ARMOR

USER'S GUIDE | REVISION A

MODEL X7 TABLET COMPUTER

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MODEL X7 TABLET COMPUTER

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SURGE SUPPRESSOR

COMPACT KEYBOARD

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

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Other Compliance:

United States

- 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 radiates radio frequency energy and, if not installed and used in accordance with the instructions, cautions and warnings contained in this user's guide, 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 this device or move it away from the equipment experiencing interference.
    - If connected to an AC outlet, move this device to an outlet on a circuit different from that to which the device experiencing interference is connected.
    - Consult the dealer or an experienced radio/TV technician for help.
- CAUTION: Changes or modifications not expressly approved by DRS Technologies, Inc. could void the user's authority to operate this equipment.
- This device complies with Part 15 of the FCC Rules. Operation is subject to the following two condition:
    - This device may not cause harmful interference, and
    - 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.
- When using a docking station and external antenna with the WLAN, the antenna should have an impedance of 50 ohms and a gain not to exceed +5 dBi. To comply with FCC RF exposure requirements, separation distance of at least 20 cm (8 in.) should be maintained between the external antenna and all persons.
- Operation within the 5.15–5.25 GHz band is restricted to indoors operations.

Canada

- This Class B digital apparatus complies with Industry Canada ICES-003, Issue 4 June 7, 2004 and license-exempt RSS standards RSS-210, Issue No 8 (December 2010), RSS-132 Issue No. 2 (September 2005), and RSS-133 Issue No. 5 (February 2009). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference that may cause undesired operation of the device.
- Cet appareil numérique de classe B est conforme à Industrie Canada ICES-003, numéro 4 Juin 7, 2004 et exempts de licence normes RSS RSS-210, Issue n ° 8 (Décembre 2010), CNR-132 fascicule n o 2 (Septembre 2005), et RSS-133 fascicule n ° 5 (Février 2009). Son fonctionnement est soumis aux deux conditions suivantes: (1) cet appareil ne peut pas provoquer d'interférences et (2) cet appareil doit accepter toute interférence pouvant causer un fonctionnement indésirable de l'appareil.
- This product is restricted to indoor use in the 5.15 to 5.25 GHz frequency range. Industry Canada requires this product to be used indoors to reduce the potential for harmful interference to co-channel mobile satellite systems.
- Operation in the 2.4 GHz band: To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.
- Opération dans la bande 2,4 GHz:Pour empêcher que cet appareil cause du brouillage au service faisant l'objet d'une licence, il doit être utilisé a l'intérieur et devrait être placé loin des fenêtres afin de fournir un écran de blindage maximal. Si le matériel (ou son antenne d'émission) est installé à l'extérieur, il doit faire l'objet d'une licence.
- Be advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5250–5350 MHz and 5650–5850 MHz and that these radars could cause interference and/or damage to WLAN devices.
- Under Industry Canada regulations, the WLAN radio transmitter may only operated using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that necessary for successful communication.
- This radio transmitter 7888B-622ANH has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.
    - Mobile Mark SMW-301-xxxx(surface mount), MGW-301-xxxx (magnetic mount)radome antennas
    - Gain: +5dBi in 2.4GHz and 5GHz bands
    - Impedance: 50 ohm

Europe

- This X7 tablet computer has been tested for compliance with ATEX directive 94/9/EC.

- This equipment may be operated in AT, BE, BG, CY, CZ, DK, EE, FI, FR, DE, GR, HU, IS, IE, IT, LV, LT, LU, MT, NL, NO, PL, PT, RO, SK, SI, ES, SE, CH, LE, UK, HR, MK, TR. Frequency band 5150 – 5350 MHz restricted to indoor use
- FR: 2400 – 2483.5 MHz frequency band restricted to indoor use
- IT: For private use, a general authorization is required if RLAN is used outside of own premises. For public use, a general authorization is required.
- NO: 2400 – 2483.5 MHz band use is not allowed within the geographical area within a radius of 20 km from the centre of Ny-Ålesund.

MODEL X7 TABLET COMPUTER

DECLARATION OF CONFORMITY

We, DRS Tactical Systems, Inc., 1110 West Hibiscus Blvd., Melbourne, FL 32901, USA Phone: 321-727-3672, *declare under our sole responsibility that the product,*

Model ARMOR X7 / T1230 **Type of Product** Tablet PC

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

Standards

- **EN60950-1:2006+A11: 2009** Safety of Information Technology Equipment
- **Council Recommendation 1999/519/EC of 12 July 1999** Limitation of exposure to the general public to electromagnetic fields (0Hz to 300 GHz)
- **EN62311: 2008** Assessment of Electronic and Electrical Equipment Related to Human Exposure Restrictions for Electromagnetic Fields (0Hz - 300 GHz)
- **EN55022:2006+A1:2007** (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: 2006** (Limits for Harmonic Current Emissions)
- **EN 61000-3-3: 2008** (Limits, Limitations of Voltage Fluctuations and Harmonic Flicker)
- **EN 300 328: V1.7.1 (2006-10)** Electromagnetic compatibility and Radio Spectrum Matters (ERM); Data transmission equipment operating in the 2,4 GHz ISM band using wideband modulation
- **EN 301 893: V1.5.1 (2008-12)** Broadband Radio Access Networks (BRAN); 5 GHz high performance RLAN
- **EN 301 908-1 V3.2.1** Part 1: Harmonized EN for IMT-2000, introduction and common requirements, covering essential requirements of Article 3.2 of the R&TTE Directive
- **EN 301 908-2 V3.2.1** Part 2: Harmonized EN for IMT-2000, CDMA Direct Spread (UTRA FDD) (UE) covering essential requirements of Article 3.2 of the R&TTE Directive
- **EN 301 511 V9.0.2** Global System for Mobile communications (GSM); Harmonized EN for mobile stations in the GSM 900 and GSM 1800 bands covering essential requirements under Article 3.2 of the R&TTE Directive (1999/5/EC)

Directives

- **DIRECTIVE 1999/5/EC** (Radio and Telecommunications Terminal Equipment)
- **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)

Lary Beaulieu, Senior Vice President

January 17, 2011
Date Melbourne, FL, USA

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WARNING AND CAUTION SUMMARY

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 the following summary, elsewhere 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!

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO INSTRUCTIONS IN THIS USER'S GUIDE.

ATTENTION: RISQUE D'EXPLOSION SI LA BATTERIE EST REMPLACEE PAR UN TYPE INCORRECT. JETER LES PILES USAGEES CONFORMEMENT AUX INSTRUCTIONS DANS CE GUIDE D'UTILISATEUR..

MODEL X7 TABLET COMPUTER

WARNING!

EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2 OPERATION.

AVERTISSEMENT – RISQUE D'EXPLOSION – LA SUBSTITUTION DE COMPOSANTS RISQUE D'AFFECTER

DE CLASSE I, DIVISION 2 FONCTIONNEMENT.

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!

Disposed lithium-ion batteries that are not fully discharged contain active salts that can result in an explosion if suddenly exposed to moisture or water in the environment. To prevent possible injury to someone finding the battery, please ensure it is fully discharged before disposing in a domestic or commercial garbage receptacle.

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 authorization to operate the equipment and could void your warranty, or could result in all of the above.

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.

CAUTION!

Use this product only in vehicles that can supply a regulated +10VDC to +30 VDC (nominal 19 VDC). Voltages outside this range could cause 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 through a 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. Dispose of used batteries in accordance with the information in ***Disposing of Your Used*** Batteries***.***

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 security 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.

Your new X7 is equipped with a high-resolution LCD display that is readable even in bright sunlight. In addition, you now have both a touch screen and an active pen screen at your fingertips.

The X7 batteries are hot-swappable, which means you can change them one at a time without interrupting normal computer operations and without the need for tools.

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 Tablet Computer, and for your trust in the ARMOR line of products.

The ARMOR Team

Your ARMOR X7 Purchase

Your purchase includes the components and accessories shown below. Please verify that all of these items are present and in good condition. Contact your ARMOR X7 computer sales representative if any item is missing or damaged.

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

COMPUTER

ACTIVE PEN

MICROFIBER CLOTH

BATTERIES (2)

AC ADAPTER

THERMAL PADS

QUICK START GUIDE

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 tablet 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.

This guide is written for the Windows 7® operating system.

Viewing, Navigating, and Printing this Guide

This User's Guide is installed on your ARMOR X7 computer in PDF format. It is primarily designed for online viewing, but it can also be printed in 2-sided book format.

Double-click on the **ARMOR X7 User's Guide icon** on the desktop to open the guide in your Adobe® PDF Reader™. The latest version of Adobe PDF Reader is available for downloading free from www.adobe.com.

While viewing this guide, you can click on any Figure or Table reference and on any blue underlined text to navigate within the guide or to access resources on the Internet.

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Please Help Us Maintain Top Quality Documentation

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We encourage you to contact DRS Technical Support toll-free at 1-888-872-1100 for information on how to obtain the latest version of this document, or if you have corrections or suggestions to improve this guide.

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2. LEARNING ABOUT YOUR ARMOR X7

Rugged yet Stylish: The X7 is a tough, full-feature small form factor tablet PC with built-in Wi-Fi® and Bluetooth networking. Its compact size and low weight, coupled with a high-contrast display for use in bright sunlight, make it ideal for field use. In addition to being a solid workhorse, your X7 looks good and feels good just holding it in your hands.

Durable: Your X7 has an Ingress Protection Rating (IP) of 65. It can withstand a 6 foot drop and still function. The X7 is specifically designed to support a full 8-hour shift operating on one set of batteries. Its hot-swap battery access means you can change a battery at any time without the need for tools and without having to power down the tablet.

Innovative and Flexible: The X7 tablet can be used standing up, sitting down or mounted in a vehicle. It 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.

Expandable: The X7 can accommodate an optional wireless wide area network (WWAN) card so you can roam to your heart's content even when travelling in Europe or Asia, and it supports a GPS satellite receiver that you can use to pinpoint your location anywhere in the world. It even has a flexible interface that allows for the use of other custom cards and modules (refer to Flexspace™ Expansion for a more detailed description of this capability).

Front and Top Panel Features

> **NOTE**
>
> ***All references to front/back, top/bottom and left/right are relative to the face-on view as shown in Figure 1 .***

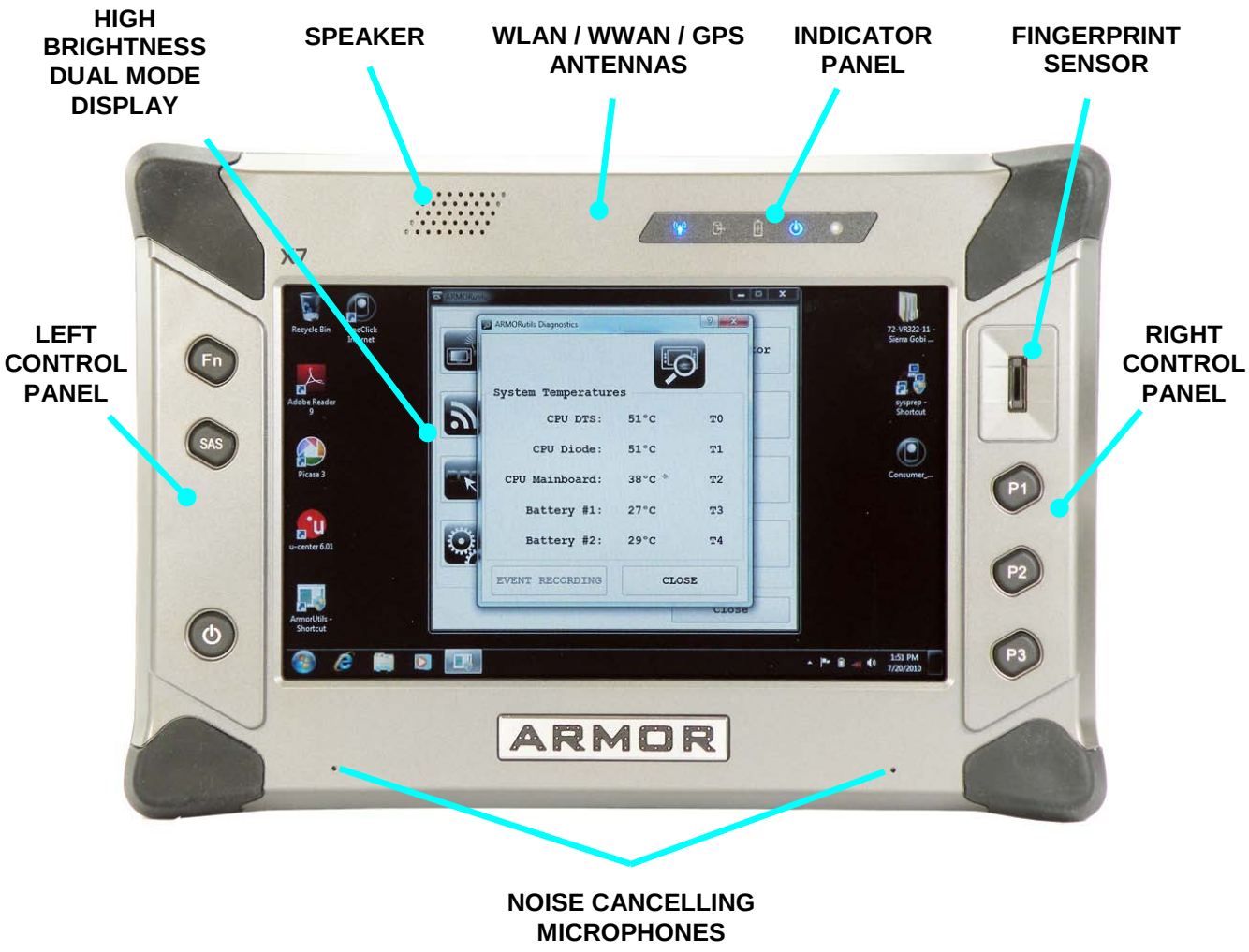

Figure 1. ARMOR X7 Key Features – Front View

MODEL X7 TABLET COMPUTER

Display

The X7 display is a high-brightness, high-contrast LCD display with anti-glare filtering that ensures your screen can be clearly viewed even in bright sunlight. A replaceable screen protector is attached at the factory to reduce glare and protect the touch screen surface.

The X7 is equipped with both an active pen (digitizer) screen and a touch screen. The pen digitizer screen permits precise data entry and accurate handwriting conversion while the touch screen provides quick and accurate operation using just a fingertip. A passive stylus (not supplied) will provide even more precision with the touch screen. You can choose to operate with both screens (Dual Mode) or with only one screen (Touch Only or Pen Only). Both screens have the same clear, crisp viewing quality in any lighting situation.

In Dual Mode, the touch screen is enabled. However, if an active pen is detected with ½" of the screen, the touch interface is turned off and active pen takes over. Switching between the two screens is automatic and instantaneous.

Controls

There are 6 push buttons and a fingerprint sensor on two control panels located on either side of the X7 display (Figure 2). Each button has a built-in LED that varies in intensity with the screen brightness. The following paragraphs describe the purpose of each control.

