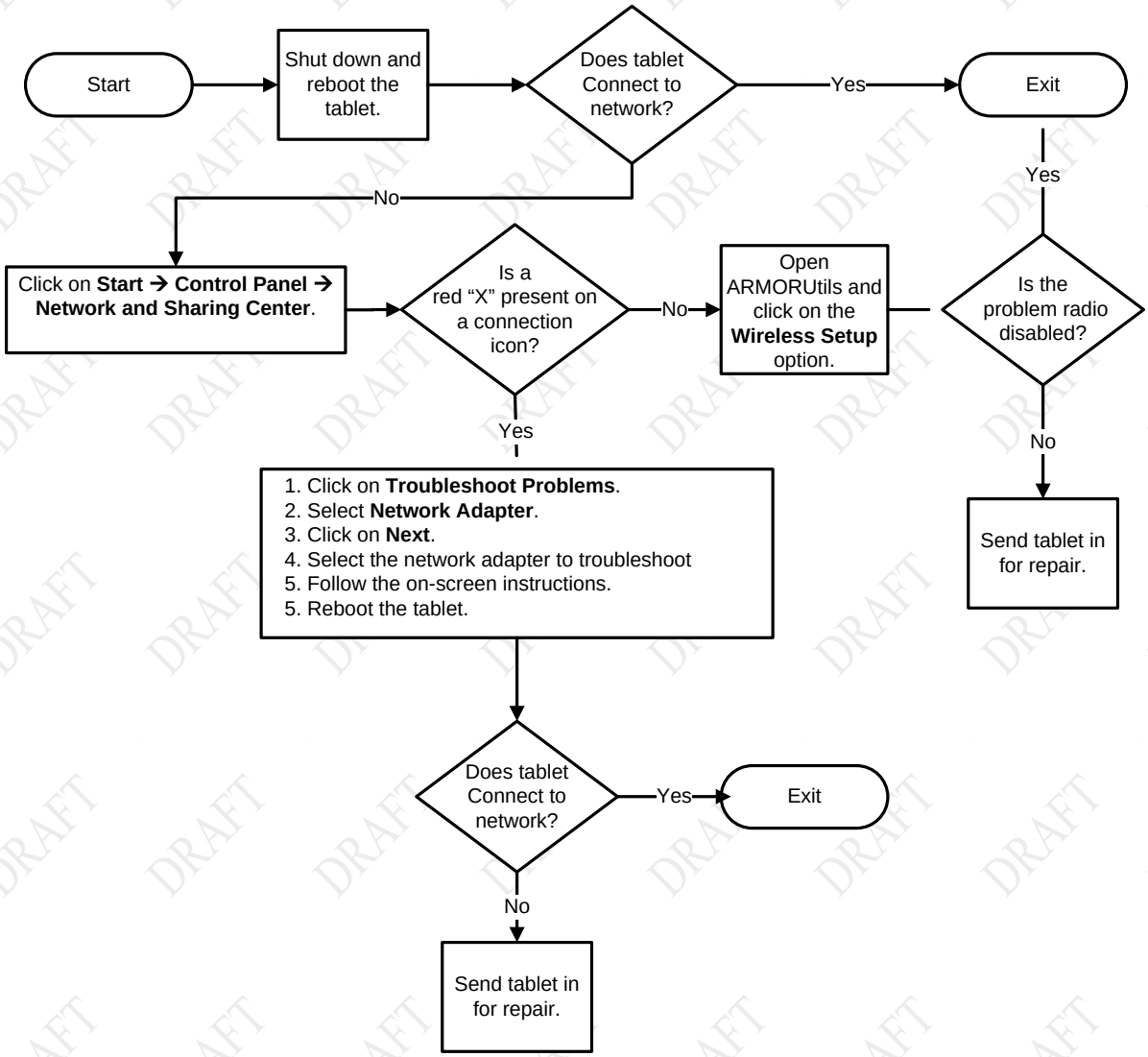
TS-04 Tablet will not recognize a battery



TS-05 Tablet is locked up



TS-06 Cannot connect to wireless network



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7. BACKUP AND RESTORE PROCEDURES

Backup with QuickBack™

If your hard drive is a spinning media hard drive, QuickBack™ is included with your software package as a backup and restore feature. It allows you to make an exact copy of your hard disk's contents on a hidden partition of your computer. You can then use this backup to restore your PC if the hard drive becomes partially corrupted.

NOTE

If the entire hard drive becomes corrupted or the hard drive is damaged, this restore feature may not work.

ARMOR X7 ruggedized computers implement the QuickBack™ functionality using the Acronis True Image OEM software package. The True Image application provides a number of useful System Backup features including the creation and storage of an Archival Backup, the ability to store up to two additional User created Backups, and the ability to create an Emergency Bootable CD for System Recovery.

The QuickBack backup feature is only one part of a complete computer backup strategy. As mentioned above, if the entire hard drive becomes corrupted or if the hard drive itself becomes defective then the QuickBack™ feature will not be able to restore the system. Even if the System Recovery CD is used, it looks for the backup data on the hard drive. The periodic use of an alternate backup tool is recommended to provide backups on external media in case of catastrophic hard drive failures.

You may wish to purchase the upgraded full-featured Acronis True Image tool to be able to backup and recover all data saved from an external drive.

Disk Partitions

The hard drive is divided into several sections or "Partitions". The C: partition is the primary partition that contains the Windows files, Application Program files, User files, etc. The C: Partition is used as the primary system boot drive for normal operations.

The D: partition contains space for QuickBack™ Backups of the C: Partition. The D: partition has been made large enough to contain at least two standard-sized compressed User-generated backups.

The compressed backup copy of a partition can only be stored in one of the other partitions for backup purposes. This allows you to overcome the most common disk corruption issues and to restore the system back to the last saved state.

How to Access QuickBack™ for Initial Set-Up and Help Features

Once installed, the QuickBack™ feature can be accessed by clicking on the Acronis True Image shortcut on the computer's desktop. You can also access it by clicking on **Start → All Programs → Acronis → True Image**. The program includes an easy to use wizard interface and detailed HELP features. The startup screen is shown in Figure 71.

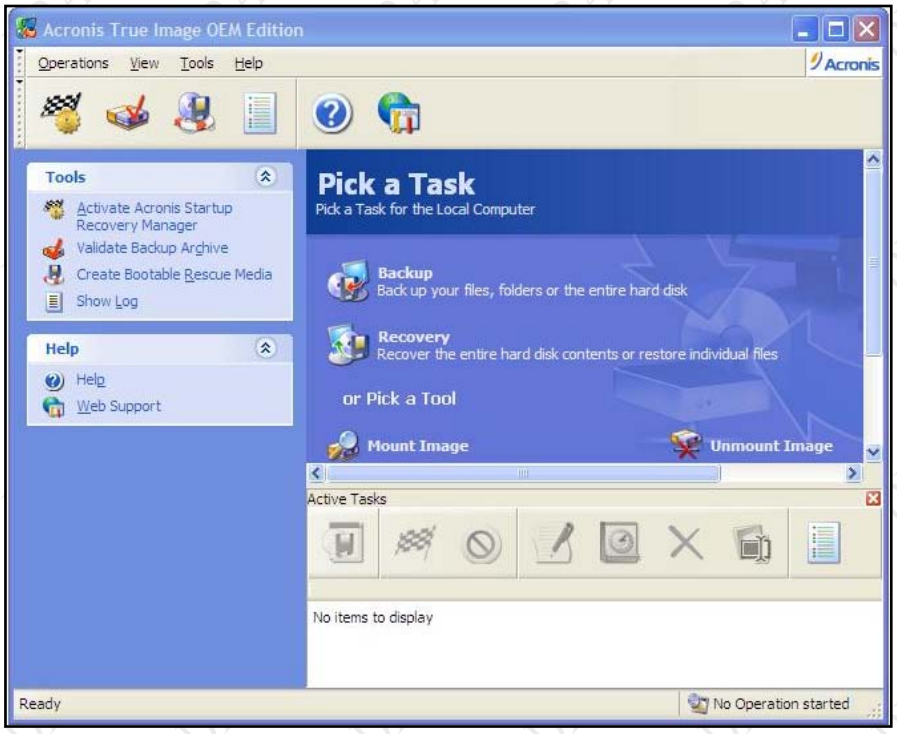


Figure 69. QuickBack™ Graphical User Interface

Archive Backup

The original Archive Backup is created automatically when you select the "Install QuickBack™" icon on the Desktop.

NOTE

The QuickBack™ install is a lengthy process involving an automatic re-partitioning of the hard drive and the automatic backup process. A USB or other physical keyboard should be used for this operation.

The initial installation takes approximately 25 minutes. Subsequent user initiated backups will take less time. The system should be connected to external power prior to the initial installation or any subsequent user backup in order to ensure the backup process completes without

interruption. The Archive Backup contains the original C and D partitions and is stored in a compressed form in a hidden partition on the system hard disk.

This hidden partition is not visible or accessible to you with the standard system file access toolset. To use the Archive Backup to restore the hard drive, press the F11 option (with external keyboard) when prompted during the system boot to immediately start the standalone True Image Application.

NOTE

If you choose the "Restore Original System Installation" option, any changes or additions to either of these two partitions since the initial QuickBack™ installation will be lost. This includes User Backups that have been placed in the D partition area.

Within the True Image application, you can select the "Restore Original System Installation" button and follow the on-screen directions to restore the entire Archive Backup onto the C and D partitions of the System Hard Drive.

User Backups

You can create up to two User Backups of the C partition (Compressed copies of C are stored up to the available space in the D partition). Backups are typically created as desired by using the True Image application under Windows. Backups are stored into the D partition of the system hard drive. Currently, with the existing C partition size, the size of the D partition allows up to two Backups to be saved at one time.

If you increase the C partition significantly with the addition of new software, then only one backup copy can be stored. With the addition of very large amounts of user data it is possible to grow the partition content large enough that it cannot be compressed into the available space on the D partition (In this case the True Image will inform you that no backup into the requested location is possible).

System Recovery CD

You can create a System Recovery CD using the True Image Application. For example, if the C drive becomes corrupted (system fails to boot normally), the Recovery CD allows you to boot the system to the True Image Application. You can then restore the C partition from one of the Backups.

Note that you create the Recovery CD using Windows and an attached CD disk drive with write capability. To create the Bootable CD, please refer to your Windows documentation. To boot from the Recovery CD, follow the procedure in Table 20.

Table 19. Boot the X7 from the Recovery CD

STEP	ACTION
1.	Connect a USB CD-ROM Drive to the USB port.
2.	Place the recovery CD in the CD drive.
3.	Select **Boot Manager.**
4.	Boot the system and press the **<ESC>** key when the ARMOR splash screen appears.
5.	Select the CD drive (the exact text depends on the type of drive being used).

The recovery disc can actually make a brand new backup, which can be handy if you want to copy a data partition on a PC that's no longer bootable.

8. MAINTAINING YOUR ARMOR X7

Removing and Replacing the Solid State Drive

The solid state drive is located in the Flexspace compartment in the back of the computer, as shown in Figure 72. Follow the procedure in Table 21 to remove and replace the drive.

NOTE

The solid state drive should only be removed or installed by a qualified technician in a controlled environment.

Figure 70. X7 Solid State Drive Location

Table 20. Remove and Replace the Solid State Drive

STEP	ACTION
1.	Power down the computer and disconnect any external power.
2.	Place the computer face down on a clean surface and remove 14 Philips screws from the cooling register/cover then remove the cover.
3.	Lift up on the drive and carefully disconnect it from the computer.
4.	Insert the replacement drive.
5.	Replace the back cover and secure with the 14 Philips screws.

Removing and Replacing the Batteries

Refer to Table 22 and Figure 73 to remove and replace a battery.

CAUTION!

Only one battery at a time can be removed and replaced during operation without causing loss of data or system shutdown. Connect external power first before removing both batteries.

NOTE

If your X7 has only one battery pack, install it in the left side (primary) battery slot.

Table 21. Remove and Replace a Battery

STEP	ACTION
1.	Push and hold the battery latch to disengage the locking bar and slide the battery pack away from the computer case.
2.	To install a battery, place the flat surface of the battery on the compartment tray with the locking slots facing toward the computer.
3.	Push and hold the battery latch and slide the battery toward the computer until the locking bar engages and the battery is flush against the compartment wall.
4.	Release the battery latch to lock the battery in place.