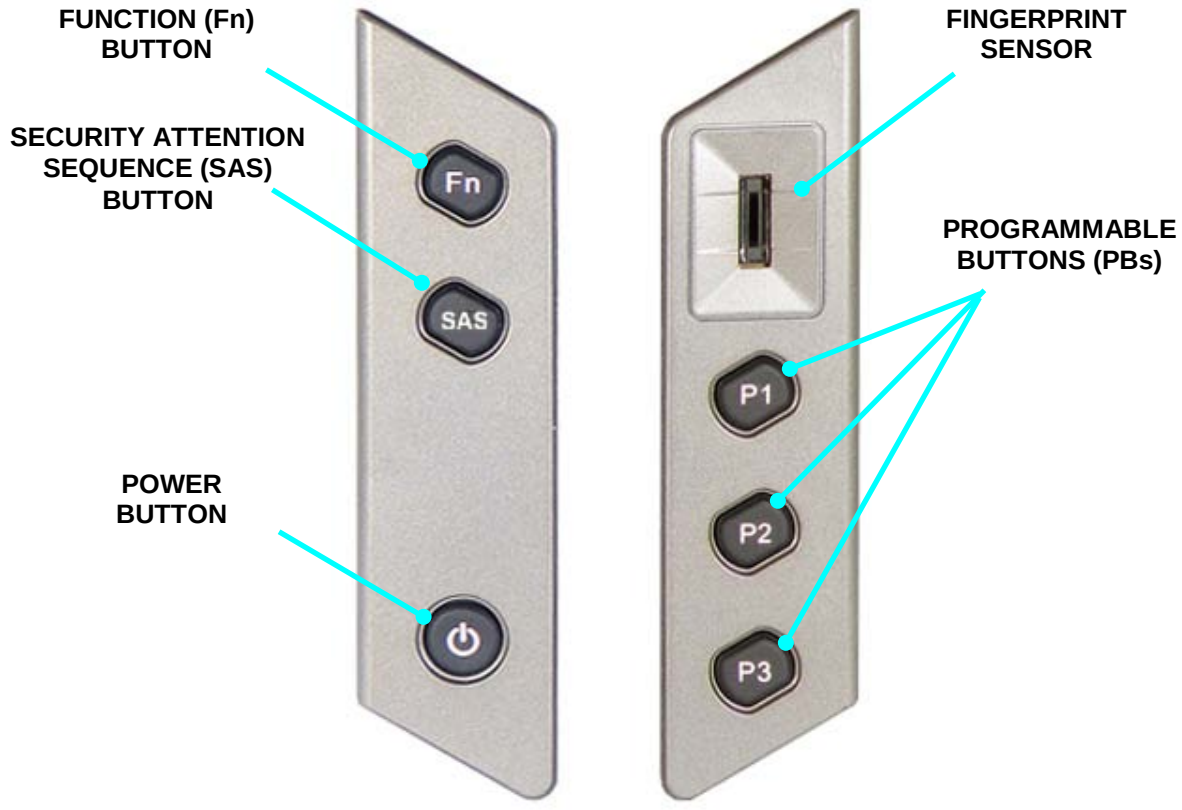

Figure 2. X7 Control Panels

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Programmable Buttons (PBs) P1, P2, P3

The PBs can be programmed to activate different functions such as controlling brightness, changing volume level or activating an application with just a single press. These buttons are preset to specific functions but you can change them to a different function. Refer to Buttons Setup for information on current programming and how to change to other available options. **NOTE:** The PB functions are only available while ARMORutils is running.

Each programmable button has a built-in LED that varies in intensity with the screen brightness.

Fingerprint Sensor (FPS)

The fingerprint sensor is used with security software to allow you to log into your account on this computer or secure your access to specific applications and online websites. Refer to TrueSuite™ Fingerprint Recognition Software for instructions on how to setup and use the FPS.

Fn (Function) Button

This button is used with PBs P1, P2 and P3 (button "combos") to activate three additional functions. Press and release the **Fn** button and then press and release **P1**, **P2** or **P3** to activate the combo function. Refer to Buttons Setup Dialog for information on how to program available functions for each button and button combo.

Security Attention Sequence (SAS) Button

The SAS button is also known as the Windows Security Key button and the OEM Button. Pressing this button invokes the **CTRL-ALT-DEL** command, which opens a menu on the desktop. From this menu, you have the following options:

- Lock this computer
- Switch User
- Log off
- Change password
- Start Task Manager

Power Button

The **Power** button is primarily used to turn the computer on, but it also performs other functions when the computer is running and when the computer is in sleep or hibernate mode.
lists the default actions of the power button when you first receive your X7.

NOTE: To turn the computer off, refer to the instructions in Putting the Computer into Hibernate Mode and Emergency Shutdown.

Table 1. Initial Power Button Actions

Operating State	Power Button Action	Result
Computer powered off	Press and hold for at least 1 second and then 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 to memory.
Computer in Sleep mode (powered on)	Press and hold for at least 1 second and then release	Computer wakes up and restores your current session.
Computer in Hibernate mode (powered off)	Press and hold for at least 1 second and then release	Computer turns on and restores your previous session.
Computer powered on and awake	To shut down the computer normally, select **Start → Shut down** from the Windows desktop.	The computer will perform a normal shutdown.
Computer powered on and awake	Press and hold for 5 or more seconds (emergency shutdown)	Computer shuts down immediately and does not save your session.
Computer off and batteries exhausted	Press and hold for at least 1 second and then release	Charging/Fault indicator blinks 5 times to indicate batteries exhausted.

Changing the Default Power Button Action

When you receive your X7, the default action for pressing the Power button during normal operation is to put the computer in Sleep mode. You can change the default action of the **Power** button through the **Power Options** settings in Windows Control Panel. The actions that are available are: Do Nothing, Sleep, Hibernate or Shut Down. Refer to Changing the Power Button Default Action.

NOTE: This change will only affect the action of the Power button during the operating state; it will still work the same as described in Table 1 when the computer is powered off or is in sleep or hibernate mode.

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 3 (**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 and the function of the ALS are described below. See Indicator State Summary for a complete description of each indicator state.

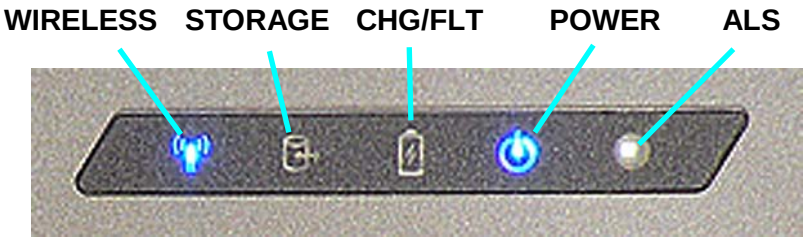

Figure 3. X7 Indicator Panel

Wireless Activity Indicator

A blue LED that is on intermittently whenever the Wi-Fi, WWAN or Bluetooth wireless radio is connecting. The indicator will be on steady if either the WLAN or WWAN radio is connected to a network. For Bluetooth, the indicator will only be on when data is being transmitted to a peripheral such as a printer, scanner or USB hub.

Storage Device Activity Indicator

A blue LED that is on intermittently whenever a storage device is being accessed. Storage devices include the embedded mSATA drive and an optional SD flash memory card and/or an optional 1.8 solid-state hard drive. (**NOTE:** The mSATA drive is an integral part of the X7 circuitry and is not physically accessible by the user).

Charging/Fault Indicator

This amber/red LED has the following conditions:

- Off when the tablet is powered up and external power is not connected.
- On steady amber when external power is connected and batteries are fully charged.
- Flashing amber at a 1-second rate when either or both batteries are charging.
- On steady red if a power system error occurs, such as an overvoltage, undervoltage or overcurrent condition or a battery failure.

NOTE: If power is off and the batteries are exhausted (depleted), pressing the Power button will cause the Charging/Fault indicator to flash 4-5 times, indicating that you need to connect external power and recharge the batteries.

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)

When the X7 display is in automatic brightness mode, the ALS senses changes in surrounding light levels and adjusts the display brightness and indicator light levels accordingly. If the surrounding light level increases, the display and indicator brightness will increase proportionally; if the light level decreases, the display and indicator brightness will decrease proportionally.

Speaker

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

Figure 1. Provisions for plugging in a headset, external speakers or an external microphone are provided only with an optional desk dock or vehicle dock.

Noise Cancelling Stereo Microphones

Two noise-canceling microphones are located at the bottom of the front panel. These microphones support simultaneous analog and 2-channel digital array recording

Rear Panel Features

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

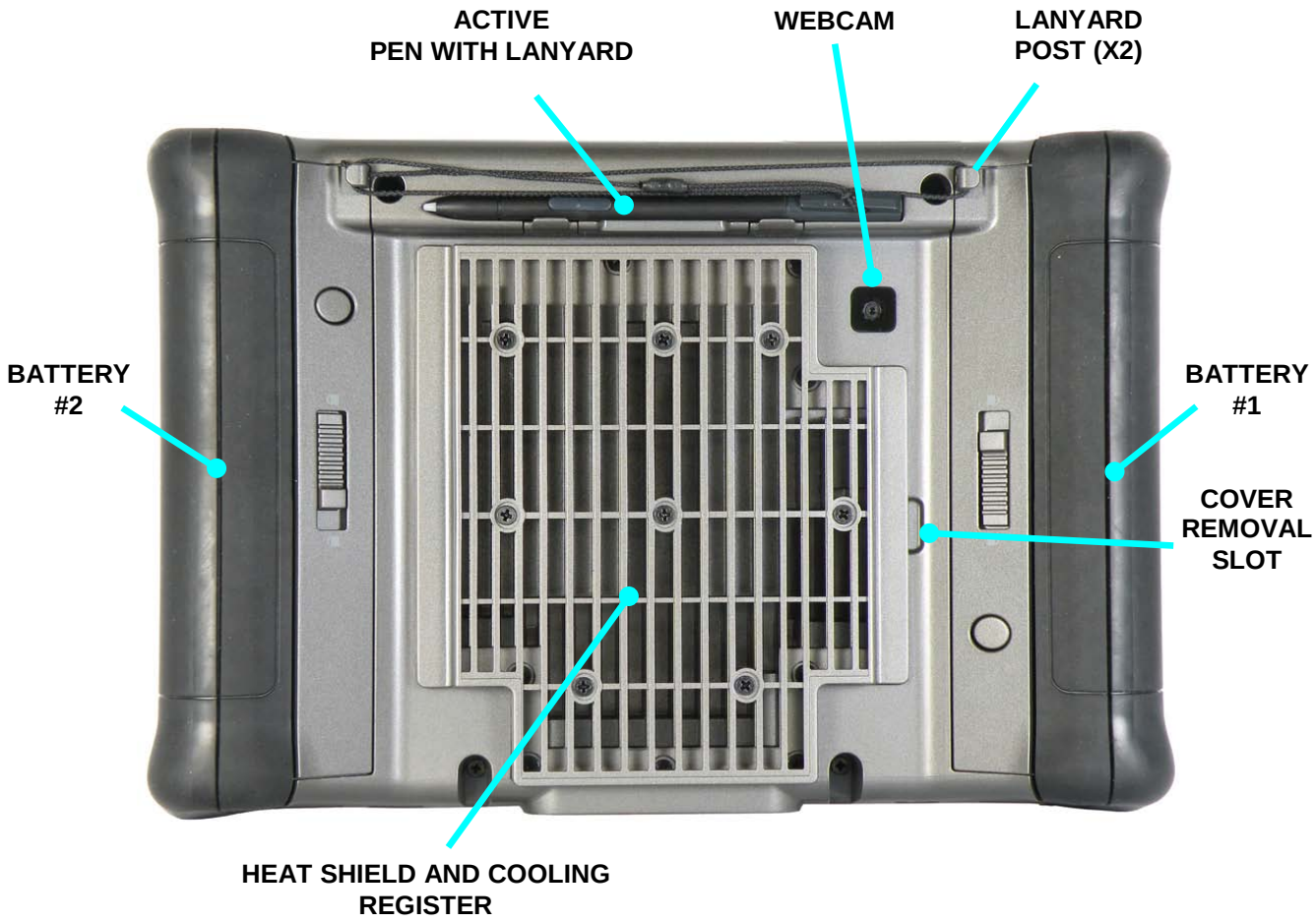

Figure 4. Key Features - Rear Panel

Cooling Register

ARMOR computers are designed to operate in wet and dirty environments under extreme temperatures. Because the tablet is sealed against contamination, it incorporates passive cooling which channels the internal heat to the cooling register at the back of the unit. The cooling register dissipates the heat to the atmosphere and normally feels only warm to the touch. However, under heavy use, the register can become hot to the touch and, as a safety and comfort measure, a plastic heat shield covers the register to prevent direct contact.

The cooling register also acts as a cover for a sealed compartment which provides access to the wireless radio cards, a SIM card socket, a micro-SD socket and any optional or custom cards.

Battery Bays

Your X7 is shipped with two custom designed batteries that are installed in bays on either side of the X7, as shown in Figure 5. In addition to supplying power to the computer, the X7 batteries also act as the handles or grips for the computer.

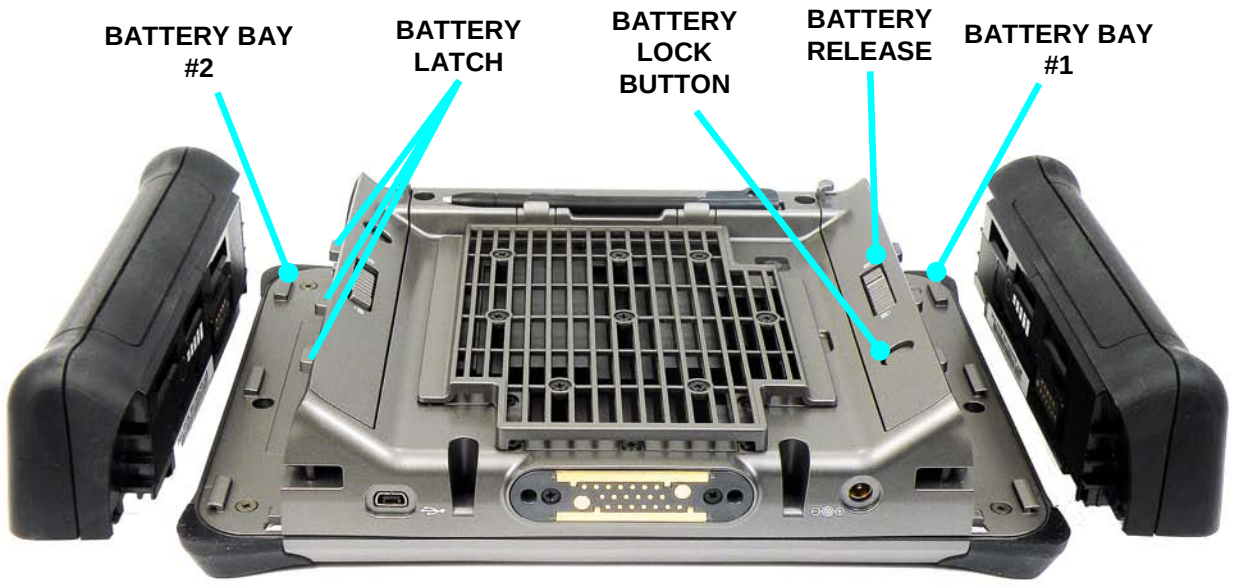

Figure 5. X7 Battery Bays

Webcam

Your X7 has a built-in 2 megapixel camera located on the back side of the unit (see Figure 6). 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 1280x1024, 800x600 and 640x480 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 for scanning bar codes.

Figure 6. X7 Webcam

Bottom Panel Features

The bottom panel houses a DC power input 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.

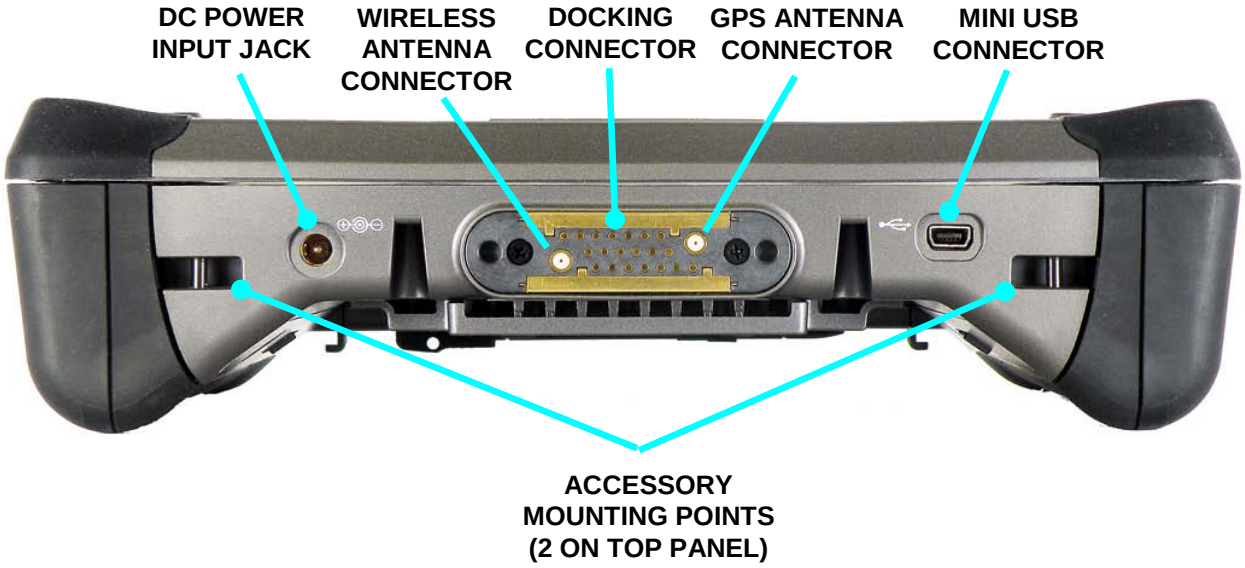

Figure 7. Key Features – Bottom Panel

Included Components, Accessories and Support

Batteries

Your X7 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 batteries come in two different capacities: 2950 mAh (standard) and 5900 mAh (high-capacity).