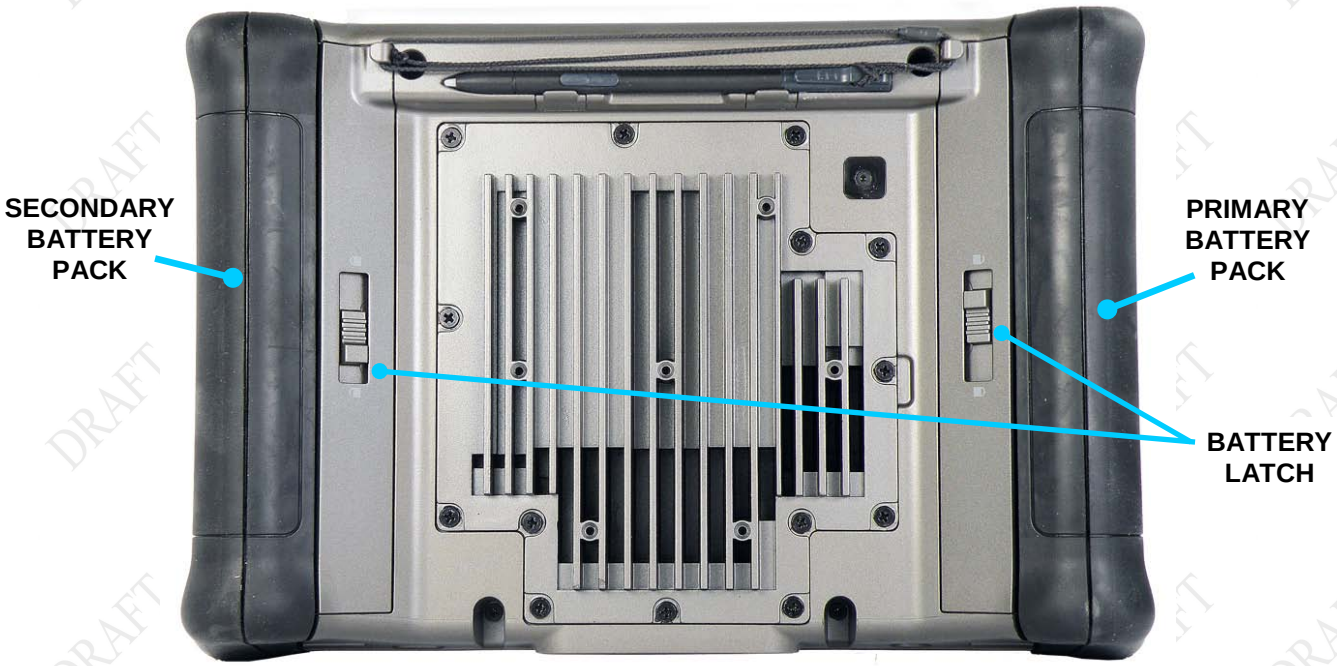


Figure 71. X7 Battery Pack Locations

Installing a SIM Card

Before you can activate and use your WWAN radio, a valid SIM card from your network service provider needs to be installed. The SIM card is installed in a socket located inside the rear compartment, as shown in Figure 74.

Follow the procedure in Table 23 to access the rear compartment and install the SIM Card.

NOTE

This procedure should only be performed by a qualified technician in a controlled environment.

CAUTION!

Circuit boards containing electrostatic discharge (ESD) sensitive devices are exposed in this compartment. Static-free handling is required to prevent possible damage to the components.

Table 22. Installing a SIM Card

STEP	ACTION	CONDITION OR INDICATION
1.	Power down the computer and disconnect any external power.	
2.	Remove the batteries.	
3.	Place the computer face down on a clean surface and remove the 14 Philips screws securing the cooling register.	
4.	Carefully pry up the register at the slot provided (Figure 74) and remove.	

MODEL X7 TABLET COMPUTER

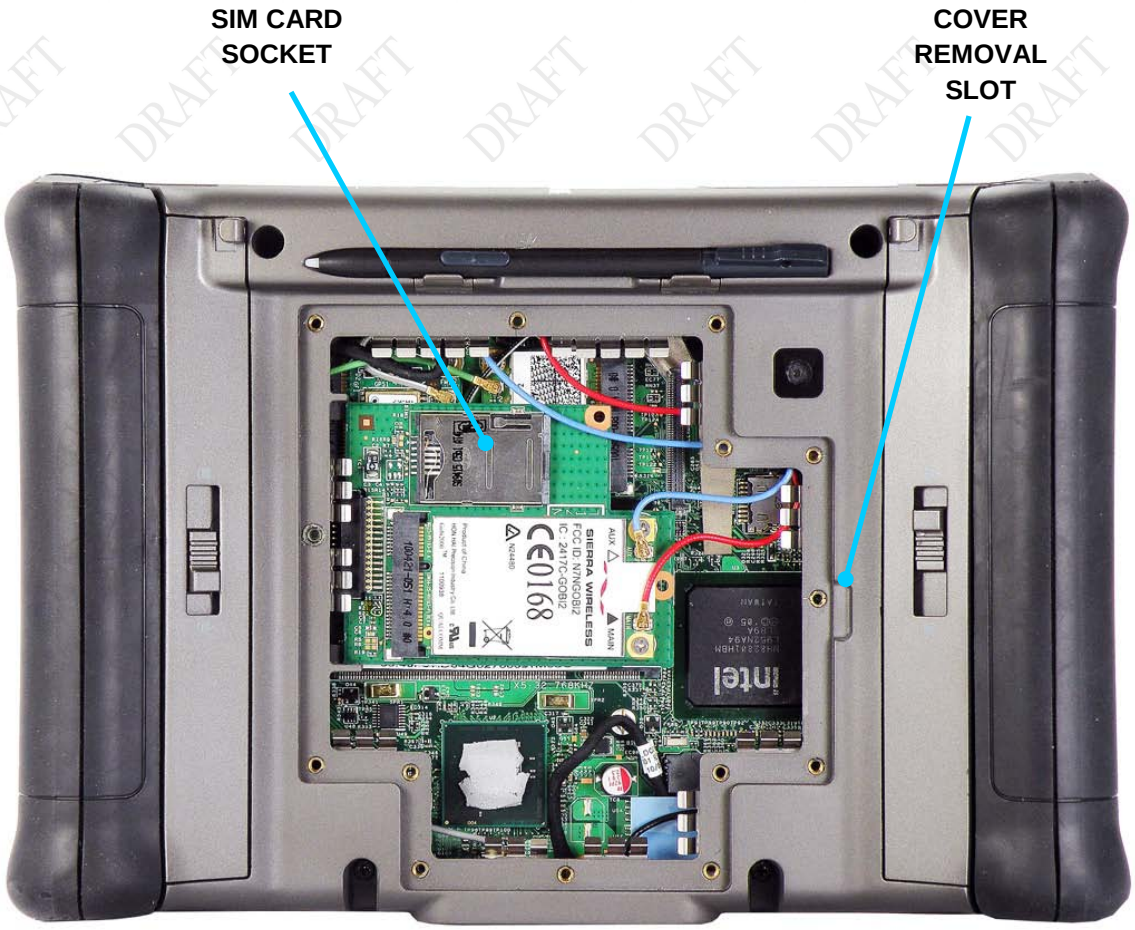
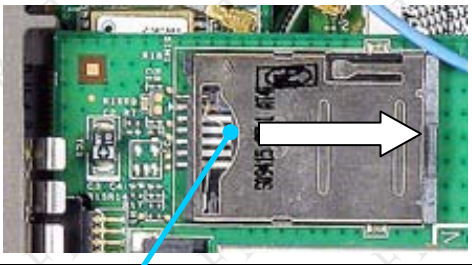
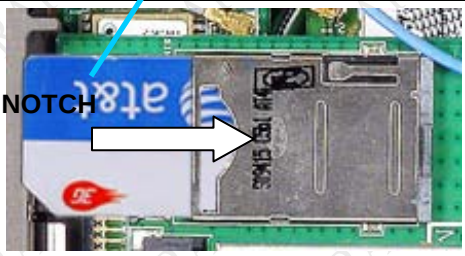
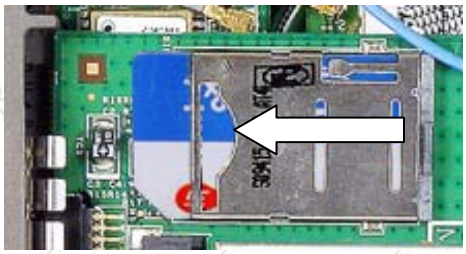


Figure 72. X7 Rear Compartment

STEP	ACTION	CONDITION OR INDICATION
5.	Place a fingertip in the notch on the left side of the SIM socket cover and slide the cover to the right until you feel an indent, then lift up.	
6.	Insert the SIM card with the corner notch at the lower left.	

MODEL X7 TABLET COMPUTER

7.	Gently press the cover down and slide to the left to lock in place.	
8.	Reinstall the cooling register and secure with the 14 Philips screws. Be careful not to over-tighten the screws.	

Installing a Micro SD or SDHC Card

The micro SD card socket is located inside the rear compartment, as shown in Figure 75. Follow the procedure in Table 24 to install the card.

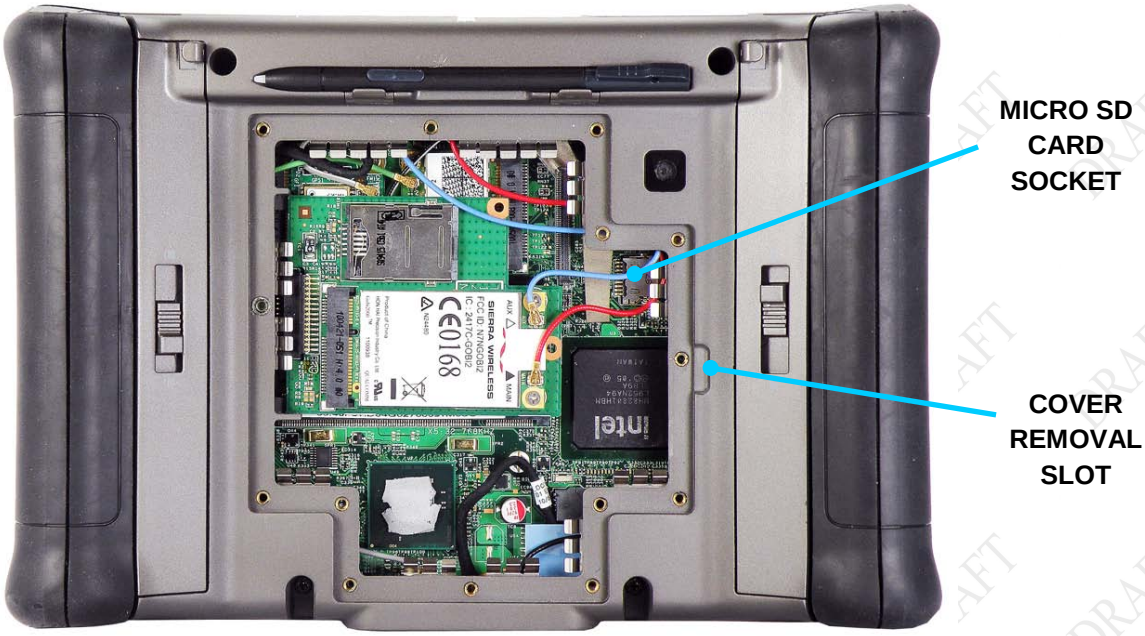


Figure 73. Micro SD Card Socket

Table 23. Installing the SC Card

STEP	ACTION	CONDITION OR INDICATION
1.	Power down the computer and disconnect any external power.	
2.	Remove the batteries.	
3.	Place the computer face down on a clean surface and remove the 14 Philips screws securing the cooling register.	
4.	Carefully pry up the cooling register at the slot provided (Figure 75) and remove.	
5.	Carefully lift the socket cover and insert the SD card all the way into the cover.	

MODEL X7 TABLET COMPUTER

STEP	ACTION	CONDITION OR INDICATION
6.	Press the card down until it locks in place.	
7.	Replace the cooling register and secure with 14 Philips screws.	
8.	Reinstall the batteries and re-connect external power if desired.	

Changing the BIOS Settings

Follow the procedure in Table 25 to access the BIOS setup utility and verify settings or make changes. You can use the active pen (not a stylus or fingertip) to navigate the setup screens and select options, or you can connect an external keyboard to one of the USB ports.

Contact DRS Technical Support if you have any questions about the BIOS settings for your ARMOR X7.

CAUTION!