Battery Description

Figure 8 shows a single X7 battery. Each battery has three locking slots that fit into three corresponding hooks on the battery latch. A multi-LED battery charge indicator, or “fuel gauge” is located next to the fuel gauge button. The fuel gauge consists of 5 LEDs and each LED represents approximately 20% of the total charge of the battery as follows:

LED #5 - 80-100% On steady
LED #4 - 60-79% On steady
LED #3 - 40-59% On steady
LED #2 - 21-40% On steady
LED #1 - 00-10% Flashing (far left LED)

Activating the Fuel Gauge

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

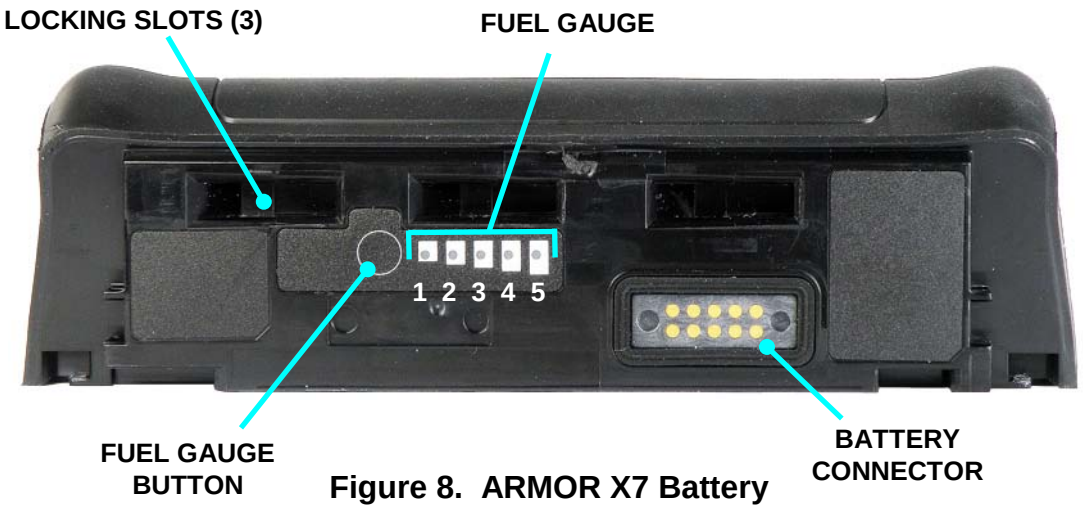

Figure 8. ARMOR X7 Battery

"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.

Standard Batteries vs. High-Capacity Batteries

Depending on your purchase, your X7 came with either two standard batteries or two high-capacity batteries. A single standard battery has a capacity of 2950 milli-ampere hours (mAh) and a high-capacity battery has a capacity of 5900 mAh.

Table 33 lists the charging times and Table 35 lists the operating times for both battery types.

Active Pen with Tether

The active pen (P/N 0000F50872-0000) that comes with your X7 (Figure 9) 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 pointer 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). Its default function is Right-Click. The pen is stored in the tablet's carrying handle and is secured to the handle by a string tether.

Figure 9. The ARMOR X7 Pen

AC Adapter and Power Cord

Included with your ARMOR X7 is a +19 VDC ± 5%, 2 amp AC power adapter, or "AC Adapter" (P/N 0000F50874-0000). This external DC power supply can be plugged in to any 100-240 VAC outlet and is used to recharge your computer's batteries and provide power to the computer without draining the batteries.

A North American AC power cord (P/N 0000F50076-0000) is standard, but a European power cord (0000F50076-0002) and a UK power cord (0000F50076-0001) are also available.

Figure 10. X7 AC Adapter

ARMOR Cloth

This microfiber cloth is specially designed to clean the display screen of dust and fingerprints. See Caring For the Display Screen for important information about using this cloth with the X7 display.

Figure 11. ARMOR Microfiber Cleaning Cloth

Thermal Transfer Pads

Two thermal transfer pads are included with your X7 in case the original pads are damaged while removing the rear cooling register/cover to install a SIM or SD card, or to change the solid-state drive. These pads should only be replaced if the original pads are torn during cover removal (see Maintaining Your ARMOR X7 for cover removal and replacement instructions).

Figure 12. Thermal Transfer Pads

Subscriber Identity Module (SIM) Card Support

The X7 is equipped with a SIM card socket for use with some WWAN network providers. A SIM card is a small electronic card that contains your GSM subscriber ID, billing information, and network permissions. The card allows you to easily transport your subscriber information to another computer or subscriber device. SIM cards are used by CSM-based networks such as AT&T® and T-Mobile®, as well as most European WWAN providers.

Figure 13 shows the size of the SIM card compared to a quarter (**NOTE**: The SIM card shown is blank - a valid card has the customer's account code printed on it).

You must have a SIM card installed in order to use your Gobi radio to connect to a GSM WWAN network in Europe and to certain providers in the United States. Refer to Installing a SIM Card.

Figure 13. SIM Card

Secure Digital (SD) Card Reader Support

The ARMOR X7 also provides a card reader for a micro SD or SDHC card in capacities of 8, 16, or 32 GB. These cards are about half the size of a SIM card and are used as removable flash drives. The socket for the micro SD card is located inside the X7 case, as shown in Figure 94. The Windows operating system recognizes the card as a removable drive, just like a USB memory stick.

Figure 14. Micro SD Card

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.

Flexspace™ Expansion

Your ARMOR X7 contains special areas with flexible I/O interfaces that can accommodate custom cards or modules. These special areas are referred to as “flexspace.”

There are two flexspace locations in the ARMOR X7: An internal flexspace located directly under the cooling register (the area bounded in red in Figure 15), and a special battery adapter flexspace that takes the place of the right-side battery, as shown in Figure 16.

Internal Flexspace

The internal flexspace accepts a custom circuit board or module that connects to the X7 using one of two different interface adapters: mini PCIe or PCI/USB. The example in Figure 15 shows a WWAN card and SIM socket module connected with the mini PCIe adapter. Each interface adapter plugs into a 60-pin flexspace connector which is mounted on the motherboard.

The internal flexspace provides the following voltages and signals: +5VDC @ 1A, 3.3VDC @ 1A, two USB 2.0 ports, four GPIO discretes to the EC processor, one PCI Express channel, one RS-232 serial port with hardware handshake and connections for a microphone and stereo headphone. Two spare pins for future use are also provided.

The cooling register/cover can be modified to accommodate cards and modules requiring thicker cross-sections.

Battery Adapter Flexspace

The battery adapter flexspace can house a custom module or antenna, or it can provide additional external connectors as shown in the concept model in Figure 16.

The battery adapter flexspace provides the following voltages and signals: +5VDC @ 1A, 3.3VDC @ 1A, two USB 2.0 ports and two GPIO discretes to the EC processor.

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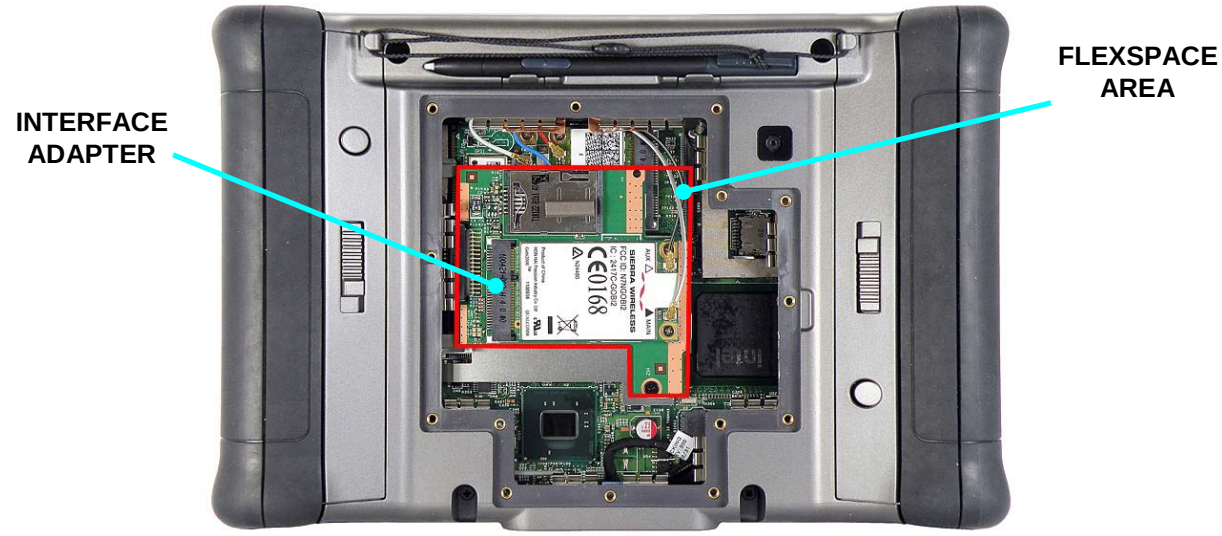

Figure 15. X7 Internal Flexspace

Figure 16. ARMOR X7 Battery Adapter Flexspace Concept

For more information on the X7's expansion capabilities, contact DRS Tactical Systems, Inc. toll free at 1-800-872-1100.

Optional Add-ons and Accessories for Your X7

The following add-ons and accessories extend the capabilities of the X7 or make it easier to use.

Gobi® Wireless Wide Area Network (WWAN) Card

We offer the Gobi 2000 WWAN card. This wireless networking device communicates over cell phone networks and can provide internet or company-specific coverage while on the road or in areas that don't provide Wi-Fi access. It can be used in the US or overseas. Adding WWAN service to your imbedded Wi-Fi capability means you have 24/7 connection to the internet virtually anywhere in the world. A complementary copy of the Sierra® OneClick Internet Connection Manager software is provided with this card.

Please contact DRS Tactical Systems toll free at 1-888-872-1100 for information about purchasing and installing this card.

u-blox® GPS Receiver Card

The u-blox GPS receiver is capable of downloading position data from the GPS or Galileo satellite networks and enables you to pinpoint your position anywhere in the world to within 2 meters. A complementary copy of u-blox u-center™ GPS software is provided with this card.

Please contact DRS Tactical Systems toll free at 1-888-872-1100 for information about purchasing and installing this card.

Compact Keyboard

A reduced-size USB keyboard (P/N 0000-16200-0000) 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 using a mini-USB adapter (nor supplied) or to a desk docking station to conserve space on a table or desktop.

External Battery Charger

A two-bay battery charger (P/N 9025F26500-1000) is available for faster and more convenient battery charging. Each battery bay has a charging time of approximately 2.5 to 4 hours, depending on battery type. The external charger is also handy for recharging spare batteries and batteries kept in storage. A 19VDC, 40W AC adapter is included.

Mini-USB Adapter

This USB to mini-USB adapter (P/N 0000F50015-0000) is available to adapt the X7 mini-USB port to a standard USB cable or flash drive connector.

D-Ring Set

This D-ring set (DRS P/N 9850F51031-0000) contains four D-rings that clip to accessory mounting points on the top and bottom panels of the X7 (see Installing the Optional D-Rings). The D-Rings are constructed of super-tough reinforced plastic that can support up to 43 pounds each. With these D-Rings, you can attach your own carrying handle, shoulder strap or other accessory.

Screen Protector

A flexible but tough screen protector is available that reduces glare and protects the touch screen surface from wear and scratching. It is also resistant to a wide variety of toxic chemicals including acetone, toluene, ethyl acetate, gasoline and concentrated hydrochloric acid. **NOTE:** This screen protector may slightly reduce outdoor viewability.

Screen protectors are available in a package of 5 (DRS P/N 9850F48847-0007).

Docking Stations

There are a number of new docking stations available to support and enhance the X7, either for the desktop or for use in a vehicle.

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. The removable breakout box has connectors for 3 USB ports, an RJ45 Ethernet port, an RS-232 serial port and a DC power input jack. The breakout box also has internal provisions for two GPIO ports.

The breakout box plugs into the dock base and is mounted to the back of the dock with four socket-head screws. If desired, it can be removed and remoted away from the desktop with a cable.

The X7 tablet is held in place with a spring-loaded top clamp that can be locked with a key. Two holes are provided in the back of the base to secure the dock to the working surface if desired.

Figure 17. X7 Desk Dock

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Vehicle Dock

The X7 vehicle dock (P/N 9800F26300-0000) 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 X7 dock is shown in

Figure 18. This dock has two RF connectors that are used to connect external GPS and wireless antennas.

The top clamp mechanism that holds the X7 in place can withstand over 50,000 latch/unlatch cycles and can be locked with a key to prevent tablet removal. The X7 tablet slips easily into the dock and can be inserted and latched with one hand. The floating docking connector is field-replaceable.

Figure 18. X7 Vehicle Dock

Vehicle Dock Mounting Solutions

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. Figure 19 shows some sample mounting solutions. Other types are available.

Figure 19. Examples of X7 Vehicle Dock Mounting Solutions

Breakout Box

The X7 breakout box (P/N 9800F26600-0000) is used with both the desk dock and the vehicle dock. When used with the desk dock, it is plugged into a connector in the base of the desk dock and secured to the back with four hex screws (see Figure 17). In a vehicle installation, the breakout box is mounted away from the dock and connected by a 6 ft 25-pin cable to the connector on the bottom of the dock.

The breakout box provides connections for 3 USB ports, an RJ45 Ethernet port, an RS-232 serial port and a DC power input jack. Two internal GPIO ports are also provided.

Figure 20. X7 Breakout Box

Surge Suppressor

Surge protection is required for all vehicle installations of the ARMOR X7. This surge protection is necessary to prevent damage to sensitive electrical circuits in the X7 tablet.

If the vehicle system voltage remains within the limits of 11-14 VDC, a regulated power supply is not required and can be replaced with an industrial-grade surge suppressor (**NOTE:** If the vehicle voltage is not controlled within these limits, a regulating power supply will be required (see Vehicle Power Supply in this section).

DRS offers its Industrial Vehicle Surge Suppressor (IVSS) (P/N 9800F50856-0000) shown in Figure 21. We also offer an installation kit to connect your surge suppressor to your vehicle's battery supply. Please contact DRS Technical Support for information and specifications concerning this device and the required kits and parts needed for your particular vehicle installation.

Figure 21. Industrial Vehicle Surge Suppressor

Vehicle Power Supply

The X7 vehicle power supply (P/N 5700-46340-0000) is a rugged Lind® power supply that accepts 9-42 VDC input from the vehicle battery supply and provides a regulated 15.6 VDC output at 6 amps maximum to the X7 system. This power supply is only required if the vehicle power system voltage drops below 11 VDC or exceeds 14 VDC.

Figure 22. X7 Vehicle Power Supply

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Complete X7 Vehicle Dock Installation

A complete vehicle dock installation includes a docking station, breakout box, 50-pin cable, surge suppressor or power supply and mount of your choice. A sample system is shown in Figure 23 (external antennas and cables not shown).

Figure 23. Sample X7 Vehicle Dock Installation Package

Contact DRS Technical Support toll free at 1-888-872-1100 for information on these and any other accessories or add-ons.

X7 Specifications

NOTE: These specifications are subject to change. Please contact DRS Tactical Systems toll free at 1-888-872-1100 for updates of a particular specification.