Incorrectly setting the BIOS options could cause the X7 to become unstable or render it completely inoperable. Move carefully through the menus and use caution when making changes. Read the description of each change in the right-hand column before making any adjustments.

NOTE

If you make permanent changes as a result of an upgrade or addition of new equipment, be sure to keep a record of the changes. Table 26 provides a handy place to record these changes. Always record the previous value in case you have to return to that value.

Table 24. Access the BIOS Setup Utility.

STEP	ACTION
1.	You can use the active pen to navigate in the BIOS setup screens or you can attach a USB keyboard to the USB port on the right side of the computer.
2.	Start the computer and as soon as the DRS logo appears, tap on the screen until you hear a beep. A small options menu will be displayed.
3.	Select **Launch System Setup** to open the Setup Utility main screen.

4.	Use the **LEFT** and **RIGHT ARROW** keys to highlight the desired menu page (listed at the top of the screen) and press **ENTER** to select the menu.
5.	Use the **UP** and **DOWN ARROW** keys to scroll through the page settings and to highlight a particular setting or sub-option.
6.	Select **ENTER** to access the sub-options under a highlighted option. Press **ESC** to return to the previous option or menu.
7.	Use the **F5** and **F6** keys to cycle through the available options and highlight the desired value to change.
8.	Select **ESC** to exit the option.
9.	Use the **arrow keys** to move to the next option.
10.	When all changes have been made, select **F10** to exit and save your changes or select **ESC** to exit without saving any changes. The computer will resume booting.

Table 25. Record Bios Changes Here

SETTING	PREVIOUS VALUE	NEW VALUE	DATE CHANGED

Changing the Power Button Default A

Follow the procedure in Table 27 to change the default actions of the Power button.

Table 26. Changing the Power Button Default Actions

STEP	ACTION	CONDITION OR INDICATION
1.	Select **Start → Control Panel → Hardware & Sound → Power Options**	The Power Options dialog window is displayed.
2.	From the left panel, select **Choose what the power buttons do**.	The Systems Settings window opens as shown in Figure 76.
	NOTE ***The X10gx does not have a Sleep button so ignore the bottom set of options.***	
3.	Click on the pull-down menus in the **On battery** and **Plugged in** columns and select the desired action.	The pull-down menu options are shown in Figure 76.
4.	Click on the **Save Changes** button at the bottom of the window.	

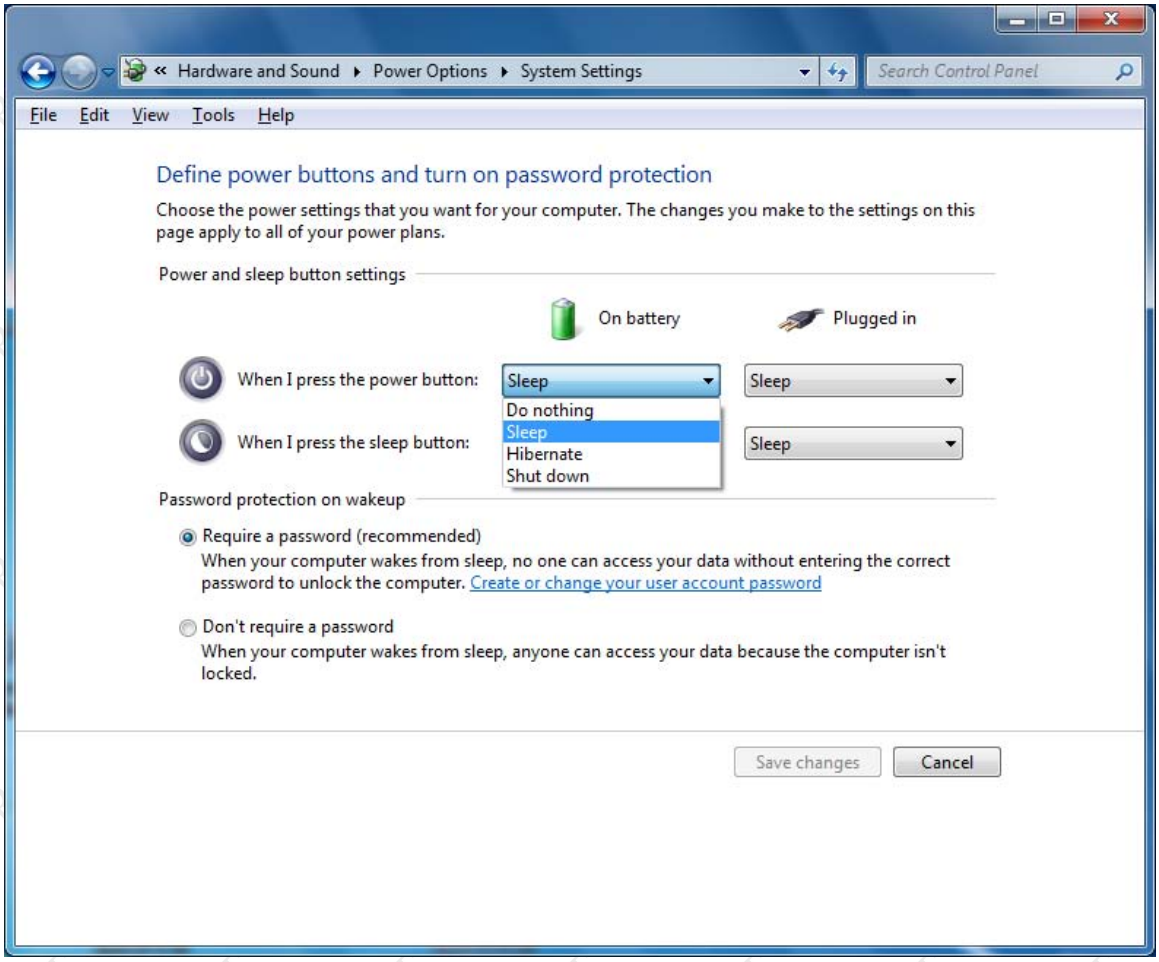


Figure 74. Power Button Settings Options

Caring For the Display Screen

With minimal maintenance, your X7 display will last for many years. When operating on the desktop, you should not use an abrasive or metallic pointer as this may damage the screen. We recommend using the pen that came with your computer or your fingertip. Use a plastic cleaner such as Plexus™ to clean the pen tip.

CAUTION!

Do not exceed 60 psi when using compressed air to clean the display. Damage to the screen surface could result.

Be careful not to let sand or grit stay on the screen as this can scratch the surface if wiped with a cloth. Clean the display surface first with dry compressed air.

Any non-ammonia based glass cleaner or dish soap and water can be used to clean the display screen. Always spray the glass cleaner on the cloth or towel and then wipe the screen.

Use a lint-free swab or soft brush to remove stubborn foreign matter. If necessary use a small amount of alcohol or dish soap. **DO NOT** attempt to remove stuck particles with a fingernail or other hard object.

Monitoring the Health of Your ARMOR X7

The X7 may be subjected to extreme temperature variations that can affect the internal operating temperature of the computer. So long as these internal temperatures remain within the operating design parameters, the computer should not experience any loss of functionality.

If you are experiencing problems and suspect that they are temperature related, you can monitor the internal temperature of the X7. Click on **Start → All Programs → ARMORutils** or double-click on the ARMORutils icon on the desktop to open the ARMORutils main window (see Figure 77). The window displays the following internal temperatures of the X7 computer:

- CPU core temperature (three measurements)
- Main Board temperature
- Battery #1 temperature
- Battery #2 temperature

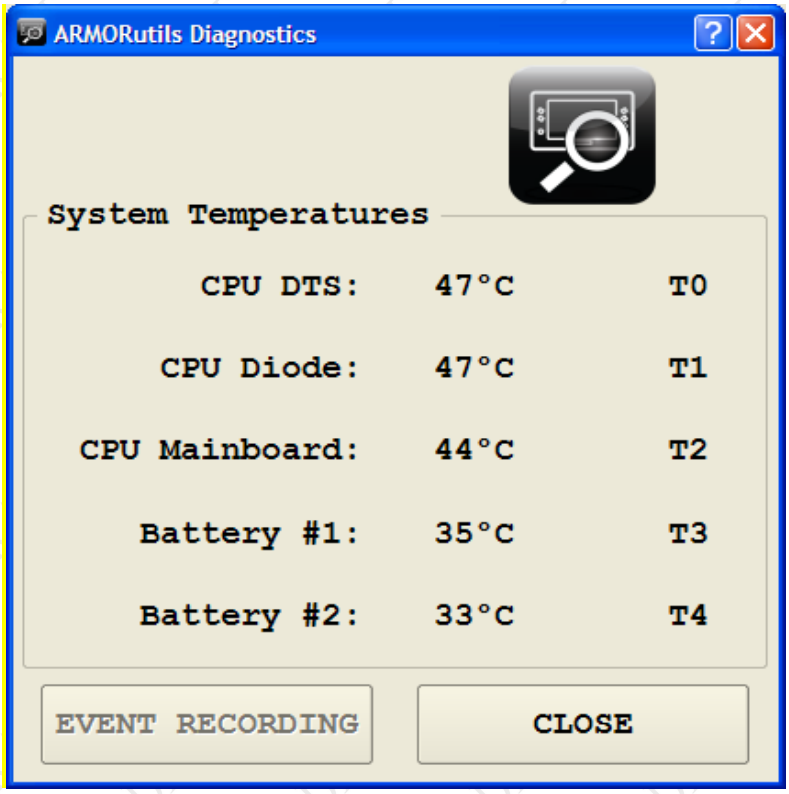


Figure 75. ARMORutils Diagnostics Dialog Window

Generating a Log of Temperature Variations

If a problem is occurring over time, you can record system temperature variations over time by creating a temperature variation log file. Follow the procedure in Table 28 to set up the log file.

Table 27. Generate a Temperature Variation Log

STEP	ACTION	CONDITION OR INDICATION
1.	Select **START** → **All PROGRAMS** → **ARMORutils** and select the **Diagnostics** page.	The page opens as shown in Figure 77.
2.	Click on the **Event Recording** button.	The Event Recording window opens as shown in Figure 78.
3.	Enter a name for the log file in the **File Name** field.	The name should be in the format **xxxxx.txt**
4.	In the **Path** field, enter the path to the folder where you want the log file to reside or click on the **Set Path** button and select the folder.	
5.	Select **START TEMPERATURE LOG** to begin generating a record of temperature changes over time.	
6.	Select the **STOP TEMPERATURE LOG** option to stop recording temperatures.	A sample log file is shown in Figure 79.

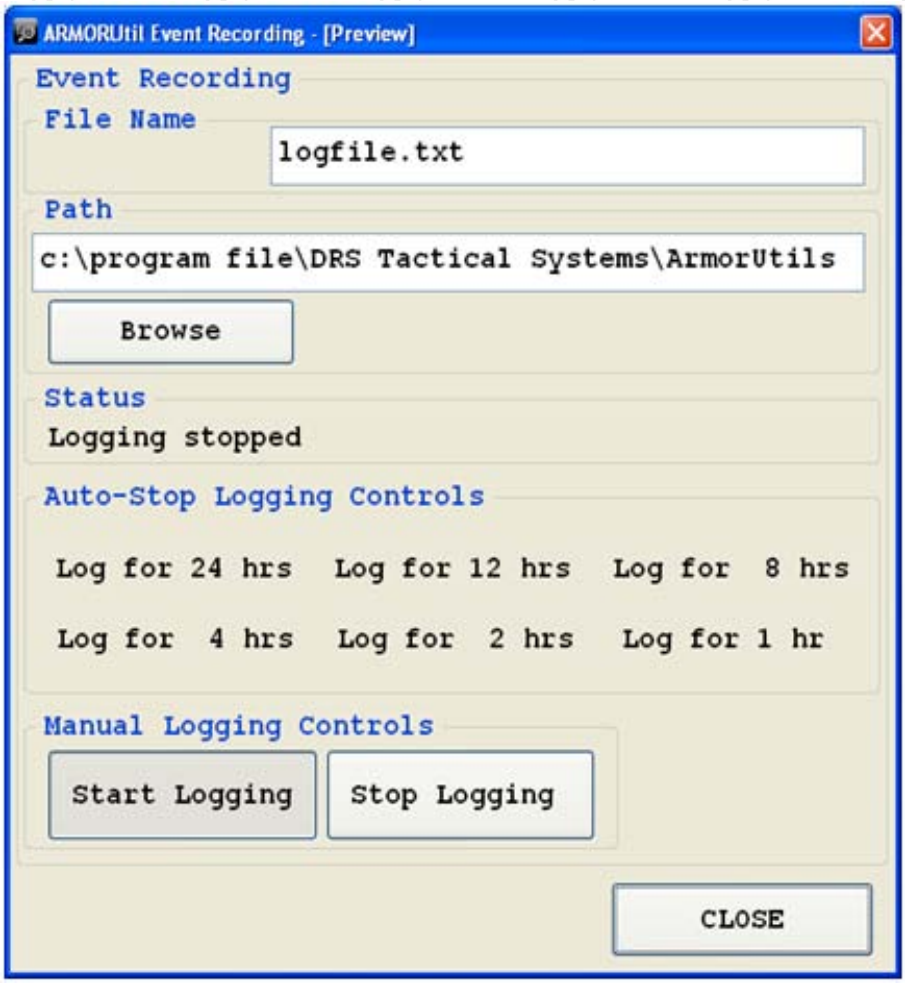


Figure 76. ARMORutils Event Recording Window

[Update image to Win 7]

Log file opened for write/append.

TIME	CPU DTS TEMP	CPU DIODE TEMP	CPU Mainboard TEMP	BAT1 TEMP	BAT2 TEMP
1/7/2010 2:42:00 AM	47°C	47°C	44°C	36°C	36°C
1/7/2010 2:42:06 AM	48°C	47°C	44°C	36°C	36°C
1/7/2010 2:42:12 AM	47°C	47°C	44°C	36°C	36°C
1/7/2010 2:42:18 AM	47°C	47°C	44°C	36°C	36°C
1/7/2010 2:42:24 AM	47°C	47°C	44°C	36°C	36°C
1/7/2010 2:42:30 AM	48°C	47°C	44°C	36°C	36°C
1/7/2010 2:42:36 AM	47°C	47°C	44°C	36°C	36°C
1/7/2010 2:42:42 AM	47°C	46°C	44°C	36°C	36°C
1/7/2010 2:42:48 AM	47°C	46°C	44°C	36°C	36°C
1/7/2010 2:42:54 AM	49°C	46°C	45°C	36°C	36°C
1/7/2010 2:43:00 AM	47°C	46°C	45°C	36°C	36°C
1/7/2010 2:43:06 AM	47°C	46°C	45°C	37°C	36°C
1/7/2010 2:43:12 AM	48°C	47°C	44°C	37°C	37°C
1/7/2010 2:43:18 AM	48°C	47°C	44°C	37°C	37°C
1/7/2010 2:43:24 AM	48°C	47°C	44°C	36°C	36°C
1/7/2010 2:43:30 AM	49°C	48°C	44°C	36°C	36°C
1/7/2010 2:43:36 AM	49°C	48°C	44°C	36°C	36°C
1/7/2010 2:43:42 AM	49°C	49°C	44°C	36°C	36°C
1/7/2010 2:43:48 AM	48°C	49°C	44°C	36°C	36°C
1/7/2010 2:43:54 AM	48°C	48°C	44°C	36°C	36°C
1/7/2010 2:44:00 AM	48°C	48°C	44°C	36°C	36°C
1/7/2010 2:43:06 AM	48°C	48°C	44°C	36°C	36°C

Log file closed.

Figure 77. Sample Temperature Log File

["Core X" column headers do not correspond to Diagnostics dialog window titles (T0, T1, T2….)

"System Temp" column header is "Core T2" in the Diagnostics dialog window titles]

9. DISPLAY MANAGEMENT

Brightness Adjustment

The brightness of an LCD display is controlled by adjusting the intensity of the backlight. The backlight level for the X7 can be controlled manually or automatically.

Manual Brightness Adjustment

Your ARMOR X7 computer is pre-set for manual adjustment of screen brightness. The backlight level can be adjusted manually in two ways: by pressing a button sequence on the control panel or by adjusting the slider in the Backlight Setup dialog window of ARMORutils.

Using a Button Sequence

Press the **Fn** button once (do not hold) and then repeatedly press the **P1** button. The brightness will increase in steps until it reaches 100%, then will start over at minimum brightness.

Using the ARMORutils Backlight Setup Dialog

Double-click on the ARMORutils desktop icon and select the **Backlight Setup** button. The Backlight Setup dialog opens as shown in **Error! Reference source not found.**.

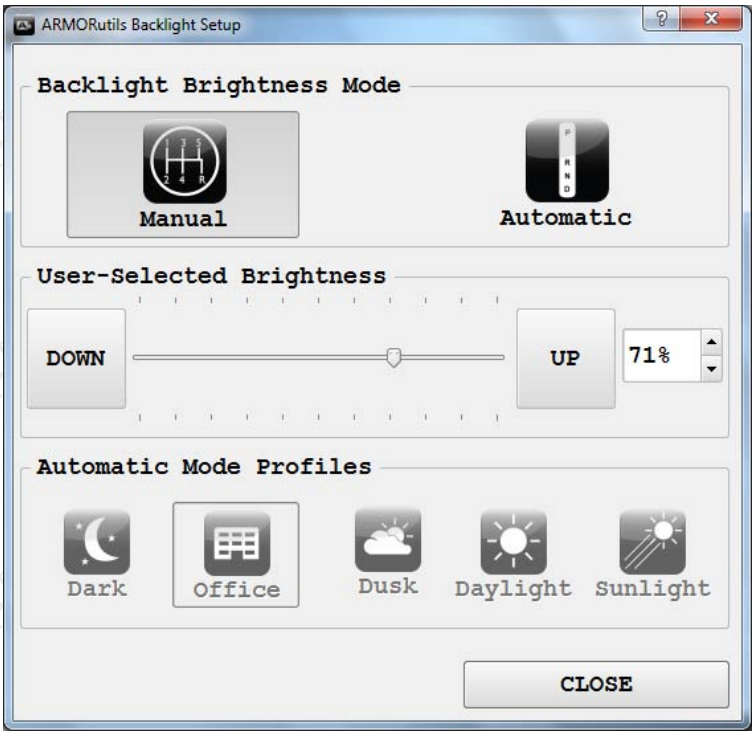


Figure 78. Armor Utilities Screen – Backlight Tab

Press the **UP** or **DOWN** buttons repeatedly with the pen or a fingertip to move the slider and adjust the backlight level. The % brightness is displayed in a field on the right. You can also use the stylus with the up and down arrows next to this field to adjust the slider.

Automatic Adjustment

Open the **Backlight Setup** dialog in ARMORutils and click on the **Automatic** button. The backlight level will now be controlled by the light sensor. If the surrounding light decreases, the brightness will also decreases proportionally; if the surrounding light increases, the brightness will increase.

NOTE

You must keep the light sensor uncovered to allow proper automatic brightness adjustment.

Automatic Mode Profiles

Select one of the profiles that best controls the range of backlight levels to suit your work environment.

Calibrating the Display in Windows 7

You can access both touch screen and pen screen calibration routines using **ARMORutils** or using the **Tablet PC Settings** utility in **Control Panel**.

Using ARMORutils

This capability is not currently available.

Using the Tablet PC Settings Utility in Control Panel

Table 28. Calibrate the Display Using the Tablet PC Settings Utility

STEP	ACTION	CONDITION OR INDICATION
1.	Select **Start → Control Panel → Hardware and Sound → Tablet PC Settings**.	The Tablet PC Settings dialog window opens, as shown in Figure 81.

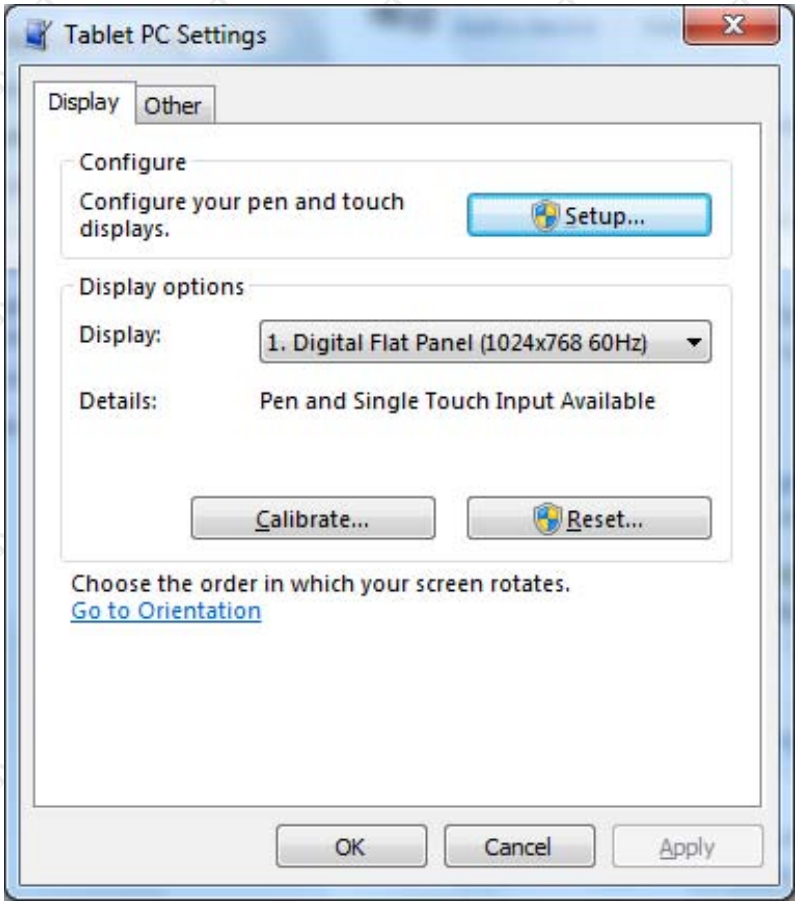
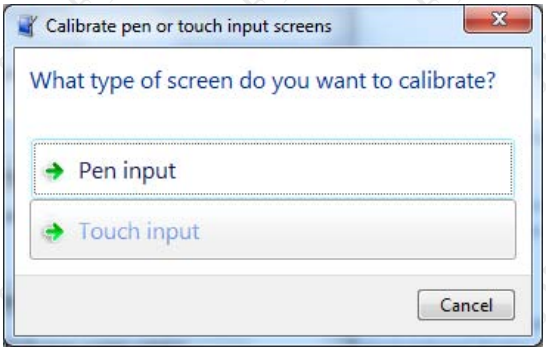
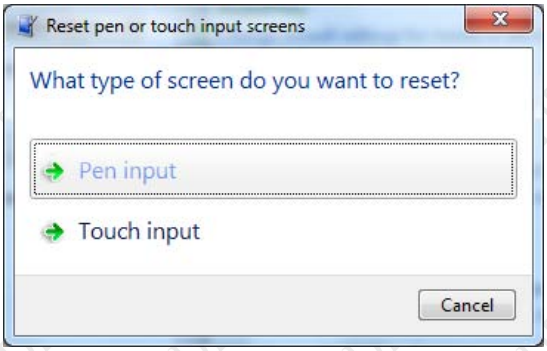
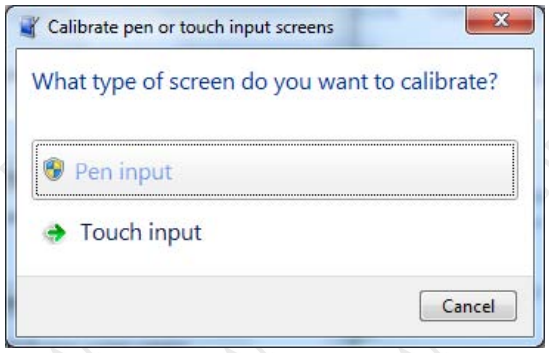


Figure 79. Tablet PC Settings Window

2.	If you have a second pen or touch screen display connected, be sure the display you want to calibrate is selected in the **Display** field.	
3.	If you are <u>not</u> having problems with screen calibration and want to do a quick 4-point calibration, click on the **Calibrate** button. Otherwise, go to Step 5.	The **Calibrate Pen or Touch Input Screens** window opens, as shown below: 
4.	Choose the type of screen to calibrate and follow the on-screen instructions.	**NOTE** ***If you do not have an external keyboard connected, you can invoke the ESC command using the Input Panel virtual keyboard. Hover with the pen or tap on the screen in the upper left corner near the left edge. The keyboard will appear.***
5.	If you are having screen calibration problems or want to do a precision 16-point calibration, lick on the **Reset** button	The **Reset Pen or Touch Input Screens** window opens, as shown below: 
6.	Select the screen calibration you want to reset.	The current screen calibration points are reset to their default values and the selection screen closes.