Operating System	Microsoft Windows7 Professional® or Windows 7 Ultimate® 32 bit
Processor	Intel® Embedded Luna Pier system architecture with Pineview-M 1.66 GHz Single Core Processor 512 KB L2 Cache 4-Channel Direct Memory Interface (DMI) ICH8M I/O controller hub Intel DX9 Graphics, 200MHz 1GB or 2GB, DDR2 667MHz SDRAM
Storage	40 GB or 80 GB embedded mSATA Support for micro SD or SDHC memory 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 acoustic speaker 2 element digital array microphone with dynamic noise cancelling CODEC
Keyboard	On-screen keyboard included with Windows® 7 operating system Accepts any USB keyboard using mini-USB adapter (not included)
Fingerprint Sensor	USB 2.0 full speed, fully encrypted, suspend and remote wakeup, selective C3 suspend support
Webcam	2.0 megapixel camera with autofocus lens
Pointer Control	Touch screen pointer controlled by fingertip or inert stylus Pen screen pointer controlled by inductive (active) pen Optional external mouse using mini-USB adapter (not included)
Interface Connections	Fixed I/O: • DC Power input jack • One Mini USB 2.0 port Docking I/O: • 10V – 30V DC power input

	• 3x USB 2.0 • 2x 5V Ground/Open Input Devices (GPIO) • Dock detect/dock enabled discrete • GPS antenna, coaxial • WWAN antenna, coaxial Mechanical features support one-handed docking
Wireless	Standard: • 802.11 A/G/N 2x2 Wireless LAN connectivity (WLAN) • Bluetooth® v2.1 + EDR (Class 2) Bluetooth 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
Flexspace Expansion	Replacement of right side battery with special adapter: • 2x USB 2.0 ports • 2x bi-directional (GND/Open) discretes to EC processor • +5V, 1A & +3.3V, 1A power for active modules User accessible compartment under cooling register: • 1x mini-PCIe port • 4x bi-directional (GND/Open) discretes to EC processor • 2x USB 2.0 ports • 1x RS-232 port • RGB video • Microphone and stereo headphone access • +5V, 1A & +3.3V, 1A power for active modules
Power	Power Input: 10 VDC to 30 VDC (19 VDC nominal) Battery support • Twin hot-swappable 7.5V lithium polymer batteries (standard or high-capacity) • Standard capacity = 2950mAh; High capacity = 5900mAh • Battery operation: 8 hours with two high-capacity batteries 4 hours with two standard batteries • Battery charging time: 7 hours with two high-capacity batteries 3 hours with two standard batteries AC Adapter: AC 100V-240V 50/60Hz, Auto sensing/switching worldwide power supply
Security Features	Password security Support for encrypted drives

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	TPM security chip v.1.2
	Fingerprint sensor
	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
Environmental	Operating Temperatures: -20 to +60°C
	Storage Temperatures: -40 to +70°C (without batteries)
	Temperature Shock: 20°C/min (operating)
	Relative Humidity: +5°C to 60°C @ 95%
	Altitude: 20,000 feet max, operating or non-operating
	Vibration: Operating - Composite Wheeled Vehicle Exposure; Storage - Composite Two-Wheeled Trailer Exposure
	Shock: Operating - 30g, 11ms, half-sine operational shock; Storage - 50 g's, 11ms, half-sine. Drop test certified to 6ft/1.8m per MIL-STD-810G, Method 516.6
	Ingress Protection Rating (IP) 65
	Fluid Compatibility: Cat II Chemical Solvents, Cat III Cleaners and Cat IV Industrial Chemicals
	UV Exposure: 1120 W/m2 in
	ESD: contact discharge ±8 kV, air discharge 22 kV
	CSA C22.2 No. 213-M1987; EN60079-0, EN60079-15:2005 (ATEX)
Regulatory Certifications	UL/TUV
	CSA
	FCC Part 15
	CE Mark
	E-Mark
	Energy Star
	EPEAT (Silver Level)
	HAZLOC/ATEX
Weight and Dimensions	3.2 lbs with two 4-cell batteries; 2.8 lbs with two standard batteries
	8.9" x 5.9" x 1.4" (center) 2.1" (Hand Grips) / 225 x 150 x 35 mm (center) 54 mm (Hand Grips)

MODEL X7 TABLET COMPUTER

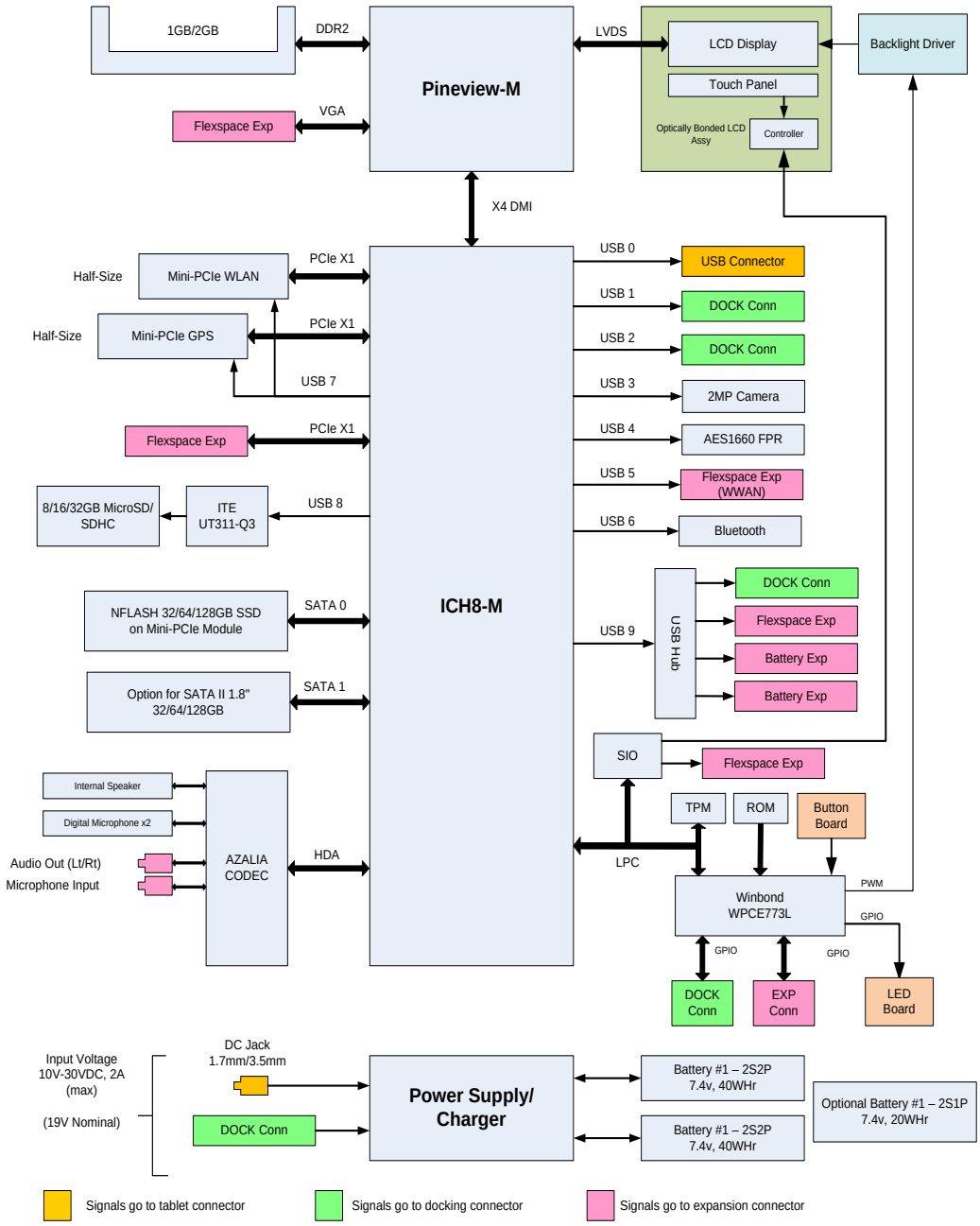

Figure 24. X7 Internal Block Diagram

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3. GETTING STARTED

The information in this section will help you get started using your ARMOR X7 computer. 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 (nominal 19VDC). 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!

DO NOT connect the AC adapter power supply to the tablet when external power is provided through a docking station. Permanent damage to the batteries 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 or “bays” on each side of the computer as shown in Figure 25. The batteries are identical and can be installed in either bay. Follow the procedure in Table 2 to install the batteries.

NOTE

If you do not plan to use your computer right away, we recommend you fully charge your batteries and then remove and store them in a safe place until needed (see How to Store Batteries When Not in Use).

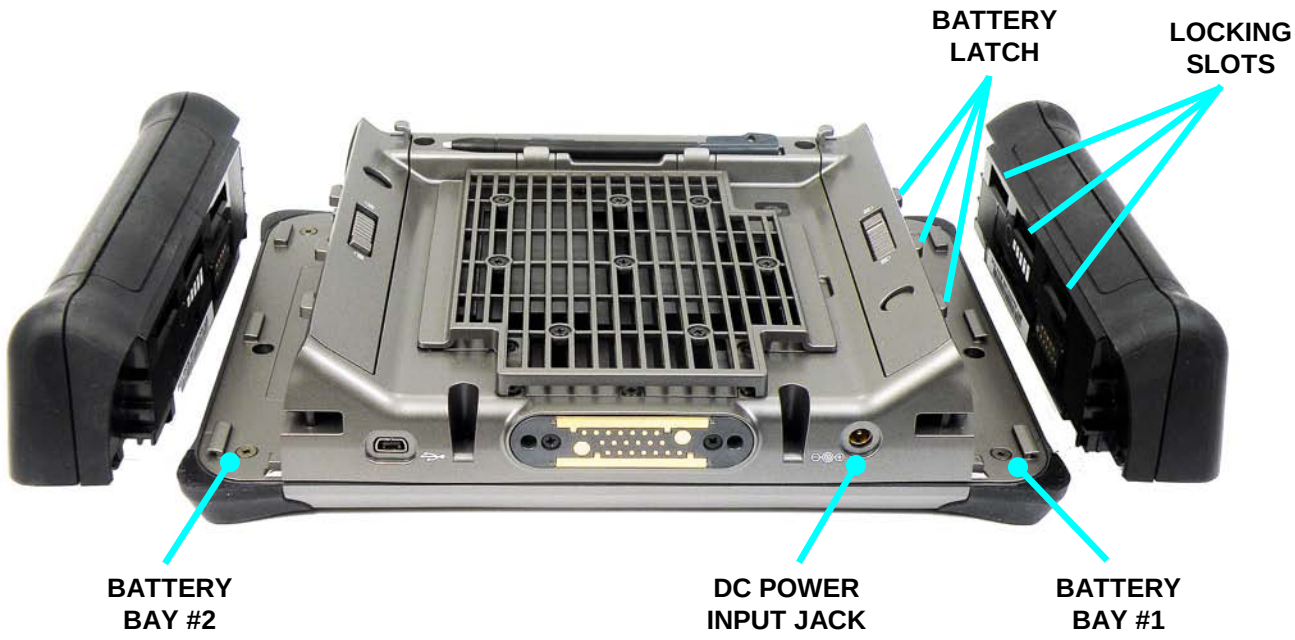

Figure 25. X7 Batteries Positioned for Installation

Table 2. Installing 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 DC power input 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 5 hours depending on the type of battery and the current level of charge of the batteries. You can work with your X7 while the batteries charge.

Monitoring Installed Battery Charge Levels

Refer to Monitoring Battery Status for information on how to check your battery status when installed in the computer.

Checking the Charge Level of Removed Batteries

A multi-LED battery charge indicator, or “fuel gauge”, is built into each battery, as illustrated in Figure 26. Each LED array consists of 5 LEDs and each LED represents 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 - 03-20% (far left LED)

The fuel gauge indicators are not visible when the battery is installed. Press the **Fuel Gauge** button to activate the fuel gauge LEDs and check the current charge level.

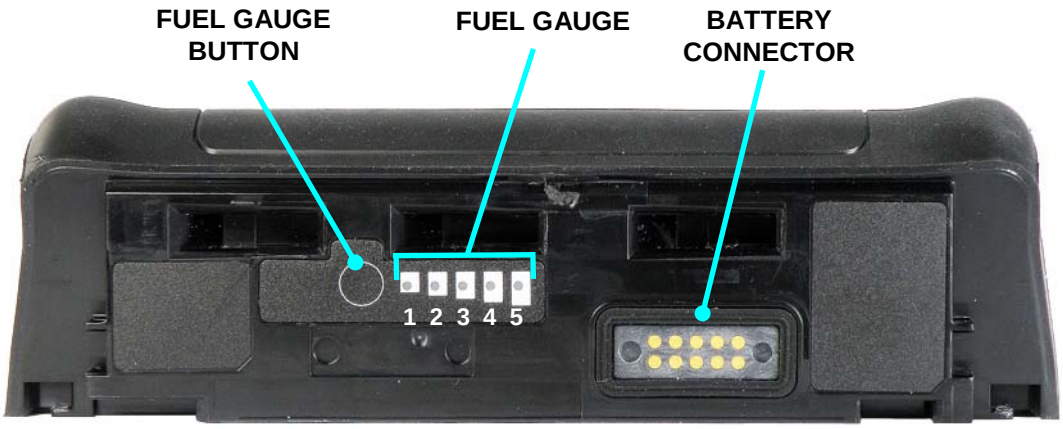

Figure 26. X7 Battery

Turning On your X7 for the First Time

Follow the procedure in Table 3 to configure your Windows 7 operating system.

NOTE

The first user account you create will be an Administrator account. You will need to use this account for any changes that require administrator privileges.

Table 3. Performing the Microsoft Out-of-Box-Experience (OOBE)

STEP	ACTION	CONDITION OR INDICATION
1.	If you have a USB keyboard available, connect it to any USB port at this time.	If you do not have an external keyboard connected, you will need to activate the on-screen keyboard later in the OOBE setup procedure.
2.	On the left control panel, press and hold the **Power** button for 1-2 seconds and then release.	When the computer boots up, the Microsoft Out of Box Experience (OOBE) screen will open. **NOTE:** If a Sysprep window opens, click on the down arrow and select Microsoft Out-of-Box-Experience.
	NOTE ***Touch and pen screen calibration will degrade slightly during OOBE but will return to normal after the OOBE process is complete.***	
3.	Follow the OOBE instructions. If you need to use the on-screen keyboard, wait until the OOBE process reaches the **User Account setup screen**, then click on the Accessibility icon in the lower left corner and select **Start On-Screen Keyboard**.	Once the keyboard is started, you can use it like a regular keyboard to select options and enter data. If you have any questions about using the virtual keyboard, click on the **Options** key.

STEP	ACTION	CONDITION OR INDICATION
	NOTE ***If you used the OOBE on-screen keyboard, you must manually turn it off or it will appear each time you restart the computer.***	
4.	Once you finish the OOBE, if you do not want the on-screen keyboard to appear each time you log on, click on the keyboard **Options** key and Select **Control whether the On-Screen Keyboard starts when I log on**.	
5.	Un-check **Use the On-Screen keyboard**.	

Turning the Computer On Normally

Turn the computer on by pressing the **Power** button for at least 1 sec and then releasing it. 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.

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:** There is a 5-10 second delay before you can restart the computer after a complete shutdown.

NOTE

Unless you have changed the default action of the Power button, pressing the Power button when the computer is running will not cause it to shut down but will 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. When the computer is in sleep mode, the blue Power LED on the indicator panel will flash slowly.

You can re-program the power button to shut down the computer when pressed while the computer is running. Refer to Changing the Power Button Default Action for instructions.

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 possibly corrupt your operating system.

Putting the Computer into Sleep Mode

To put the computer into sleep mode (also called "standby"), press and release the **Power** button while the tablet is operating. **NOTE:** This is the default action of the Power button when you first receive your X7, but this can be changed in Windows Control Panel (see Changing the Power Button Default Action).

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 in the lower right corner of the Start menu, then select **Sleep** from the drop-down menu.

To wake up the computer, press and hold the **Power** button for 1-2 seconds and then release. This will take you back to the desktop and you can resume your session where you left off.

Indications that your X7 is Asleep

In Sleep mode, your session is saved to RAM memory and the screen is turned off. All LEDs will initially be off (except the Charging/Fault LED on the indicator panel if external power is applied). Once the session has been suspended by the computer, the Power indicator LED will flash at a 1 sec on / 2 sec off rate to indicate you are in sleep mode.

Putting the Computer into Hibernate Mode

From the Windows 7 desktop, click on the **Start** button and then click on the **down arrow** next to the **Shut down** button in the lower right corner of the Start menu, then select "**Hibernate**" from the drop-down menu.

When you place the computer in hibernate mode, your current session is saved to your solid-state drive or mSATA memory and the computer is powered down. There are no visual indications that the computer is in hibernation; the computer is powered down and all led's will be off, with the exception of the Charging/Fault indicator if you have external power connected.

To wake up the computer, press and hold the **Power** button for 1-2 seconds and then release. This time, the computer will wake up to the locked user account selection screen. Click on the current icon to resume your previous session. You may have to enter a password or swipe your fingerprint, depending on how you have your login set up.