7.	Click on **Calibrate** and select the screen you want to calibrate.	**NOTE:** A shield symbol next to the screen type (shown below) indicates the calibration data has been reset and is not calibrated; a green arrow indicates that the screen is calibrated. 
8.	Follow the on-screen instructions.	

Calibrating the Display in Windows XP

You can access both screen calibration routines through **ARMORutils** or access the pen screen calibration through the **Pen Tablet Properties** utility and the touch screen calibration through the **Touch Settings** utility in **Control Panel**.

Using ARMORutils

This capability is not currently available.

Using the Pen Tablet Properties Utility (Pen Screen Only)

The pen screen should be calibrated using the procedure in Table 30.

Table 29. Calibrate the Pen Screen Using the Pen Tablet Properties Utility

STEP	ACTION	CONDITION OR INDICATION
1.	Select **Start → Control Panel → Hardware and Sound → Pen Tablet Properties**.	The Pen Tablet Properties dialog window opens, as shown in Figure 82.

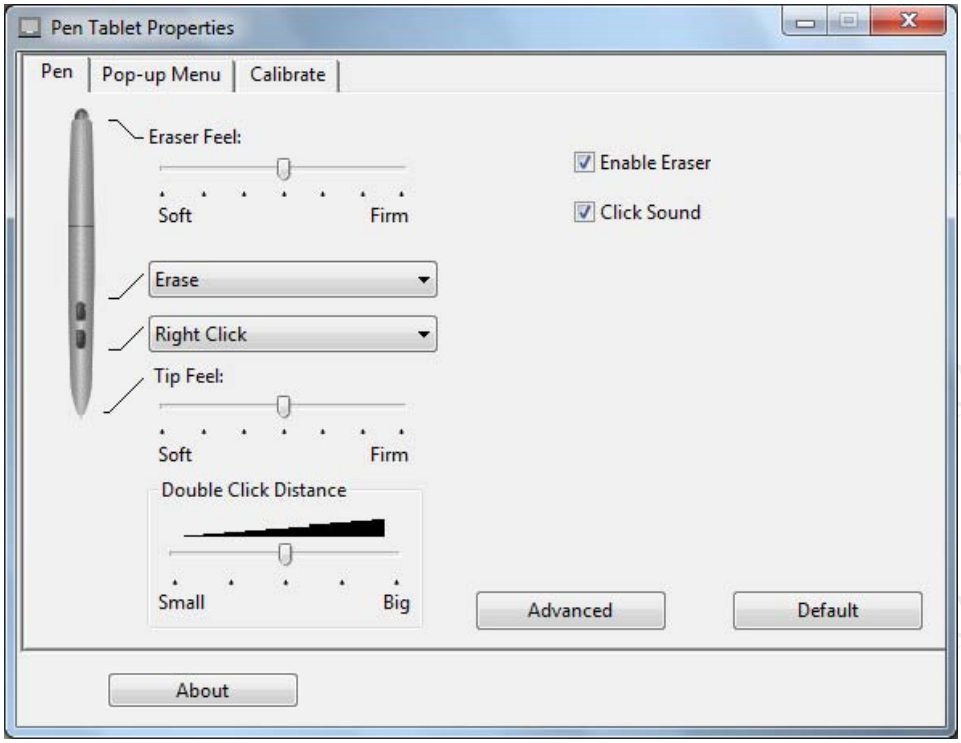
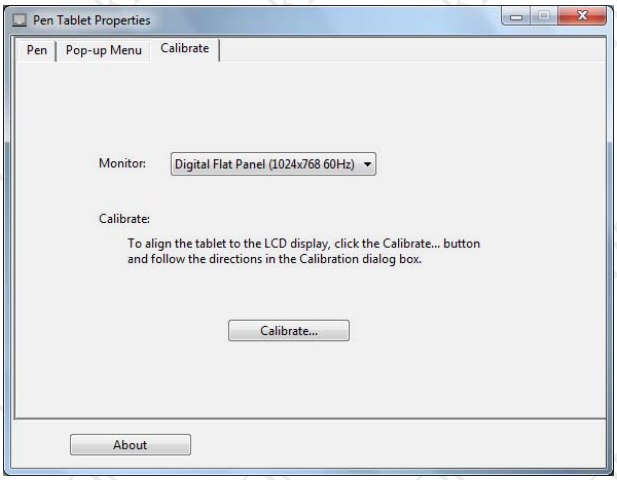


Figure 80. Pen Tablet Properties Utility Window

2.	Click on the **Calibrate** tab.	The Calibrate tab opens as shown below: 
3.	If you have a second pen or touch screen display connected, be sure the display you want to calibrate is selected in the **Monitor** field.	
4.	Click on the **Calibrate** button and follow the on-screen instructions.	

Using the Touch Settings Utility (Windows XP)

Calibrate the touch screen using the procedure in Table 31.

Table 30. Calibrate the Touch Screen Using the Touch Settings Utility

STEP	ACTION	CONDITION OR INDICATION
7.	Select **Start → Control Panel → Hardware and Sound → Touch Settings.**	The Touch Settings dialog window opens, as shown in Figure 83.
8.	Click on the **Calibrate** button and follow the on-screen instructions.	

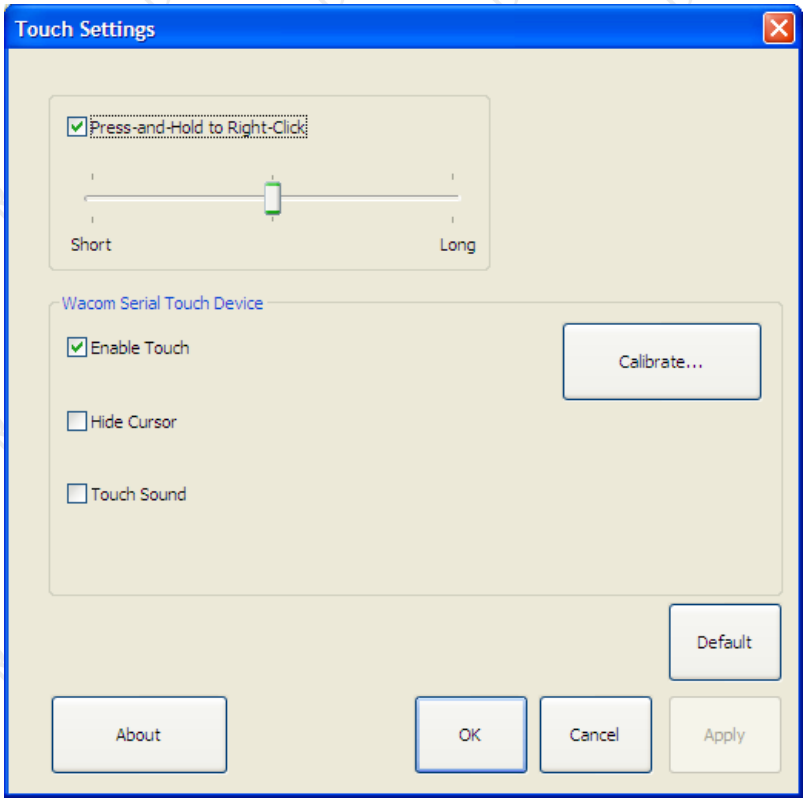


Figure 81. Touch Settings Utility Window

Figure 82. Computer PC Settings Display Tab

Rotating the Screen (Touch or Pen)

Your ARMOR X7 supports the Windows function of rotating the screen between Landscape and Portrait layout mode. In landscape mode (default orientation), the long axis of the screen is along the top and bottom of the display. In portrait mode, you turn the computer 90° and the long axis of the screen is along the left and right sides of the display.

There are three ways to rotate the screen:

- By using the Intel Graphics options via the desktop or icon tray
- By using the Intel Graphics and Media Control panel
- By using a hot key combination with an external keyboard

NOTE

If you lose calibration when rotating the screen and cannot use the pen to return to the default orientation, attach an external keyboard and press Ctrl+Alt+Up Arrow. This will return the display to the default landscape orientation.

Using the Intel Graphics Options

Right click anywhere on the desktop or click on the Intel Graphics icon in the icon tray (you may have to show hidden icons) and select **Graphics Options → Rotation**. Then select one of the four rotation angles as shown in Figure 85. **NOTE:** The "Normal" position is the default landscape orientation as shown in **Error! Reference source not found.**.

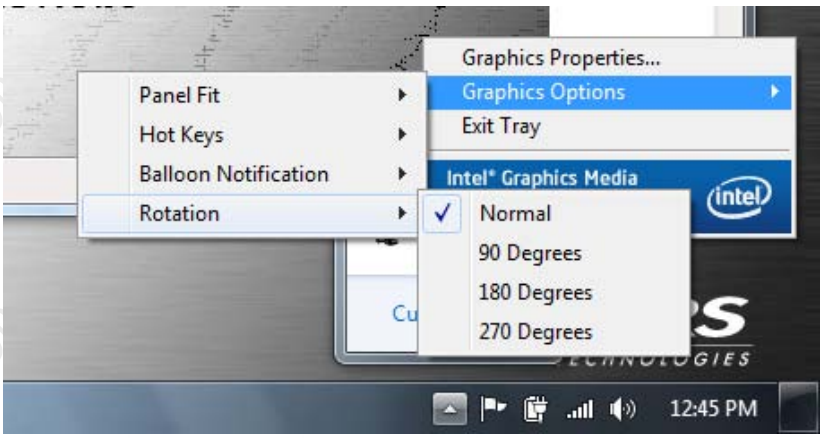


Figure 83. Intel Graphics Screen Rotation Options (from icon tray)

You can rotate the screen clockwise in four 90 degree steps, alternating between portrait and landscape orientation, or you can rotate it 180° or 270°.

Using the Intel Graphics and Media Control Panel

Right-click anywhere on the desktop or click on the Intel Graphics icon in the icon tray and select **Graphics Properties** to open the Intel Graphics and Media Control Panel, as shown in Figure 86. Select the rotation angle and click **OK**.

Figure 84. Intel Graphics and Media Control Panel

Using a Keyboard "Hot Key" Combination

Open the Intel Graphics and Media Control Panel and select **Options and Support → Hot Key Manager**. A list of pre-assigned (default) hot key combinations is displayed in the right panel, as shown in Figure 87. You can use these default combinations or specify a combination of your own.

To use a hot key combination, connect a USB keyboard and enter the combination.

Figure 85. Intel Graphics Panel Hot Key Manager

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10. BATTERY MANAGEMENT

The Lithium Ion batteries used in your ARMOR X7 computer offer the best technology available today. These 'Smart Batteries' provide ARMOR X7 users with the greatest power density and the most accurate "fuel gauge" possible. To achieve the best possible performance from your batteries, we recommend using and maintaining the batteries in accordance with the instructions provided in this section.

DRS recommends that you fully charge your batteries before using the computer on batteries alone. If you do not plan to use your computer immediately, be aware that the batteries will discharge at a slow rate even when not in use.

WARNING!

Do not drop or mishandle the batteries, immerse them in water, or subject them to high heat. Doing so could increase the risk of explosion or leakage, and possibly cause injury.

WARNING!

The lithium-ion batteries used in this equipment contain material that is hazardous to your health. If battery contents come in contact with the eyes, IMMEDIATELY flush the affected area with clean water for 15 minutes and have someone else summon medical attention for you. Unaffected persons should assist the affected individual in the vital first flushing of the eyes.

WARNING!

If battery material comes in contact with the skin, flush the affected area with clean water and seek immediate medical treatment.

Safety and Handling Considerations for Your Batteries

Please use the following safety rules when handling and using lithium-Ion batteries.

- Do not expose the batteries to very high temperatures such as an open flame.
- Do not short circuit the battery contacts or reverse their polarity.
- Do not let children play with the batteries.
- Do not crush, dent or allow any deformation of the batteries.
- Do not disassemble or open the batteries or try to alter or bypass the internal safety circuits.
- Avoid exposing the batteries to wet or extremely humid conditions.
- Avoid exposing the batteries to electrostatic discharge.
- Avoid dropping the batteries.
- Do not use in, or connect the batteries to, any other devices.
- Do not allow batteries to remain discharged for more than 1 week

When to Charge a Battery

Newly Received Batteries

Due to current regulations regarding shipment of Lithium Ion batteries, received batteries will arrive in a partially charged condition, typically with a maximum charge of 30%-50%. When you receive new batteries, you should fully charge them prior to using the computer on batteries alone.

Disconnected Batteries

To check a battery that is disconnected from the computer, press the battery button to activate the fuel gauge (see Figure 7). The lowest indicator will flash when the battery is at 10% charge or below. Because batteries will continue to self-discharge slightly even when disconnected, DRS recommends you recharge your batteries as soon as possible after they reach the 20% level (LED #1 on steady).

Installed Batteries

When an installed battery's charge drops below 10%, a warning message, similar to the one in Figure 88 will appear on the screen. At this point, the battery is in a **fully depleted** charge state (between 10% and 3%) and you risk having the computer shut down unexpectedly if you continue normal operations beyond this point.

To avoid a sudden shutdown and possible data loss, you should recharge your batteries as soon as you see the warning message, or replace them immediately with fresh batteries.

Fully Depleted Batteries

A battery is considered **fully depleted** when its charge falls below 10%. A lithium battery that is not installed in the X7 will self discharge at the rate of about 0.3% per day or 3% every 10 days (faster in higher temperature conditions). A fully depleted battery is therefore in danger of becoming **overly discharged** (below the 3% charge level) after about 23 days.

To protect the life of your batteries, DRS recommends you wait no longer than 10 days to recharge a fully depleted battery.

CAUTION!

Batteries that are allowed to discharge below the 3% charge level may not be recoverable and may have to be discarded.

How to Charge Your Batteries

Using the X7 Computer

The X7 batteries automatically begin charging when installed in the computer and external power is applied.

To recharge the batteries using the computer, plug the circular connector of the AC adapter into the AC adapter port on the left side of the ARMOR X7, or into the PWR connector on a desk dock unit. If your X7 is installed in a vehicle dock, the batteries will charge whenever vehicle battery power is available.

Using the Optional X7 External Battery Charger

The X7 external battery charger () will charge a single battery in about 2.5 hours, or two batteries in about 4.5 hours. For instructions on using the external battery charger, see Appendix B, Using the X7 External Battery Charger

Charging Time

The charging time for a fully depleted battery (10% charge or less) is approximately 1-2 hours depending on battery capacity and temperature. Two fully depleted batteries will take approximately twice as long to charge, or about 4 hours. Using the computer during charging will lengthen the recharge time depending on backlight setting, computer usage and surrounding temperature.

Don't be alarmed if batteries feel warm to the touch during the charging process.

NOTE

If the internal battery temperature exceeds 45°C during charging, the computer will suspend the charging cycle until the temperature drops back into the normal operating range.

NOTE

The charging cycle is not linear and the last 20% of charge takes proportionally longer to complete than the first 80% of charge time.

Selecting How to Charge Your Batteries

If you have two batteries installed, you can select if both will charge at the same time (simultaneous mode) or if the battery with the lowest charge will charge first (sequential mode). The default mode is simultaneous.

Simultaneous Mode

In simultaneous mode, both batteries will charge at the same time regardless of individual battery charge level.

Sequential Mode

If you choose sequential mode, the battery with the lowest charge will be charged to 80%, followed by the next lowest battery. Once both are at 80%, the first charged battery will be charged to 100%, followed by the second charged battery.

Follow the procedure in Table 32 to select if your batteries will charge simultaneously or sequentially.

Table 31. Select How to Charge the Batteries

STEP	ACTION	CONDITION OR INDICATION
1.	Connect external power.	
2.	Double-click on the **ARMORutils** icon on the desktop and select the **Battery Monitor** dialog page from the Main screen.	The Battery Monitor dialog page opens.
3.	Click on the **Charger Settings** button.	The Charger Control Settings window opens.

STEP	ACTION	CONDITION OR INDICATION
	NOTE ***If total system current exceeds 4 amps during charging, the charger will switch to sequential battery charging.***	
4.	Select **Charge Both** (simultaneous) or **Charge Lowest First** (sequential).	

How to Tell When Batteries Have Finished Charging

While the batteries are charging, the fuel gauge LEDs will light to indicate the current level of charge and the amber battery status LED will be on steady. When the batteries are fully charged, all five fuel gauge LEDs will be on steady and the battery status LED will be off.

Temperature Can Affect Recharging Times

DRS has included temperature sensors in the battery circuit to protect the cells when a high or low temperature condition occurs. Recharging a battery under extreme temperature conditions can force the charger to suspend charging until the temperature returns to a safe level. This can occur if the internal temperature of the battery falls below -10°C (14°F) or exceeds 45°C (113°F).

Battery Operating Time

The total operating time for the ARMOR X7 with two fully charged 2400 mAh batteries at a nominal room temperature is approximately 4 hours. For a single battery, the operating time is approximately 2.5 hours. Legacy batteries with lower capacity will have correspondingly shorter operating times.

Operating times will vary depending on backlight setting (brightness), wireless and GPS radio activity, Ethernet network activity, and utility and software applications that are currently running. The operating time can also be reduced when the batteries are near the temperature extremes.

Operating under Low Battery Conditions

Low Battery Level

Your ARMOR X7 is designed to operate even when the battery is depleted (<10% charge). When the total charge drops below 10% (low battery level), a low battery alert message will be displayed, as shown in Figure 88. At this point, DRS recommends you connect external power to recharge the batteries or replace one or both batteries with fresh batteries.

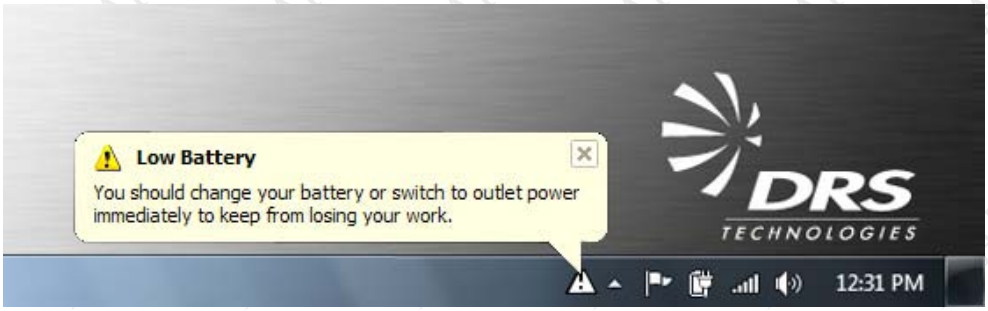

Figure 86. Low Battery Alert Message

Reserve Battery Level

When the remaining charge reaches 7% (reserve battery level), another message will be displayed stating that you are operating on reserve power. At this point, you need to save your work and then connect external power, replace the batteries or shut down the computer.

Critical Battery Level

When the remaining charge reaches 5% (critical battery level), the battery icon in the task tray will indicate a critical battery level and Windows will automatically place your computer into hibernation mode. Hibernation is a low-power mode that first saves your current session to the hard drive and then performs an orderly shutdown. To resume your session where you left off, press the **Power** button to restart the computer.

CAUTION!

If the total battery charge drops to 3% or lower while the computer is operating, the computer will shut down abruptly with the loss of any work in progress. Normally, the automatic shutdown at the 5% point will prevent this happening, but heavy demands on the batteries may cause the battery charge to drop too quickly for the computer to react and perform a safe shutdown.

What to Do if You Get a Low Battery Alert

DRS recommends you do one of the following immediately should you get a low battery alert:

- Connect external power and begin recharging the batteries
- Replace one or both of the batteries with a fully charged battery.
- Save your work and perform a normal system shutdown.

Avoiding Overly-Discharging Your Batteries

The following suggestions will help avoid an overly-discharged condition.

- Do not store the X7 for long periods with the batteries installed. Even when the unit is powered off, the tablet still draws a small amount of power from the batteries.
- Do not store X7 batteries in a fully depleted condition for long periods of time. The X7 batteries will further self-discharge over time at a rate of about 10% a month or 3% every 10 days. The batteries should be recharged to 40% of full charge every 3-4 months of storage.

What to Do for Overly-Discharged Batteries

The Armor Tablet X7 has an internal Level 2 smart battery charger. One of the features of this charger is that it will attempt to recover a battery that has been too deeply discharged (3% or less). This is done by applying a trickle current of 80 milliamps for about 3 minutes. This process normally injects enough energy into the battery to allow normal re-charging to occur. If the recovery process is successful, the 20% LED will begin flashing or be on steady. Allow the battery to charge normally.

If this recovery process does not work (20% LED will not light), perform the procedure in Table 33.

Table 32. Recover an Overly-discharged Battery.

STEP	ACTION
1.	Remove both batteries.
2.	Wait 5 seconds.
3.	Reinstall both batteries.
4.	Repeat steps 1-4 up to a maximum of five times.
5.	If the batteries still fail to start re-charging, they will have to be replaced.

Battery Capacity

A battery's capacity is it's ability to hold the maximum charge that it was designed to carry. This capacity gradually decreases over time due to chemical aging, temperature extremes and usage. Once a battery's capacity drops below 80% of its designed rating, it is considered at the end of it's life and would normally be replaced. However, some batteries may still be usable.

CAUTION!

Permanent battery capacity loss is greatest at elevated temperatures with the battery fully charged. Do not leave batteries installed in your X7 with external power connected in high temperature surroundings for days or weeks at a time.

Discharge/Recharge Cycles

Lithium ion batteries do not need to be deeply discharged periodically to maintain capacity like other NiCad or other rechargeable batteries. In fact, deep discharges have a negative effect on the battery's capacity and operating life.

Each time a lithium ion battery is deeply discharged (< 30%) and then recharged (either during normal operation or conditioning), the system records the event as a "cycle." Each of these deep discharge/recharge cycles has a small cumulative effect on the overall capacity and life of the battery and, on average, after approximately 300-400 cycles at nominal room temperature, the battery is a candidate for replacement (sooner if used primarily in high temperatures).

The accumulated cycles are recorded in the **Charge Cycles Count** field of each Battery Information window in ARMORutils (see Figure 51).

Battery Conditioning

Battery conditioning is only recommended if you suspect that ARMORutils or the battery fuel gauge is not reporting the battery charge correctly, as conditioning adds to the charge cycle count.

Battery conditioning is a 3-step process consisting of an initial full charge, followed by a full discharge and finally followed by a full recharge. Each step is displayed in the Conditioning Status panel of the ARMORutils Battery Conditioning window (see Figure 89).

Follow the procedure in Table 34 to condition a battery.

NOTE

You must have external power connected to condition a battery.

NOTE

The conditioning process can take 3-5 hours to complete. Ensure external power remains connected for the duration of the conditioning period.

NOTE

If the internal battery temperature exceeds 45°C during conditioning, the charging circuit will suspend the conditioning cycle until the temperature drops back into the normal operating range.

Table 33. Conditioning a Battery

STEP	ACTION	CONDITION OR INDICATION
1.	Connect external power.	
2.	Open the **Battery and Charger Monitor** page in **ARMORutils** and Click on the **Conditioning Menu** button.	The Battery Conditioning window opens, as shown in Figure 89.
3.	Select **Bay 1 Only**, **Bay 2 Only** or **All Bays**	
4.	Click on **Start Cycle.**	
5.	To terminate the conditioning process at any time, click on **Terminate Cycle**.	

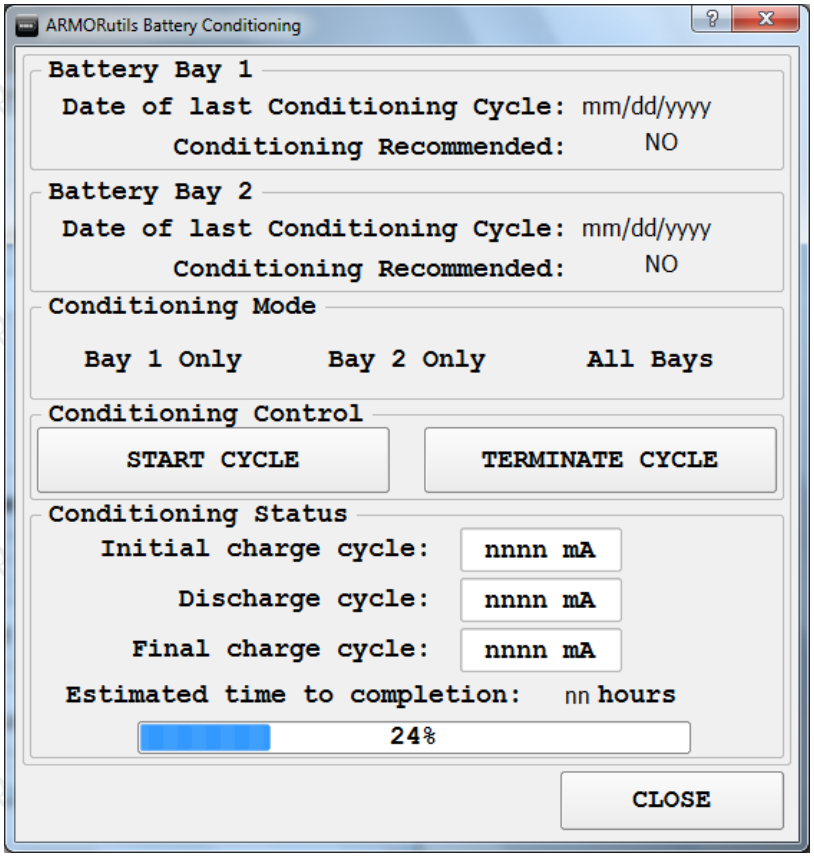

Figure 87. ARMORutils Battery Conditioning Window

How to Optimize Battery Operating Time

The total operating time for your ARMOR X7 is greater than 8 hours with two batteries installed and up to 4 hours with a single battery. However, this is dependent on a variety of factors including temperature, backlight setting and computer usage.