Indicator State Summary

Table 4 lists all states for the various X7 indicator LEDs (refer to Indicator Panel for a description of each indicator).

Table 4. X7 Indicator State 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	Installed	At least one radio is transmitting (GPS is receive only).
	Flashing intermittently	On	N/A	Installed	The WLAN or WWAN radio is searching for a network connection or Bluetooth is transmitting data to a peripheral.
	Off	On	N/A	Installed	One or more installed radios (excluding GPS) are disabled in ARMORutils. See Wireless Setup Dialog.
Storage Activity (blue)	Flashing intermittently	Power on	N/A	Installed	Processor is accessing a storage device (SSHD, mSATA memory or micro SD card).
Charging/Fault (amb/red)	Off	Power on	Disconnected	Installed	No power faults are detected
	On steady amber	Power off	Connected	Installed	Batteries are fully charged
	Flashing amber at 1 sec rate	Power on or off	Connected	Installed	Batteries are charging

LED	IF THE INDICATION IS:	AND THE POWER MODE IS:	AND EXTERNAL POWER IS:	AND BATTERY IS:	THIS MEANS:
	Flashing amber at 1/2 sec rate	Power on or off	Connected	Installed	Battery charging has been suspended due to extreme battery temperature. Charging will resume when temperature is between 0°C and 45°C.
	On steady red	Power on or off	Connected	Installed	Power system fault (overvoltage, undervoltage or overcurrent condition or battery failure). **NOTE:** The LED will turn off when the fault condition is removed.
Power (blue)	On	On	N/A	Installed	Computer is powered up.
	Flashing 1 sec on, 2 sec off	Reduced	N/A	Installed	Computer is in sleep mode.
	Off	Off	N/A	Installed	Computer is powered off or is in hibernate mode.
Fuel Gauge (blue) **NOTE:** Press fuel gauge button to activate LEDs	Single LED on steady	N/A	N/A	Removed	Total charge is max for that level (20%, 40% etc.)
	LED # 1 (far left) flashing at 1 second rate	N/A	N/A	Removed	Battery is below 10% charge level (depleted)
	All LEDs off	N/A	N/A	Removed	Battery is fully depleted. See What to Do for an Overly-Discharged Batter.

Configuring and Controlling your Wireless Radios

For instructions on configuring and controlling your wireless radios, including the optional WWAN radio and optional GPS receiver, refer to Section 4, Networking. You will also find instructions for connecting to a cabled LAN.

Installing a Micro SD/SDHC Card

A micro SD/SDHC card can provide up to 32GB of additional data storage. The socket for this card is located inside the computer and is accessed by removing the cooling register/cover at the back of the computer. For instructions on how to remove the rear cover and install the card, refer to Installing a Micro SD or SDHC Card.

Installing the Optional D-Rings

Follow the procedure in Table 5 to install a D-ring to each of the four accessory mounting points.

Table 5. Installing the D-Rings

STEP	ACTION	COMMENTS
1.	Remove both batteries to access the accessory mount points.	**NOTE:** The accessory mount points are located on the top and bottom panels of the X7 (see Figure 7).
2.	Using a pointed object such as a dentist probe or large pin, slide out the locking bar on each D-Ring until it clears the center opening, as shown in the image to the right.	
3.	Insert a D-Ring onto each accessory mount point and push the locking bar in all the way.	
4.	Replace both batteries.	

Configuring your Audio System

Follow the procedure in Table 6 to configure your speaker. Follow the procedure in Table 7 to configure your microphones.

Table 6. Configuring the Speaker

STEP	ACTION	CONDITION OR INDICATION
1.	Double-click on the orange speaker icon in the systray.	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 27
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.	

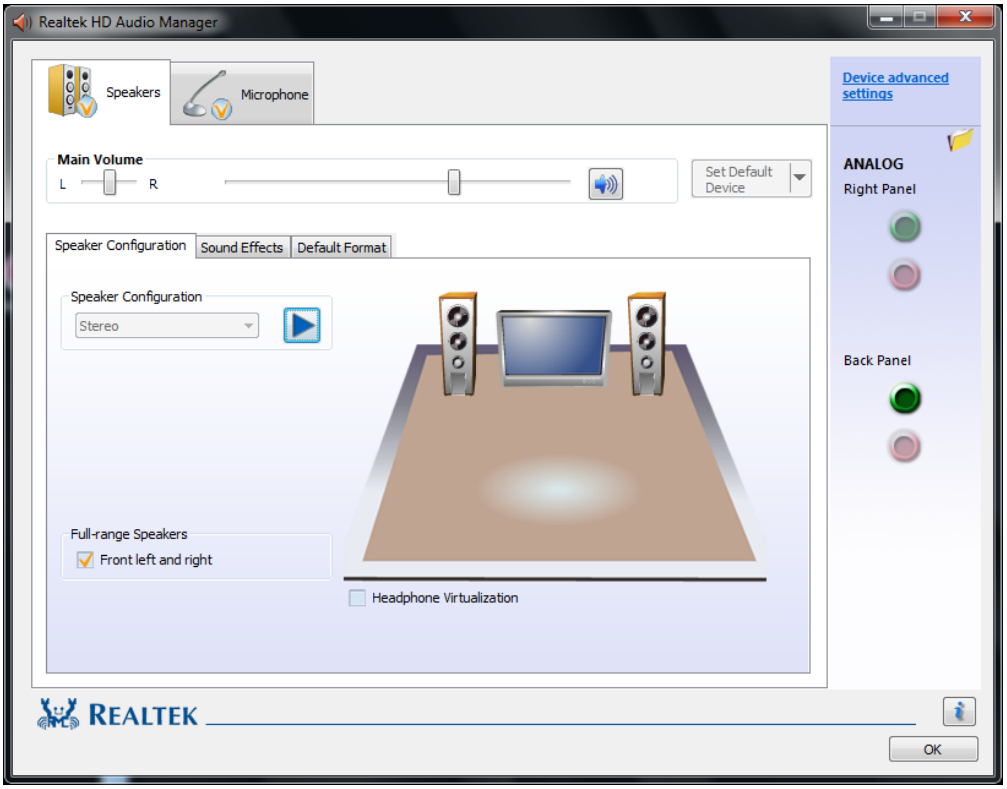

Figure 27. Realtek HD Audio Manager - Speakers Main Tab

Table 7. 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 28.
2.	Set up and adjust your microphones.	
3.	Click on the **Default Format** sub-tab to select a default sound format for your microphones.	

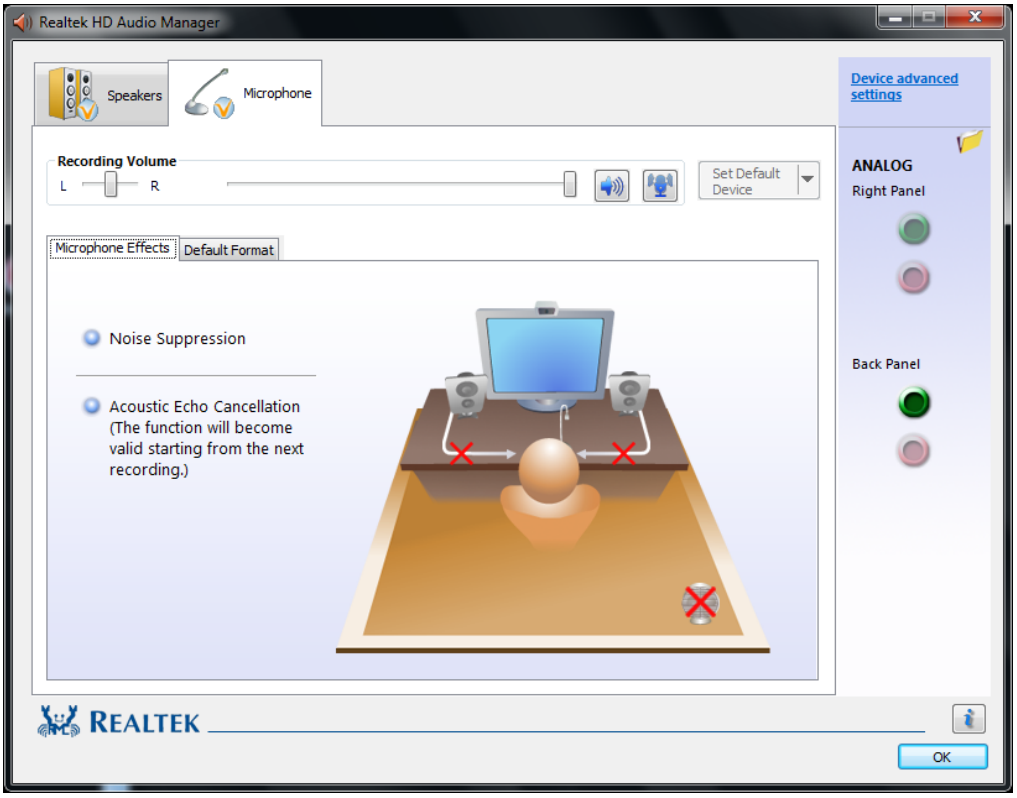

Figure 28. Microphone Main Tab

Operating the X7 Display

Selecting the Display Mode

Your X7 has the capability to operate with both a touch screen and a pen screen enabled (dual mode) or you can select touch screen only or pen screen only. The default display mode is "Dual Mode".

To select touch or pen screen only operation, click on the **ARMORutils** icon in the systray menu, then select the **Screen Setup** option from the Main screen. The Screen Setup dialog opens, as shown in Figure 29.

Click on **Touch Only** to deactivate the pen screen, or click on **Pen Only** to deactivate the touch screen. The screen option that is enabled will appear grayed out in the Screen Setup dialog, indicating that it is selected and the other modes are available. Click on **Dual Mode** to re-enable both screens.

CAUTION!

If you change to Pen Only mode using the touch screen and you do not have an active pen, you will not be able to access the screen or switch back to Dual or Touch Only modes unless you attach an external USB mouse or obtain an active pen. Restarting the computer will not change anything.

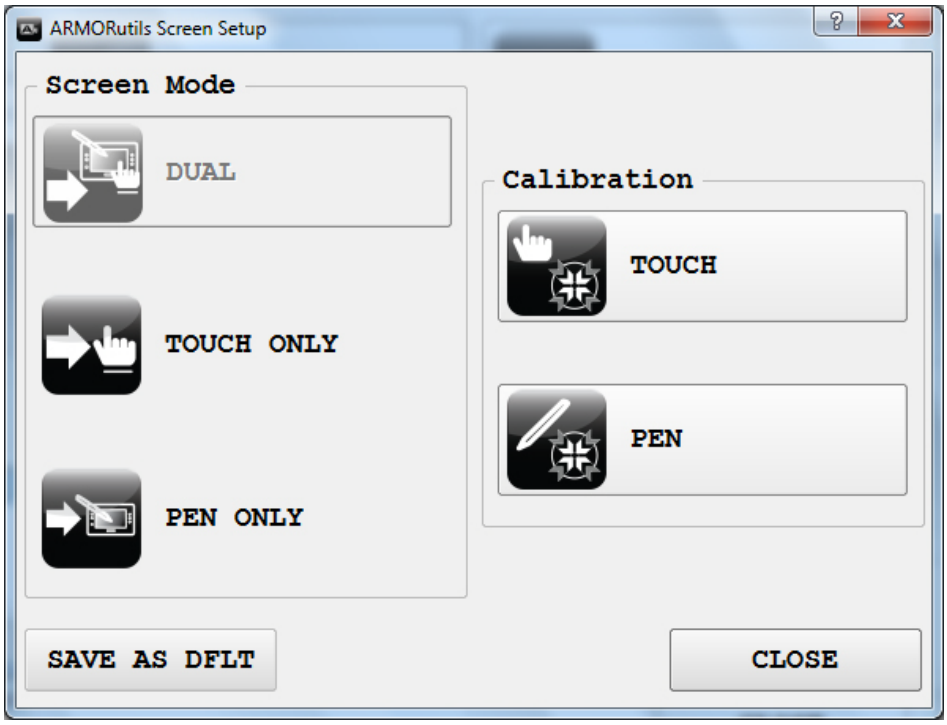

Figure 29. ARMORutils Screen Setup

Adjusting Screen Brightness

The brightness of the LCD display is controlled by adjusting the backlight intensity either automatically or manually. When you first receive your ARMOR X7, the brightness mode is set to Automatic. To switch to Manual brightness control, or switch back to Automatic mode, open ARMORutils and click on the **Backlight Setup** option in the ARMORutils Main dialog window. This will open the Backlight Setup dialog window shown in Figure 30.

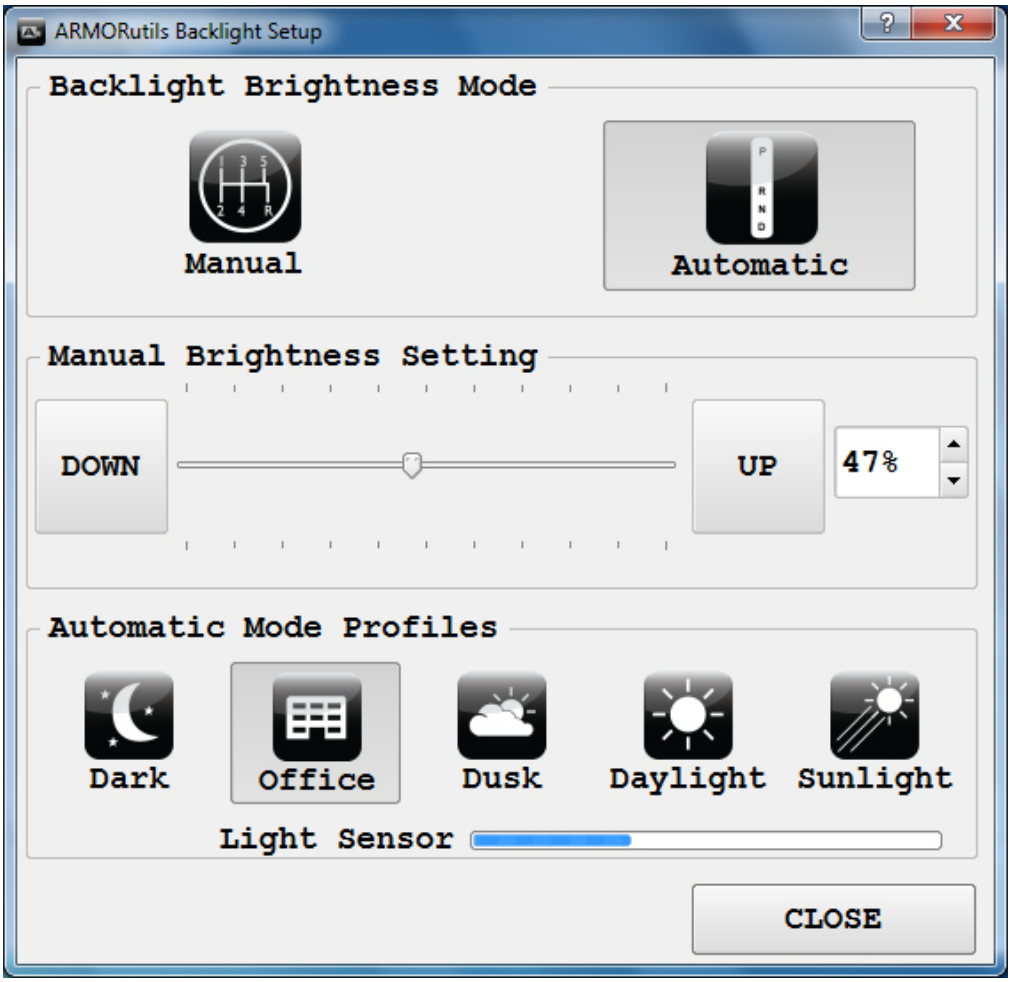

Figure 30. ARMORutils Backlight Setup Dialog Window

Automatic Brightness Adjustment

Click on the **Automatic** button to change to the automatic brightness mode. The backlight level will now be controlled by the ambient light sensor (ALS) located on the indicator panel. If the surrounding light decreases, the brightness will *decrease* proportionally; if the surrounding light increases, the brightness will *increase* proportionally.

NOTE

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

Selecting an Automatic Mode Profile

You can tailor the automatic brightness adjustment by selecting one of the 5 pre-configured brightness profiles. DRS has researched typical lighting environments and has created these adjustment profiles that respond more precisely to changing light levels within a particular environment.

For example, if the automatic brightness doesn't keep the display bright enough for you under surrounding lighting conditions, you can select the Dusk, Daylight or Sunlight profile to increase the brightness range proportionally. Similarly, if the normal brightness control results in light levels that are consistently too bright, you can select the Office or Dark profile to reduce the brightness range.

Manual Brightness Adjustment

Click on the **Manual** button to change to manual brightness mode. You can manually adjust screen brightness in two ways: by using pre-programmed buttons (PBs) **P1, P2** and **P3** or by using options and buttons in the **Backlight Setup** dialog.

Using P1, P2 and P3 to Adjust Brightness

When you first receive your X7, the **P1** button is programmed to increase screen brightness in 10% steps, **P2** is programmed to decrease brightness in 10% steps and **P3** is programmed to toggle the screen full off and on.

NOTE: ARMORutils must be running to use the PB functionality (see Starting ARMORutils).

Press and release **P1** repeatedly to increase the brightness to its maximum level (100%); press **P2** repeatedly to decrease the brightness to its minimum level (10%). Press **P3** to turn the screen completely off; press it again to turn the screen back on to it's previously set level.

NOTE: P1, P2 P3 are initially programmed to adjust screen brightness; however, you can change each button's programming as described in Buttons Setup Dialog.

Using the Backlight Setup Dialog to Adjust Brightness

Drag the **slider** or press the **UP** or **DOWN** buttons repeatedly with the pen or a fingertip to move the slider and adjust the brightness 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.

Working with the Pen Screen

When the pen screen is active, you can steer the pointer 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.

Your X7 Active Pen

The pen that comes with your X7 (Figure 9) is stored in a slot on the back panel (see Figure 4) and has circuitry that interacts with the pen screen digitizer assembly. The digitizer detects the pen tip close to the screen and activates certain functions like steering the pointer or performing a right click action if the side button is pressed. Pressing the tip to the screen activates a tip switch that opens a right-click menu.

Using the Active Pen

Table 8 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 Right-Click function (default). This function can be changed as described in the Pen Tablet Properties utility in Control Panel.

Table 8. 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).	Hold tip to screen -or- Hover near screen and press side button (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 Tablet Properties utility
- Pen and Touch utility
- Tablet PC Settings utility

Refer to Windows Display Utilities 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 pointer over the entire screen area. Refer to Calibrating the Display.

Working with the Touch Screen

When the touch screen is active, the pressure of a fingertip or passive stylus (not supplied) against the screen is used to duplicate the actions of a two-button mouse.

NOTE

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

Table 9 lists mouse-type objectives you can perform using a fingertip or passive stylus with the touch screen.

Table 9. 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. Select **Start → Control Panel → Hardware and Sound** → and click on either the **Touch Settings** utility, **Pen and Touch** utility or the **Tablet PC Settings** utility. Each utility controls different attributes of the touch screen. Refer to Windows Display Utilities for an explanation of these attributes.

Touch Screen Calibration

NOTE

If your X7 is in Dual Mode display, you cannot use the active pen that came with your X7 to calibrate the touch screen since the digitizer will detect the active pen tip and not allow you to proceed.

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 pointer. For calibration instructions, refer to Calibrating the Display.

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 hidden just off the top left or right side of the display. The edge appears in the upper left corner when you tap anywhere on the screen with a fingertip, stylus or the active pen, as shown in Figure 31.

When the edge is visible, tap on it twice to fully open it on the desktop, as shown in Figure 32.

Figure 31. Location of the Input Panel

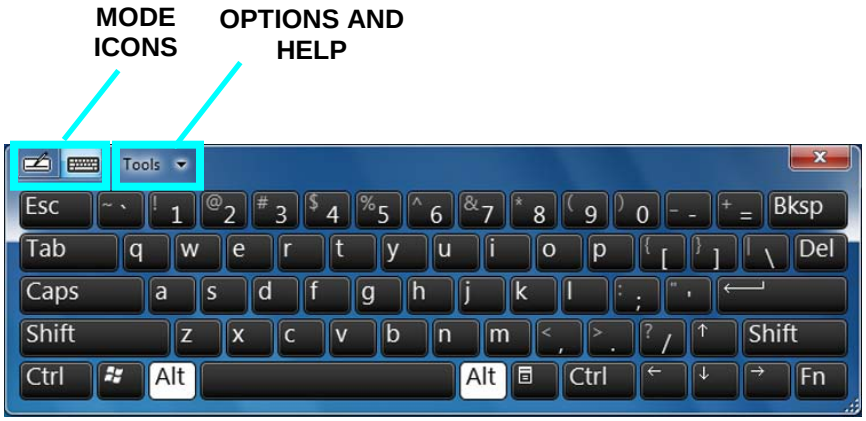

Figure 32. Input Panel Keyboard Opened on Desktop

Operating Modes

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 re-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.

Editing Documents

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

Configuring Input Panel Options

The **Input Panel Options** window is where you can change a wide variety of Input panel display and operating features. There are two ways to get to this window:

1. Click on **Control Panel → Hardware and Sound → Tablet PC Settings** and select the **Other** tab, then click on **Go to Input Panel Settings**.
2. With the Input Panel keyboard open on the desktop, click on the down arrow next to the **Tools** button and select **Options**.

Click on the link **Learn More About Opening and Moving Input Panel** at the bottom of the options window to access a Windows help tutorial about opening and position the 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. Follow the instructions to test and adjust your gesture.

Entering Data using Other Virtual Input Devices

There are a number of on-screen keyboards offered by companies other than Microsoft, such as the My-T-Pen® Onscreen Virtual Keyboard Utility and the Comfort® On-Screen Keyboard for Windows.

There are also other types of software and hardware input devices besides virtual keyboards that can be used for viewing and entering data, such as hand gesture recognition software and infrared tracking devices.

Using the Fingerprint Sensor (FPS)

Activating the FPS Software

To initially set up your FPS software, double-click on the **TrueSuite** icon on the desktop and click on **Get Started** to begin. This will take you through the steps to enroll, or register, your fingerprint(s). The fingerprint sensor is located on the right side of the tablet in the middle of the row of buttons.

Once you have enrolled your fingerprints, you will need to swipe in each time you restart the computer.

Using the Fingerprint Sensor

To use the fingerprint sensor, swipe your finger or thumb from side to side at medium speed across the sensor.

Using the TrueSuite Application

Open the TrueSuite application by double-clicking on the **TrueSuite icon** on the desktop or by selecting **Start → All Programs** and clicking on the **TrueSuite** folder in the programs list (you may have to scroll down to see it). Click on the **TrueSuite** option to open the application, as shown in Figure 33. There are five user panels available. Click on the navigation icon in the upper right corner to open a panel.

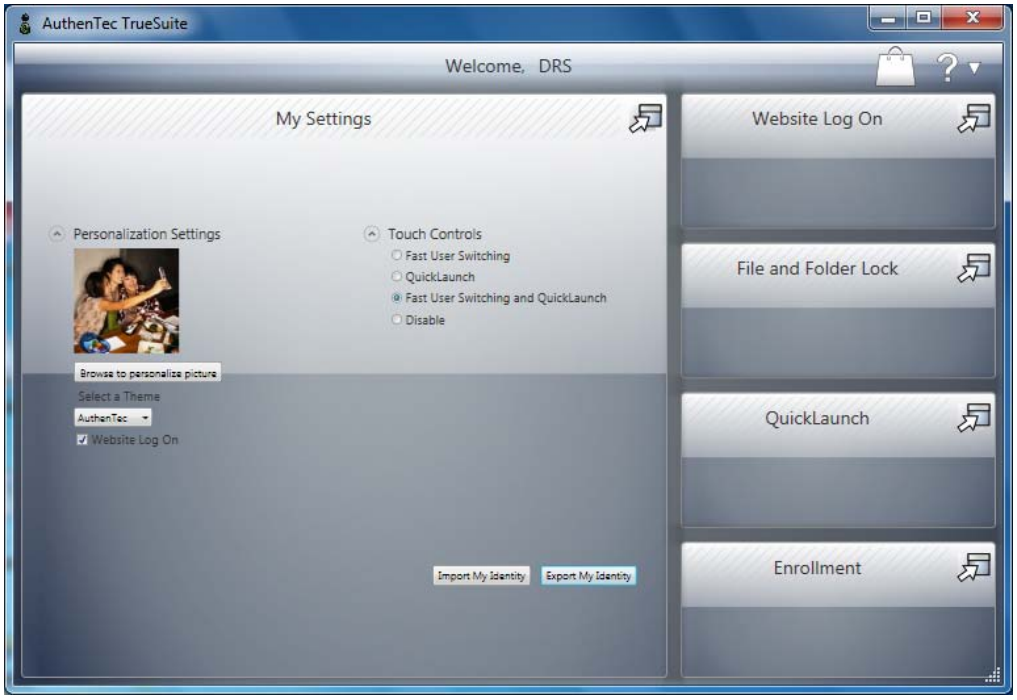

Figure 33. TrueSuite Application Window

TrueSuite Options and Settings

A complete description of the options and settings of the TrueSuite software is beyond the scope of this user's guide. Click on the "**?**" in the upper right corner of the window to access the application's help resources for detailed descriptions and instructions.

Uninstalling your Fingerprint Software

Should you decide to uninstall your fingerprint software, be sure to use the uninstall program provided with the AuthenTec software rather than through Control Panel. Click on **Start → All Programs → TrueSuite → Uninstall TrueSuite**.

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 complementary version of Picasa 3™ to demonstrate the image capture process, or you may wish to download and install your own camera application.

Follow the procedure in Table 10 to capture and save a still image or movie using the Picasa 3 software.

NOTE

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

Table 10. Capturing a Still Image or Video

STEP	ACTION	COMMENTS
1.	Double-click on the **Picasa 3 icon** on the desktop.	The Picasa application window will open as shown in Figure 34.
2.	Click on the "**Capture photos or video…**" button in the options bar (see Figure 34).	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.	

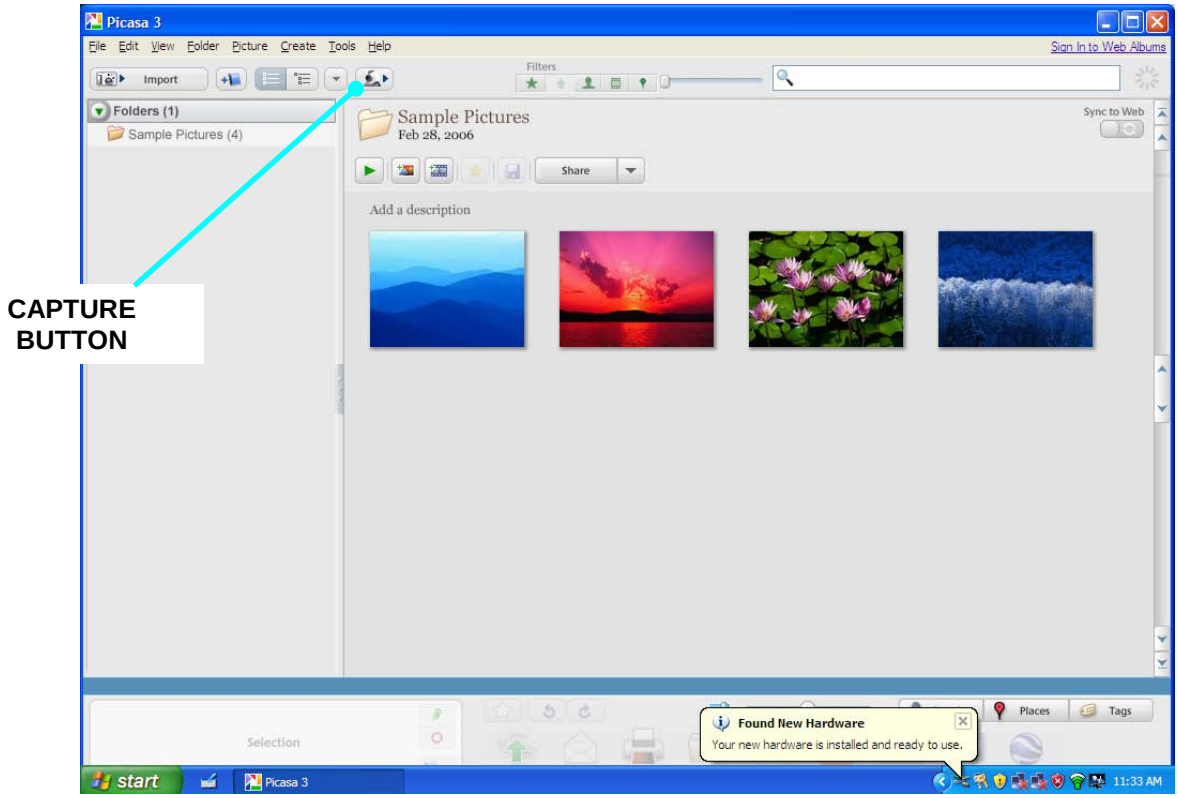

Figure 34. Picasa Application Window

Scanning a Barcode

The built-in webcam and the application software of your choice will allow 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.

Scanning Linear Barcodes (UPC-10, EAN-13, ISBN, etc.)

Figure 35 shows a sample of a linear barcode. Follow the procedure in Table 11 to scan a linear barcode.

Figure 35. Sample Linear Barcode

Table 11. Scan UPC-10, EAN-13 and ISBN Barcodes

STEP	ACTION	COMMENTS
1.	Double-click on the **Webcam Barcode Scanner** icon on the desktop.	The application window opens as shown in Figure 36
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, place the pointer in a field and paste.	

Figure 36. Webcam Barcode Scanner® Application Window

2D Barcodes (Datamatrix or QR format)

A sample 2D barcode is shown in Figure 37. Follow the procedure in Table 12 to scan a 2D barcode.

Figure 37. Sample 2D Barcode

Table 12. Scan a 2D Barcode

STEP	ACTION	COMMENTS
1.	Double-click on the **QuickMark** icon on the desktop.	The QuickMark® application window opens as shown in Figure 38
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 39.
3.	To return to the camera mode, click on the door icon at the lower right corner of the window.	

Figure 38. QuickMark® Barcode Scanner Application Window

Figure 39. A Captured 2D Barcode

Using the Screen Magnifier

Some text and images on a small screen can be 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.** An icon will also appear in the system application tray (systray).
- Use the scroll wheel to increase or decrease magnification. The application will return to the last magnification used when restarted.
- Left click to close the magnifier.
- To access the Virtual Magnifying Glass configuration menu, right-click on the icon in the systray.
- A magnified example is shown in Figure 40.

Figure 40. 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°C or above 70°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 removable cards. They are keyed to go in only one way and inserting a card incorrectly or using excessive force could result in damage to the card or the computer.
- Keep your screen clean and calibrated.

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4. NETWORKING

Your ARMOR X7 comes configured with two wireless network capabilities: Wi-Fi™ (wireless fidelity) and Bluetooth®. The Wi-Fi network is primarily used for higher bandwidth connections such as Internet or a company LAN. The Bluetooth network is used for connecting wireless devices such as a wireless router, printer or scanner to your computer.

The X7 can also accommodate an optional factory-installed WWAN radio and/or GPS receiver. These wireless devices are described in Optional Add-ons and Accessories for Your X7. Please contact DRS Technical Support for information about installing these options.

Your X7 can be connected to a cabled LAN through the breakout box on a desk or vehicle docking station.

Managing your Wi-Fi Connections

Your Wi-Fi (WLAN) radio is already configured and operating when your computer starts. Refer to Table 13 for instructions on how to manage your WLAN connections.

NOTE

The Windows Network and Sharing Center window in Control Panel will show you all of the networks you can select or manage. If you have an optional Gobi WWAN card, it is best to let the Sierra OneClick Internet connection manager application control your WWAN network connection. For instructions, please refer to the Sierra OneClick Connection Manager .

Table 13. View and Manage Network Connections

STEP	ACTION	COMMENTS
1.	Select **Start → Control Panel → Network and Internet → Network and Sharing Center**.	The Network and Sharing Center window opens, as shown in Figure 41.