You can help ensure the maximum performance of your batteries by optimizing your computer's power management features. For some suggested ways to do this, select **Start → Control Panel → Hardware and Sound** and click on the **Power Options** icon.

There are three power plan options: **Balanced, High Performance** and **Power Saver**. DRS recommends that you use the **Balanced** plan until you are more familiar with the usage demands on your tablet.

How to Monitor Battery Usage

You can monitor the charge level of each battery in two ways: by clicking on the **Battery/Plug** icon in the task bar (the battery icon changes to a plug icon when external power is connected) to open a Windows 7 battery window or by selecting the **Battery Monitor** page in **ARMORutils** to open the Battery Monitor page.

Open the Task Bar Battery Window

Click on the Battery/Plug icon in the Task Tray to open the Windows 7 battery window, as shown in Figure 90. The example on the left shows the battery symbol when the X7 is operating on battery power alone. The example on the right shows the battery symbol when external power is connected and the battery is charging (**NOTE:** The charge times and levels are not related in these examples).

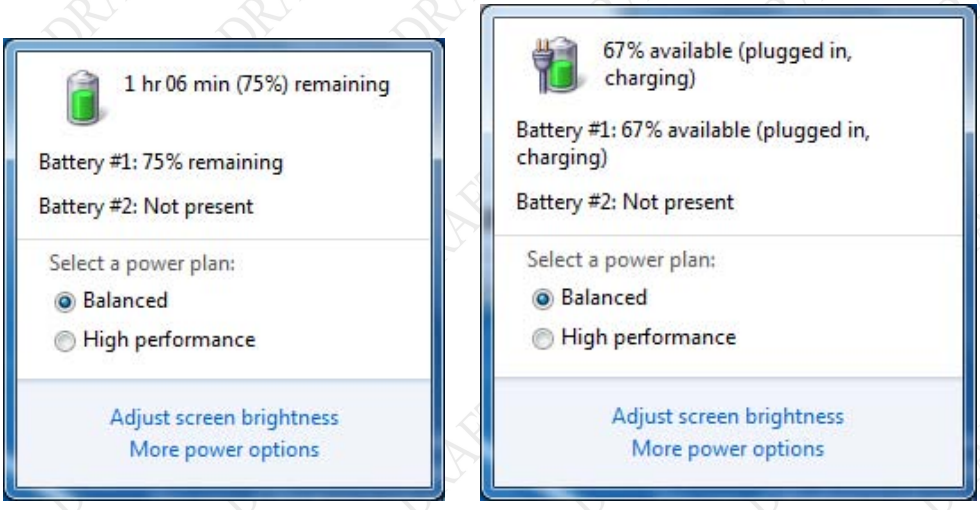

Figure 88. Windows Battery Window Icon Examples

Open the ARMORutils Battery Monitor Page

Double-click on the **ARMORutils icon** on the desktop and select the **Battery Monitor** button to open the Battery and Charger Monitor page, as shown in Figure 91.

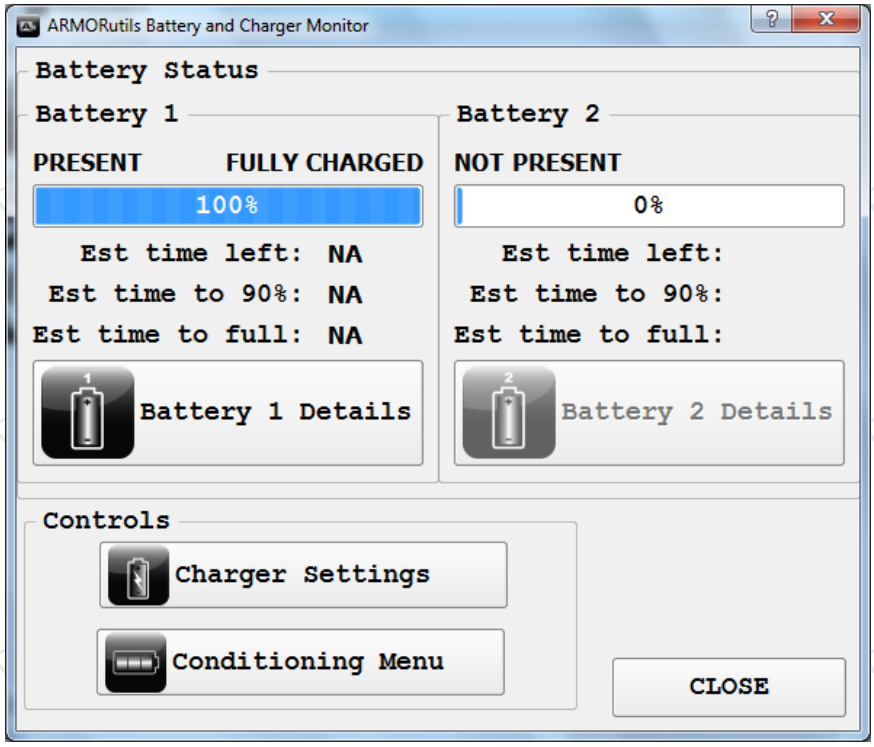

Figure 89. ARMORutils Battery Monitor Page

When to Replace a Battery

Battery life is affected by the age of the battery, its operating temperature and the number of discharge/charge cycles that it goes through over time. Industry surveys report that “average daily use” (8 hours or less at nominal room temperature) equates to approximately 300-400 cycles per year. Batteries operating at this level of usage that are properly cared for can last as long as two years or even longer. However, if the batteries are in constant use (24/7), subjected to frequent temperature extremes or are subjected to complete discharging frequently they will deteriorate more rapidly. Under these conditions, DRS recommends at least an annual replacement.

To determine the age of the battery, check the lot number on the battery label (see Figure 92). This number is the date (mm/yy) the battery was shipped from DRS.

Figure 90. ARMOR X7 Battery Label Example

Battery Warranty

Your X7 battery is warranted against all defects in material and workmanship for a period of 1 year from shipment from DRS.

Because of the many variables associated with usage and aging, DRS is not responsible for battery capacity performance except as affected by factory defects or workmanship in the battery.

Where to Purchase Replacement Batteries

Your ARMOR X7 uses long lasting Lithium Ion batteries that are custom made for DRS Tactical Systems, Inc. If you need to purchase replacement batteries, notify your sales representative, authorized reseller or contact DRS Technical Support.

Do not substitute any other batteries. Substituting batteries could damage the X7 and may void your computer warranty.

How to Store Batteries When Not in Use

The following storage tips will help you optimize the capacity and performance of your batteries.

Short-Term Storage

- If your X7 will not be in use for 7-30 days, it is recommended that the batteries first be charged and then removed from the computer for short-term storage.
- Batteries can be stored at temperatures of 32ºF to 95ºF (0ºC to 35ºC) and a humidity of 45-85%
- When possible, store them in a cool dry place at room temperature or below. The best place to store them is in a refrigerator at a temperature of 35 - 40°F.
- Do not leave batteries in direct sunlight or in any other unusually hot location. A battery will deteriorate more quickly if stored in high temperatures such as a vehicle in the hot sun.
- Protect the battery contacts from accidentally touching other battery contacts or any metal objects to prevent a short circuit and possible arcing or explosion.

Long-Term Storage

- If your X7 will not be in use for 30 days or longer, the batteries should be placed in long-term storage.
- Prepare the batteries for storage by placing them in the computer with external power disconnected and allow the charge to drop to 40%.
- LiION batteries self discharge at the rate of about 10% per month. While in long-term storage, you should recharge the batteries every 3-4 months to a charge level of 40%.
- To check a battery's remaining charge, insert it in the X7, power up the unit and select the **Battery Monitor** button from the ARMORutils main window.

Battery Tips for Best Performance

- Recharge a battery within 24 hours of a full discharge. Batteries remaining in a fully discharged state longer than 24 hours may deteriorate more quickly.
- Battery charging should be done at temperatures between 32°F (0°C) to 95°F (35°C), but preferably at room temperature. The battery could deteriorate more quickly when charged at high temperatures.
- When operating your ARMOR X7 on external power for extended periods of time (1 week or longer), it's best to remove the batteries and store them in a cool place until needed.
- If batteries are removed for longer than 30 days, refer to How to Store Batteries When Not in Use.

- If possible, allow a battery to warm or cool to the temperature of your surroundings before installing it in the tablet.

Disposing Of Your Batteries

Lithium-ion batteries are fully recyclable and should not be simply thrown away. Please help protect our environment by turning in your defective batteries to an authorized recycler, or send them back to DRS.

DRS Tactical Systems supports recycling of batteries and will take back your batteries using a Returned Material Authorization (RMA) form. Please contact the DRS Technical Support center toll-free at 1-888-872-1100 for more information.

Follow these precautions when handling or returning used batteries:

- Insulate the battery contacts with tape.
- Do not disassemble the batteries.
- Package the batteries so that they cannot move around or contact with each other.

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11. DRS TECHNICAL SUPPORT

Before You Contact Us

Please have your local technical personnel check for network or custom software problems before contacting DRS Technical Support with a problem.

How to Obtain Warranty Service

Before proceeding, please read the **Error! Reference source not found.**.

Notice: DRS reserves the right to charge a No Fault Found (NFF) fee for any unit returned for repair that is found to be fully operational.

1. Immediately notify DRS.

Inform DRS of your problem at one of the numbers below, or notify an authorized DRS Reseller.

In North America, call:	(888) 872-1100 or (321) 309-0599 – 24 hrs, 7 days a week
In the UK, call:	44-(0)-1252-730716
In Europe, call:	49-2246-915-99-77

2. Obtain a Return Merchandise Authorization (RMA) Number.

If it is determined that your product needs to be returned for replacement or repair, a customer service representative will give you an RMA number. The RMA number is required to return any product to DRS, regardless of the reason for the return.

3. If you want to use our online RMA service, please ask for a Username and Password.

To access our online RMA service:

1) Go to www.drsarmor.com.
2) Click on the **Support** tab and select **Online RMA**.
3) At the login screen, enter your Username and Password.
4) Click on **Send**.
5) Fill out the online form.
6) Print a copy of the form for your records.
7) Select **Send.**

4. Include the Following Required Information with Your Product(s):

- Company name, address and telephone number.
- RMA number received from DRS (if applicable).

- Serial number of the product.
- Date of purchase.
- Your ship-to address and any special shipping requirements.
- A detailed description of the problem.

5. Prepare your Products for Shipment.

- Use the original shipping container if possible to return your product.
- Remove the batteries and package them separately.
- If the original container is not available, wrap each item securely with bubble wrap or suitable cushioning material.
- Enclose a copy of the RMA form.
- Enclose a description of the problem and any special notes for the repair technician.

6. Ship Your Product(s).

Ship your products to one of the addresses listed below:

NOTE

Transportation and insurance costs must be prepaid. DRS is not responsible for loss or damage which may occur in transit.

NOTE

Before you ship any product(s) to DRS, be sure to back up the data on any hard drive(s) and any other storage device(s). Remove any confidential, proprietary or personal information and any removable media such as floppy disks, CDs or PC Cards. DRS is not responsible for any lost confidential, proprietary or personal information or removable media or for corrupted data.

In North America, ship to:

DRS Tactical Systems, Inc.
1110 West Hibiscus Boulevard
Melbourne, Florida 32901 USA
ATTN: Service

In Europe, ship to:	**DRS Tactical Systems, LTD.** The Trading Estate Farnham Surrey, GU9 9NN UK ATTN: Brian Perkins
or:	**International – Markus Breuch** Rathausstr. 10 53797 Lohmar, Germany ATTN: Silke Zaigler

Once your product(s) are repaired or replaced under the terms specified in the warranty, DRS will return your product(s), with shipping pre-paid, to the address included with your RMA.