STEP	ACTION	COMMENTS
2.	Click on the "**Connect to a network**" link to open the window shown in Figure 42. 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	

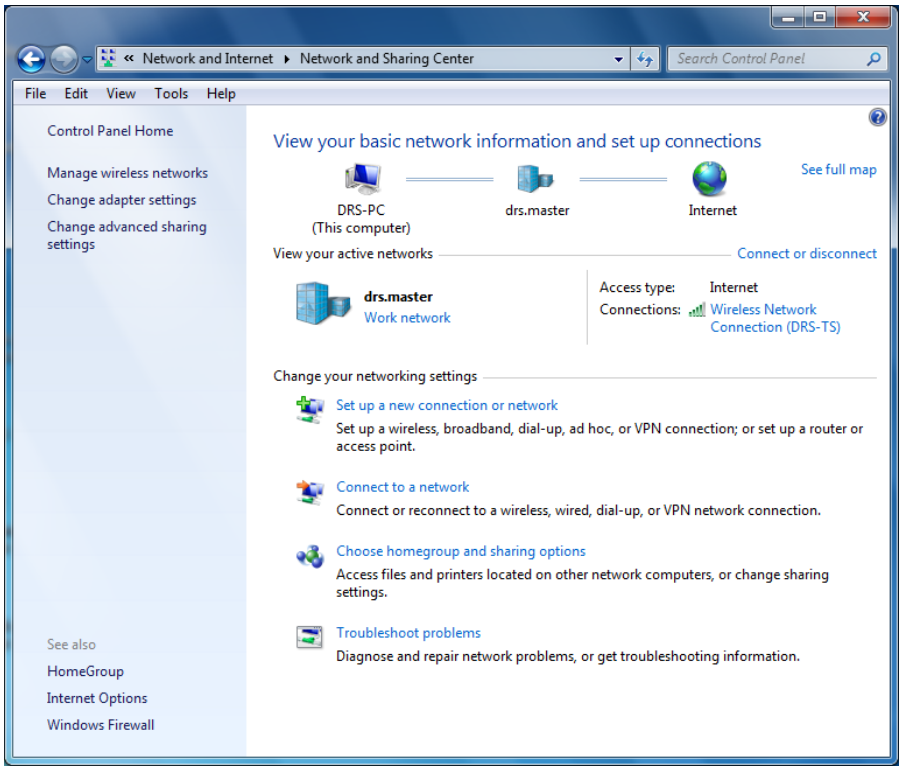

Figure 41. Network and Sharing Center Window

Figure 42. Currently Connected and Available Wi-Fi Networks

Managing your Bluetooth Connections

Your X7 comes equipped with Bluetooth® networking. However, to utilize this feature, you must "associate" your computer with any Bluetooth devices you want to connect. To see what Bluetooth devices are available and to add or remove devices, follow the procedure in Table 14.

Table 14. View and Manage Bluetooth Devices

STEP	ACTION	COMMENTS
1.	Select **Start → Control Panel → Hardware and Sound → Devices and Printers.**	The Devices and Printers window opens (Figure 43) showing any peripherals are in range or are already connected (including cabled devices).
2.	Right-click on the icon for your computer and select **Bluetooth settings** from the menu.	The Bluetooth Settings window opens, as shown in Figure 44.
3.	Check the "**Allow Bluetooth devices to find this computer**" option.	
4.	Check the "**Allow Bluetooth devices to connect to this computer**" option.	
5.	To add a device, click on the "**Add a device**" option in the toolbar.	

STEP	ACTION	COMMENTS
6.	To remove a device, click on the "Remove a device" option in the toolbar.	
7.	For additional information about these windows, click on the **Help** icon.	

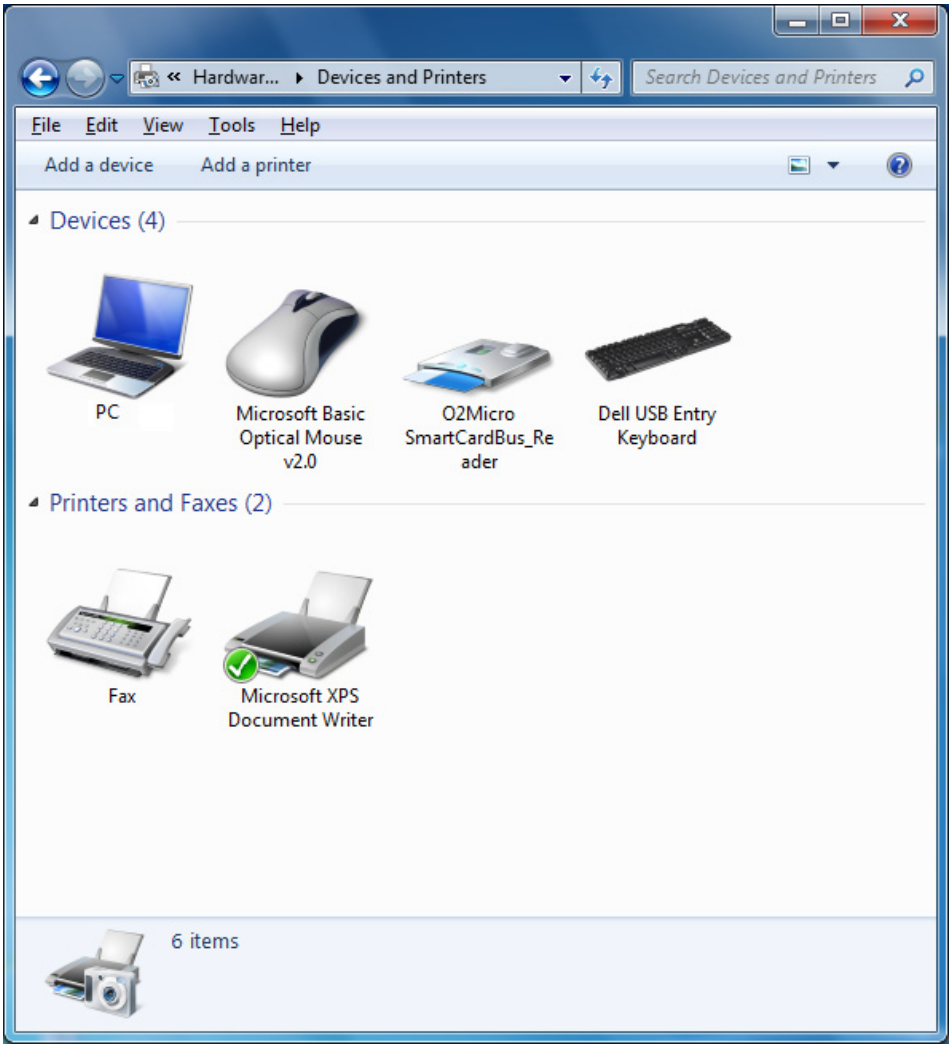

Figure 43. Devices and Printers Window

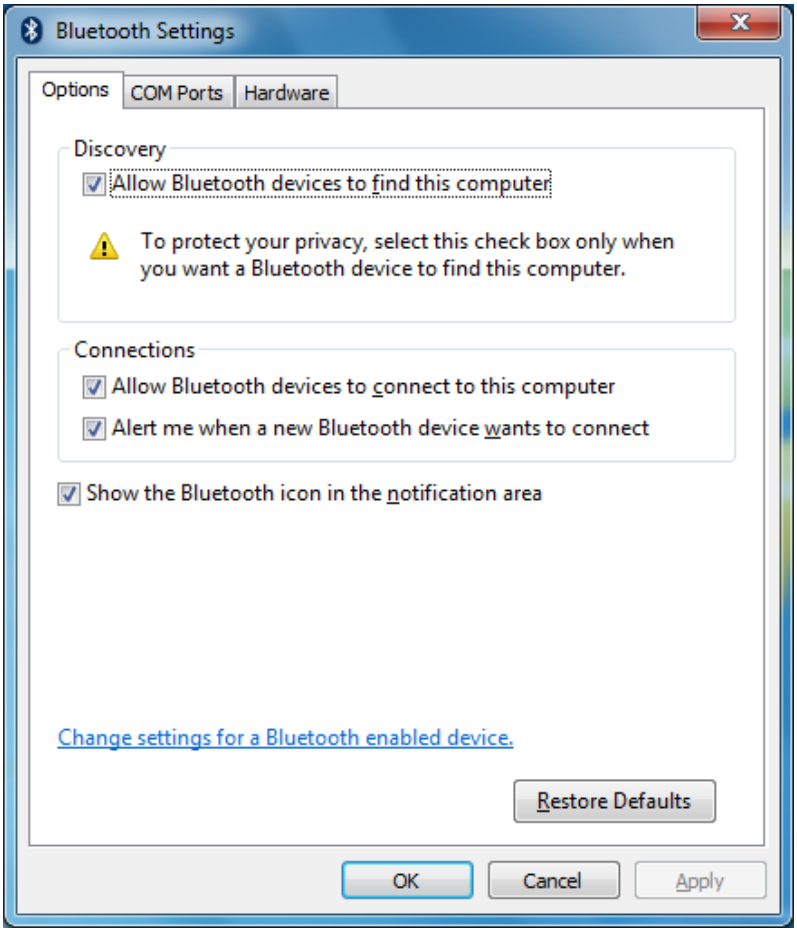

Figure 44. Bluetooth Settings Window

Managing your Ethernet Connection

Your X7 supports a cabled 10/100 Ethernet connection through a desk dock or a vehicle dock using a USB to LAN converter chip located in the docking station breakout box. An RJ45 Ethernet connector is provided at the breakout box for physical connection to the Ethernet LAN.

Once your docking station is cabled into the network, follow the procedure in Table 15 to connect to the LAN.

Table 15. Setting up an Ethernet Connection

STEP	ACTION	COMMENTS
1.	Contact your IT department or internet provider to obtain a user name and password. If necessary, your internet provider will give you an IP address as well. Otherwise, the IP address will be provided automatically by the network once you are physically connected and the X7 is running.	
2.	Click on **Start → Control Panel → Network and Internet → Network and Sharing Center**.	This will open the Network and Sharing Center window as shown in Figure 41.
3.	Click on the **Change Adapter Settings** link in the left-hand navigation panel.	This will open the Network Connections window.
4.	If no red "X" appears next to the **Local Area Connection** icon, your external LAN connection is established and you can open an internet browser to access the internet. If there is a red "X" showing, go to Step 5.	
5.	Click on the "back" arrow to return to the Network and Sharing Center window.	
6.	In the **Change Your Network Settings** panel, click on the **Set Up a New Connection or Network** link.	
7.	Highlight the **Connect to the Internet** option and click on **Next**.	The Connect to the Internet window will open.
8.	Click on the **Broadband** connection option.	An information dialog window will open with entry fields for your service provider, as shown in Figure 45.

9.	Enter your user name and password in the fields provided. Click on the **Remember this Password** option if you don't want to have to enter the password each time you access the network.	
10.	Enter the IP address provided by your IT department or internet service provider in the **Connection Name** field.	If the address is already showing, you do not have to enter it again.
11.	Click on the **Connect** button.	A message window will pop up stating that your connection was successful.

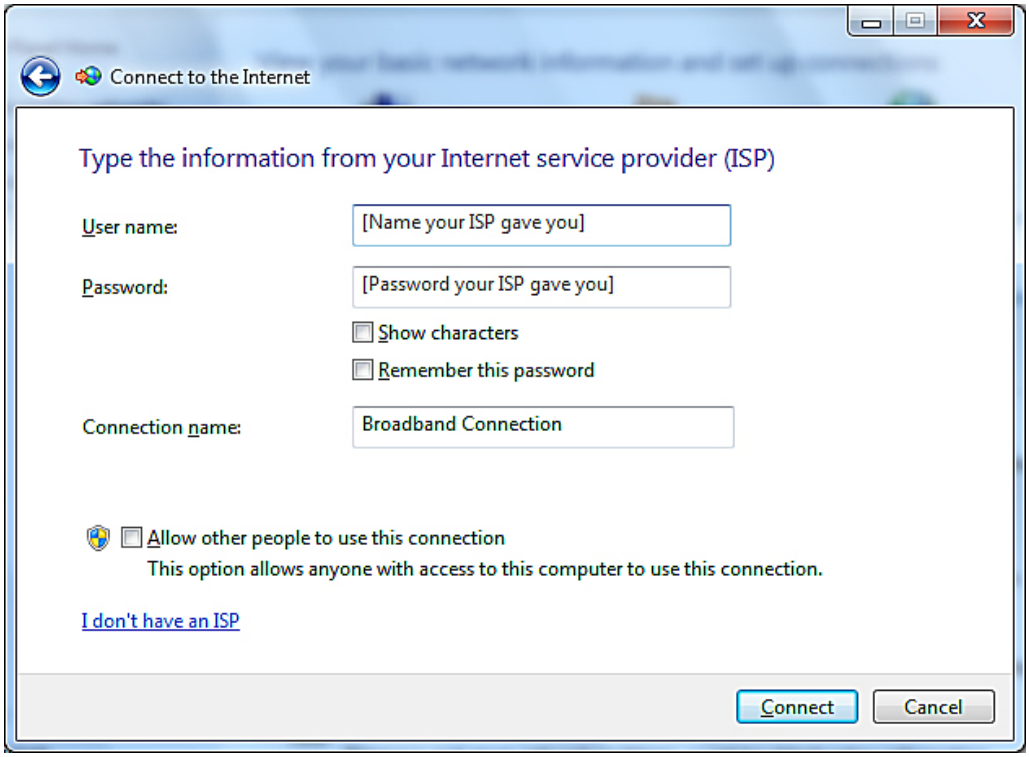

Figure 45. Internet Service Provider Information Window

Activating the Optional Gobi® WWAN Radio

If you have the Gobi® WWAN radio installed, your hardware is already configured. However, for certain providers, you must install a valid SIM card (Figure 13) before you can connect to their network. The SIM card is obtained from your WWAN service provider and is installed in a socket located inside the X7. Once you obtain your SIM card, follow the procedure in Installing a SIM Card.

.Once your SIM card is installed (or if you don't need one) click on the **OneClickInternet** icon on the desktop to open the connection manager, as shown in Figure 46.

Figure 46. Sierra® OneClickInternet™ Connection Manager

Using the OneClickInternet Application

For instructions on how to use the OneClickInternet application, refer to the Sierra OneClick Connection Manager User Manual which is included in Appendix C. **NOTE:** The Sierra OneClickInternet application is already installed on your computer so you can skip the installation instructions in Section 1 of the manual.

Using the Network Driver Interface Specification (NDIS)

NDIS is an application programming interface (API) that provides an additional layer of control to your Sierra® OneClickInternet™ connection manager. It allows your Gobi radio to automatically connect to your provider after powering up the computer without starting the OneClick Internet application and before you log in. However, when you first receive your ARMOR X7, NDIS is not automatically available and must be manually configured in order to use it.

Follow the procedure in Table 16 to enable NDIS in your Sierra OneClick Internet connection manager.

CAUTION!

Before uninstalling the OneClickInternet application with NDIS enabled, make sure that the "Gobi NDIS Auto Connect" option is unchecked in the Settings/General tab. Otherwise the module will always connect automatically on the next start up. Without the OneClickInternet application installed, you cannot disable this feature.

NOTE

It is recommended that you test the profile that you will use with the NDIS auto connect feature to ensure that it works prior to enabling NDIS.

Table 16. Configuring the Sierra OneClick Application to Use NDIS

STEP	ACTION
1.	If open, close the OneClick connection manager.
2.	Use Windows Explorer to navigate to the C:\Program Files (x86)\OneClickInternet folder.
3.	Double-click on the **Config.ini** file to open the file with Notepad (you can use any text editor).
4.	Add the following line: **AutoNDISConnect=1**
5.	Save the file and exit.
6.	In the Sierra OneClickInternet application, click on the **Settings** button and select the General tab. Check the "Gobi NDIS Auto Connect" option.

Important Notes about Using NDIS:

- NDIS turns the WWAN radio on even before the OS starts. This is not always a desirable state, so choose NDIS only if you need this functionality.
- NDIS enables the Gobi WWAN hardware to connect, reconnect and roam automatically, so these connection options on the Settings page are ignored if chosen in conjunction with NDIS.

- If you reboot the computer, NDIS will maintain your connection during the reboot.
- Selecting the "Auto Launch" option on the Settings page when NDIS is selected is not recommended as this will launch the OneClickInternet application upon reboot which will restart your connection.

Activating the Optional GPS Receiver

The u-blox ® u-center™ GPS control application is bundled with your X7 software suite. Before you can use the application, however, you must manually obtain and enter the communications (COM) port that was assigned to the u-center program by Windows when the operating system was installed. To do this, follow the procedure in Table 17.