If You Need Further Information

Please call us, fax us, email us, or visit our website.

Call us:	**In North America, call:** (888) 872-1100 or (321) 309-0599 **In the UK, call:** 44-(0)-1252-730716 **In Europe, call:** 49-2246-915-99-77
Fax us:	**In North America:** 321-725-0496 **In the UK, fax:** 44-(0)-1252-730522 **In Germany, fax:** 49-2246-915-99-78
Email us:	
For Support:	**In North America or UK:** support@drs-ts.com **In Europe:** sales@drsarmor.eu
For Sales and Information	**In North America or UK:** Sales@drsarmor.com **In Europe, email:** Sales@drsarmor.eu
Or Visit our website at:	www.drsarmor.com For translation in German, click on "**Deutsch**" at the top of the page.

Warranty Information

DRS TACTICAL SYSTEMS, INC.
LIMITED WARRANTY – HARDWARE
ARMOR PRODUCTS

General Information

DRS Tactical Systems, Inc. ("DRS") warrants for the duration of this warranty that the DRS ARMOR product(s) ("Product(s)") produced by DRS will be free from defects in material and workmanship under normal use and service, subject to the terms and conditions set forth herein. This warranty applies to the Products only and excludes, but is not limited to, all other products and accessories supplied and/or distributed but not manufactured by DRS.

This warranty extends only to the original purchaser of Products from DRS or a DRS Authorized Reseller ("Original Purchaser"). It is not transferable to anyone who subsequently purchases or obtains the Products from the Original Purchaser.

Length of Warranty

The warranty is valid for a period of three (3) years from the original date of the packing slip from DRS and/or an Authorized Reseller. During this period, DRS will, at its option and expense, either repair or replace with new or reconditioned (of equal or better quality) parts of any of the Products which prove to be defective, provided that such Products are returned in accordance with the terms of this warranty. All exchanged parts and Products replaced under this warranty will become the property of DRS. If repair or replacement is not feasible, DRS will, at its option, refund the purchase price of the Product(s) on a three year straight line depreciation basis. Any replacement part or Product will be warranted for the remainder of the original warranty period or ninety (90) days, whichever is longer.

Terms and Conditions

This warranty covers defects in materials and workmanship in the Products, as follows:

Term	3 years standard
Technical Assistance	Yes
Shipping Costs	Shipping costs of a Product to DRS are not included as part of this Warranty. Shipping costs of a Product to the Original Purchaser after a warranty repair is included as part of this warranty. If after receipt of a Product for repair under this warranty, it is later determined to be a non-warranted repair, all shipping costs are to be paid by the Original Purchaser.

This warranty does not cover:

- Non-DRS ARMOR products (accessories) under the original manufacturer's warranty including, but not limited to, the carrying case, PCMCIA cards, etc. Non-DRS ARMOR branded products are not covered under an extended warranty period.
- Software, including the operating system and software added to the DRS ARMOR hardware products through our factory-integration system, third-party software, or the reloading of software;
- Scratches or abrasions to the Product's LCD screen/display, and abusive wear of the LCD screens;
- Consumables and High Wear Items. Batteries, Keyboards, Touch Pad, Touch Screen, AC Adaptor, and liquid crystal display (LCD) are covered under the Limited Warranty for one (1) year.
- Problems that result from external causes such as accident, fire, floods, or acts of God; abuse; misuse; or problems with electrical power; servicing not authorized by DRS; failure to follow the Product instructions or failure to perform preventative

maintenance; problems caused by using accessories, parts, or components not supplied by DRS; improper installation (to include the absence of surge protection in vehicle installations), testing, operation, use or handling of the Product; or unauthorized alteration of Products

- Products with missing or altered service tags or serial numbers.
- Products for which DRS has not received payment.
- DRS is not responsible for and shall not be liable for transportation and insurance charges incurred in or damages resulting from transporting the Products, Accessories and/or Replacement Products to DRS for warranty service.
- DRS is not responsible for any third-party software created for use in the integration and/or operation of any Products, Accessories and/or Replacement Products whether or not such third party software was installed by DRS. Maintenance and support service for third-party software is the sole responsibility of the creator thereof.

Additional Information

The agents, dealers, DRS Authorized Resellers and employees of DRS are not authorized to make any modifications to this warranty, or additional warranties binding on DRS about or for Products, Accessories and/or products sold or supplied by DRS. Additional statements, whether oral or written, except signed written statements from an officer of DRS, do not constitute warranties and should not be relied upon.

The Product is not designed or certified for use in high risk applications including, but not limited to, the operation of nuclear facilities, aircraft navigation or air traffic control systems, communications systems in which a failure thereof could cause death or serious injury or property damage (e.g., emergency or 911 communications systems), medical systems, life support, weapons systems or any other potentially life critical uses. Original Purchaser understands and agrees that DRS makes no assurances or warranties that the Product is suitable for any such high risk uses.

DRS' SOLE LIABILITY, AND ORIGINAL PURCHASER'S SOLE REMEDY, FOR ANY MALFUNCTIONS AND DEFECTS IN THE PRODUCTS IS LIMITED TO REPAIR AND REPLACEMENT AS SET FORTH IN THIS WARRANTY STATEMENT. EXCEPT AS OTHERWISE EXPRESSLY STATED HEREIN, DRS DISCLAIMS ALL OTHER WARRANTES, WHETHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM COURSE OF DEALING OR TRADE. NO WARRANTIES WILL APPLY AFTER THE WARRANTY PERIOD HAS EXPIRED.

DRS HEREBY DISCLAIMS, AND THE ORIGINAL PURCHASER HEREBY AGREES, THAT DRS DOES NOT ACCEPT LIABILITY BEYOND THE REMEDIES PROVIDED FOR IN THIS WARRANTY OR FOR ANY INDIRECT, CONSEQUENTIAL, PUNITIVE, SPECIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, ANY LIABILITY FOR THIRD PARTY CLAIMS FOR DAMAGES, FOR PRODUCTS NOT BEING AVAILABLE FOR USE, OR FOR LOST DATA OR LOST SOFTWARE. NOTWITHSTANDING ANYTHING CONTAINED HEREIN, DRS' TOTAL LIABILITY FOR ANY ALLEGED OR ACTUAL BREACH OF WARRANTY WILL BE NO MORE THAN THE AMOUNT PAID FOR THE PRODUCT THAT IS THE SUBJECT OF ANY SUCH CLAIM. THIS IS THE MAXIMUM AMOUNT FOR WHICH DRS SHALL BE RESPONSIBLE.

Acronyms

ACRONYM	DEFINITION
AC	alternating current
BIOS	basic input/output system
CD-ROM	compact disk – read only memory
CDMA	code division multiple access
CPU	central processing unit
DC	direct current
DVD	digital video disk
EDGE	enhanced data rates for GSM evolution
EVDO	evolution data only/evolution data optimized
GB	gigabytes
GPRS	general packet radio service
GPS	global positioning system
GSM	global system for mobile communications
HDD	hard disk drive
HSDPA	high-speed downlink packet access
I/O	Input/Output
LCD	liquid-crystal display
LED	light-emitting diode
OEM	original equipment manufacturer
PC	personal computer
PCMCIA	personal computer memory card international association
RAM	random access memory
SAS	security attention sequence
SD	secure digital
SIM card	subscriber identity module
SmBus	system management bus
SODIMM	small outline dual in-line memory module
SSHD	solid-state hard drive
SVGA	super VGA (maximum of 800 x600 pixels)
TFT	thin-film transistor
USB	universal serial bus
VAC	volts AC
VDC	volts DC
VGA	video graphics array
WLAN	wireless local area network
WWAN	wireless wide area network
XGA	extended VGA (1024 x 768 pixels)

Glossary

TERM	DEFINITION
ambient temperature	The temperature of the air surrounding an object
fully depleted battery	A lithium-ion battery that has discharged to a level of 3 % or below.
fully charged battery	A lithium-ion battery that has reached 100% of charge as indicated by a steady 100% LED on the Battery Gauge on the Control Panel.
fully discharged battery	A lithium-ion battery that has discharged to a level between 10% and 3% of charge, as indicated by a flashing 10% LED on the Battery Gauge.
flexspace	A special compartment with a flexible communications interface for custom circuit cards or modules.

Appendix A

Explanation of Pen Side Button Options

4th Click (Back)	Duplicates a 4th mouse button click – usually the Back command in browser application.
5th Click (Forward)	Duplicates a 5th mouse button click – usually the Forward command in browser application.
Click	Duplicates a left mouse button click.
Click Lock	Duplicates holding an object with the left mouse button; good for dragging objects or selecting text or groups of objects. Press button to grab, press to release.
Default	Sets the switch function to Right Click
Disabled	Disables the side switch.
Double Click	Generates a double-click action with a single press of the side switch.
Erase	Enables the pen tip to act like an eraser in handwriting applications and in some paint and imaging editing programs.
Journal	Opens Microsoft Journal™ (only with versions of Windows that include Microsoft Journal).
Keystroke…	Enables you to define special keystrokes. This function can also be made available using the Pop-up Menu option (must be defined in the Pop-up Menu tab of the Pen Computer Properties dialog.
Middle Click	Duplicates pressing the middle scroll button on a mouse.
Mode Toggle…	Toggles between Pen and Mouse mode if pre-configured in the Pop-Up Menu tab of the Pen Computer Properties dialog (see Windows Control Panel).
Modifier…	Enables you to duplicate a shift, ctrl, alt or click function.
Open/Run…	Opens or runs a pre-selected application. This function can also be made available using the Pop-up Menu option.
Pan/Scroll…	Enables you to use the pen like a hand to move a document or image in any direction within an active window.
Pop-up Menu	Makes available selections enabled in the Pop-up Menu tab of the Pen Computer Properties dialog (see Windows Control Panel).
Pressure Hold	Primarily used with painting programs to maintain the pressure of a brush stroke.
Right Click	Duplicates a right mouse button click.
Computer PC Defined	Uses the pen settings defined in the Pen Options tab of the Pen and Touch dialog window.
Computer PC Input Panel	Opens the Computer PC input panel (only with versions of Windows that support Computer PC).

Appendix B

Using the X7 External Battery Charger

The X7 battery charger can recharge a single battery in 2.5 hours and two batteries in less than 6 hours. You can remove or insert a battery at any time in the charge cycle without causing damage to the charging circuits or to the battery.

Table 34. Charging a Battery

Step	Action	Comment
1.	Hold the battery with its connector pointing down and the rounded edge of the battery facing away from the charger, as shown in Figure 93.	
2.	Insert the battery into the bay and gently press down to engage the locking latches. Rock the battery slightly to ensure the battery is locked in place.	The battery button will snap into place when the latch is engaged. The charging will begin immediately, as indicated by the steady yellow charge indicator. When charging is complete, the yellow LED will turn off and the green (fully charged) LED will turn on.
3.	To remove the battery, press on the spring-loaded battery release button and lift the battery from the charging bay.	

Figure 91. Inserting a Battery

Charger LED Status Indications

There are two status indicators for each battery bay. Table 36 lists the possible indicator conditions and their meanings.

Table 35. Status Indicator Conditions

Status Indicator	Condition
Fully Charged Battery LED (green)	On steady with external power applied and battery fully charged (>95%).
	Off with external power disconnected or battery charge <95%.
Charging LED (yellow)	On steady with external power applied and battery charging.
	Flashing 1 sec on/1 sec off with external power applied and battery temperature above or below maximum limits.
	Flashing 1 sec on/1 sec off with external power applied, temperature in limits, and other battery charging (serial charging).
Fault LED (red)	On steady when fault in power system is detected (over voltage, under voltage, excessive current, charger circuit failure or battery circuit failure).
	Off when fault is corrected.

RECORD OF CHANGES

Rev	ECO #	Description Of Change
-		Initial Release.

ARMOR Rugged Mobile Computers
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Melbourne, FL 32901
Tel 888.872.1100
FAx 321.725.0496
sales@drsarmor.com

International calls
+1 321.309.0599

Product Support

ARMOR computer systems are typically custom-configured for a given application. Before calling DRS, please check with your IT staff to resolve any software issues. Additional ARMOR Product Support is available 24/7 on the web at www.drsarmor.com and by telephone at 888.872.1100 or 321.309.0599. For Windows® information, please refer to www.microsoft.com.

DRS TECHNOLOGIES