Table 17. Configuring the u-Center Com Port

Step	Action	Comment
1.	From the Windows desktop, select the **Start** button and select **Control Panel → Hardware and Sound → Devices and Printers → Device Manager**	The Device Manager dialog window will open.
2.	Open the **Ports (COM & LPT)** option, scroll down to **u-blox 5 GPS and GALILEO Receiver** and record the COM port number**.**	
3.	Close the Control Panel and open the u-center application by double-clicking on the **u-center desktop icon** or selecting the **u-center option** from the **All Programs** list.	The u-center application window opens as shown in Figure 47. **NOTE:** The application workspace is configurable and may not look exactly as in the figure.
4.	Select the **Receiver** menu in the application tool bar and click on the **Port** option.	
5.	Choose the COM port that you recorded from Control Panel.	Your GPS receiver will automatically begin searching for satellites.

The u-center GPS Application Window

The diagram in the center shows the approximate positions of satellites relative to your location that are within range of the receiver. The graph at the bottom of the page shows the 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.

u-center User's Guide

A complete description of the u-center software is beyond the scope of this manual. However, an online User's Guide is provided with your u-blox installation. To access the user's guide, select **Start → Computer → Local Disk (C:) → Programs Files (x86) → u-blox → u-center → Documentation → User's Guides** and double-click on the **u-Center_User_Guide pdf file.**

NOTE: We recommend you create a shortcut to this file on the desktop.

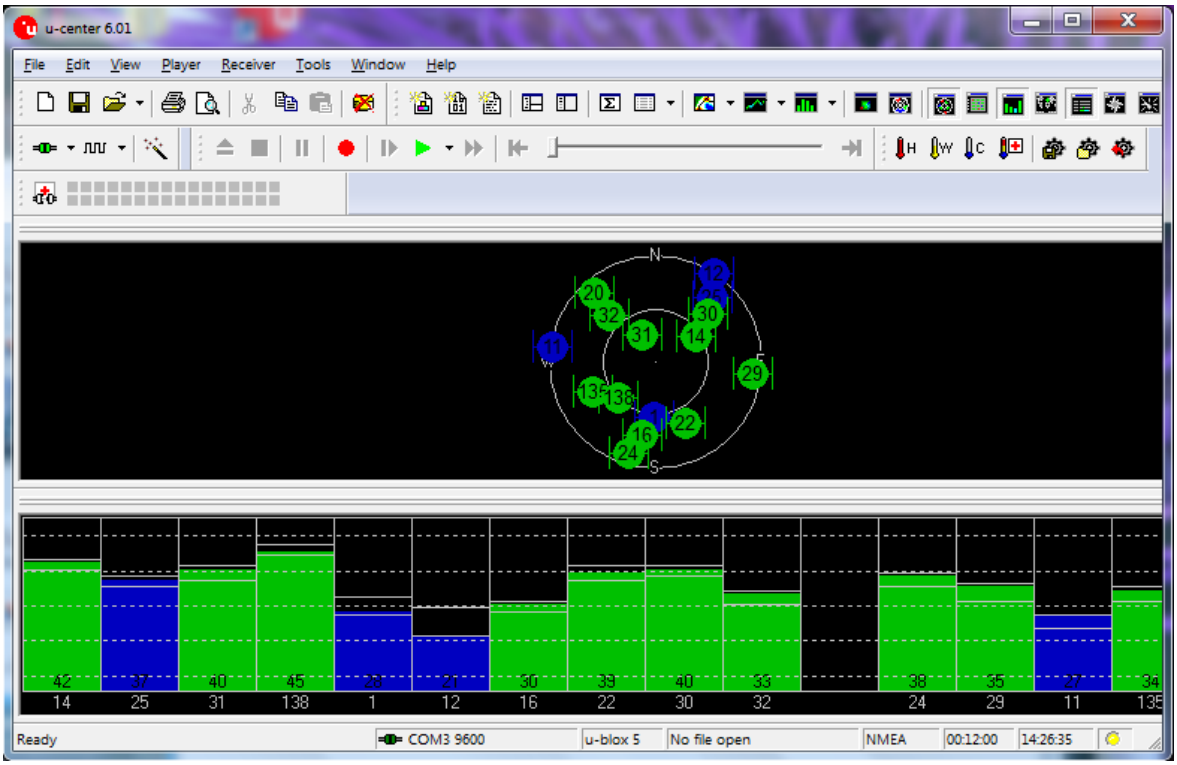

Figure 47. U-Center GPS Application Window

Assisted GPS

Assisted GPS (AGPS) is an option that uses your wireless network connection to quickly download the GPS almanac and ephemeris information your system needs to compute a first fix on your location. This greatly reduces the time to first fix (TTFF).

With AGPS, your system can acquire an accurate fix in less than 30 seconds. Without AGPS, the TTFF can take as long as 15 minutes depending on surrounding structures and the strength of the satellite signals.

However, AGPS depends on an internet connection so it is limited to areas where wireless network coverage is available.

Activating Assisted GPS

AGPS is free with your purchase of your ARMOR X7 but you must obtain the necessary AGPS password from u-blox by following the procedure in Table 18.

Table 18. Obtaining the AGPS Password from u-blox

Step	Action	Comment
1.	Send an email with no subject or content to agps-account@u-blox.com	Within 24 hours, u-blox will return a password via your email account.
2.	Once you have your password, click on the **u-center** icon on the desktop.	The u-center application window opens as illustrated in Figure 47.
3.	Locate the thermometer icon with a red cross and click on it.	The AssistNow Online™ window opens, as shown in Figure 48.
4.	Enter your email address in the **User** field.	
5.	Enter your AGPS password in the **Password** field.	
6.	Click **OK** to save and exit.	
7.	When you want to use the assisted GPS capability, ensure you have a valid wireless connection to the internet and click on the thermometer icon with the red cross.	

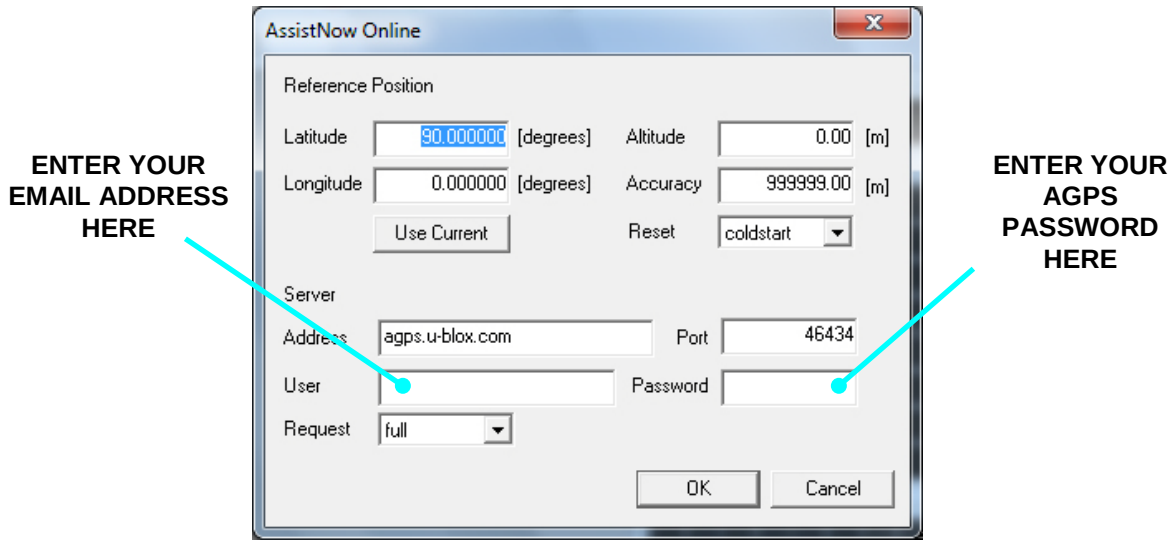

Figure 48. u-center AssistNow Online Window

Enabling and Disabling Your Wireless Radios

You may wish 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 installed radios at one time but keep working on your computer, as when travelling on an aircraft.

Follow the procedure in Table 19 to enable/disable your radios.

NOTE

If you exit ARMORutils completely or shut down your system with the Radios ON/OFF Toggle set to OFF, all radios will be off the next time you restart ARMORutils or turn on your computer. This is done for safety reasons to prevent your wireless radios from being accidentally re-activated during flight.

You will need to re-enable each radio with its Radio ON/OFF button when you reach your destination.

Table 19. Enabling and Disabling Your Wireless Radios

Step	Action	Comment
1.	Click on the **ARMORutils icon** on the desktop and select the **Wireless Setup** option.	This will open the Wireless Setup dialog window, as shown in Figure 53.
2.	Click on the **ON** or **Off** button to enable/disable each installed radio that you want to control then click the **Save Settings** button to save your configuration.	
3.	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.	

Wireless Signal Quality

Wireless signal quality is affected by several conditions:

- Distance from a Wi-Fi access point.
- 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 Setup 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 Wi-Fi access point is operating.
6. If none of these actions solves the problem, contact your Network Administrator for assistance.

Using your Radios with an X7 Vehicle Docking Station

With the X7 vehicle dock (see Vehicle Dock), you can switch your GPS receiver and/or WLAN radio to externally mounted antennas for improved operation. By using external antennas, you can reduce the attenuating effects of the vehicle cab and the constantly changing direction of the X7 internal antennas.

When configured in ARMORutils, the RF multiplexer in the X7 will automatically switch the GPS receiver, WLAN radio or both to the external antennas whenever the tablet is docked, and switch them back to the internal antennas when the tablet is undocked.

Follow the instructions in Table 20 to configure your radios to use external antennas.

NOTE

If you have a vehicle dock but are <u>not</u> connected to external antennas, you must set the Dock RF Sw in the ARMORutils Wireless Setup dialog window to "Disable" in order to use the tablet's internal antennas.

Table 20. Configuring the X7 to use External Antennas

STEP	ACTION	CONDITION OR INDICATION
1.	Place the X7 in the docking cradle (see Figure 18) and press down on the top clamp until it locks.	
2.	Double-click on the ARMORutils icon in the systray.	The ARMORutils Main Window opens.
3.	Click on the **Wireless Setup** option.	The Wireless Setup dialog window opens as shown in Figure 49.
4.	In the Dock RF MUX panel, select **GPS Only, WLAN Only** or **Both.**	The default setting is “Both”.
5.	Press the **Docking RF Sw Enable** button to enable switching of the selected antennas.	If the Docking RF Sw is set to “Disable”, the tablet will utilize it’s internal antennas.
6.	Click on the **Save Settings** button to save your changes.	

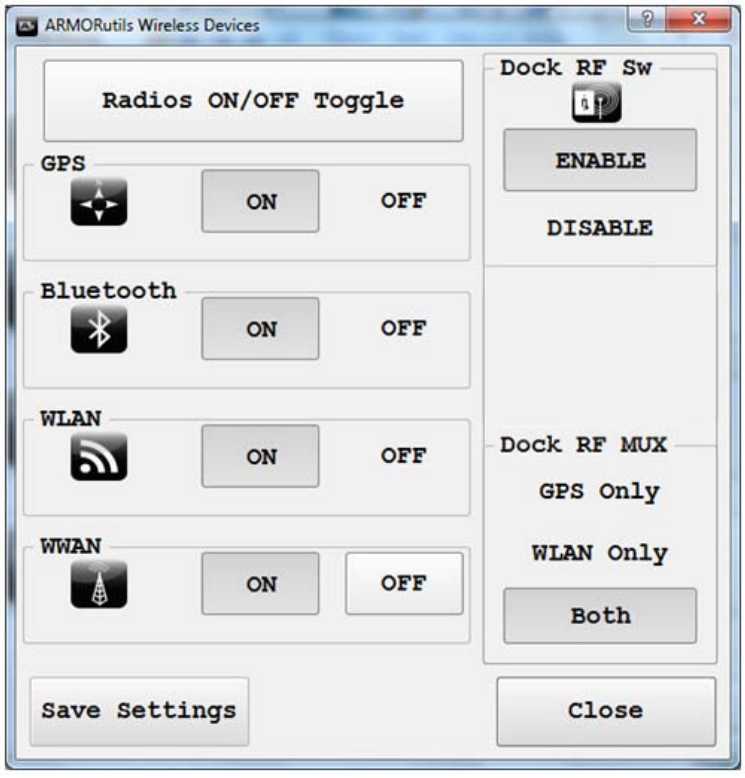

Figure 49. ARMORutils Wireless Setup Dialog

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5. YOUR ARMOR X7 SOFTWARE

Your ARMOR X10gx comes with a variety of software applications. Many of these are standard with your particular operating system, some are necessary to configure and operate your system, some are required for specific devices or functions and some are complementary applications provided by DRS to enhance your X10gx experience.

The following paragraphs provide an overview of the key programs and utilities necessary to configure and operate your X7 computer. Some of these applications are required for specific devices or functions and some are complementary applications provided by DRS to enhance your X7 experience. Many of these are standard with the Windows 7 operating system.

NOTE

A detailed description of each application's settings and options (with the exception of the ARMORutils application provided by DRS) is beyond the scope of this manual. Please refer to the Windows Help resources and to the help resources provided with each software application.

ARMORutils™ Application

The ARMORutils application is provided to help you configure and manage your X7 computer. It contains settings and information about screen setup, wireless configuration, battery status and much more.

NOTE

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

Starting ARMORutils

ARMORutils starts automatically when you boot up your computer and places an icon in the system application tray (systray) located in the lower right corner of the task bar (see Figure 50). An icon is also provided on the desktop and ARMORutils appears in the **Windows Start menu All Programs list** so you can restart ARMORutils should you exit it for any reason.

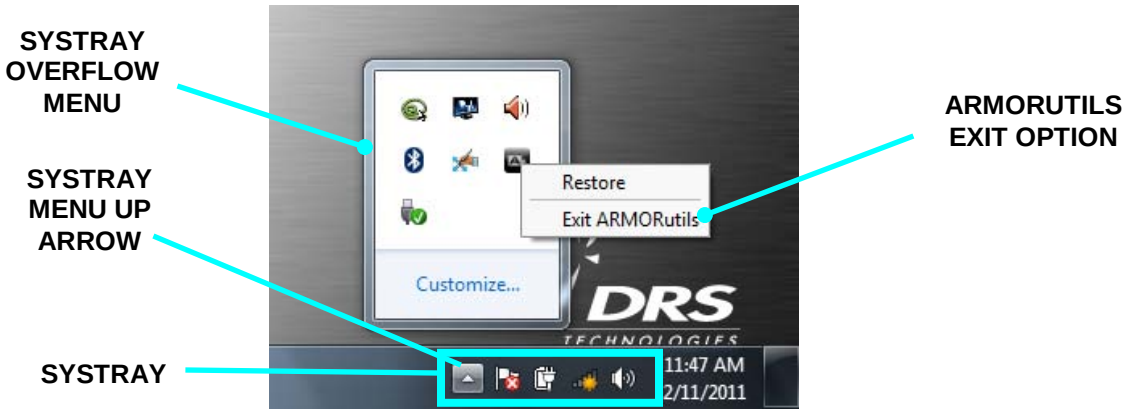


Figure 50. Systray with Overflow Menu Displayed

Opening ARMORutils

To open the ARMORutils Main dialog window (Figure 51), double-click on the ARMORutils icon in the systray or right-click on the icon and select **Restore** (**NOTE:** If the icon is not visible in the systray, click on the menu "up" arrow to access the overflow menu).

NOTE

Armor Utilities must be run by a user with Administrator privileges due to the User Account Code restrictions in Windows 7. If you are not using an account with administrator privileges, Windows will display a password entry window when you try to run ARMORutils. You must enter the Administrator password to proceed.

Exiting from ARMORutils

When you click on the **CLOSE** button on the ARMORutils main window or click on the red "**X**" at the upper right corner, you are only closing the main window – you are not exiting from the utility. ARMORutils continues to run in the background.

To exit from the application completely, right-click on the ARMORutils icon in systray and select **Exit ARMORutils**. You can restart the application by clicking on the **ARMORutils icon** on the desktop or select the ARMORutils option in the Start menu **Programs list**.

NOTE

If you exit ARMORutils completely, you will lose programmable button functionality. Restart ARMORutils to reactivate the PBs.

ARMORutils Main Window

The ARMORutils main window is shown in Figure 51. Eight options provide access to dialog or information windows. Click on an option to access one of these windows.

Figure 51. ARMORutils Main Window

Backlight Setup Dialog Window

The Backlight Setup dialog window allows you to adjust the screen brightness manually or automatically and to select from a series of preset profiles to automatically restrict the brightness range under specific lighting conditions.

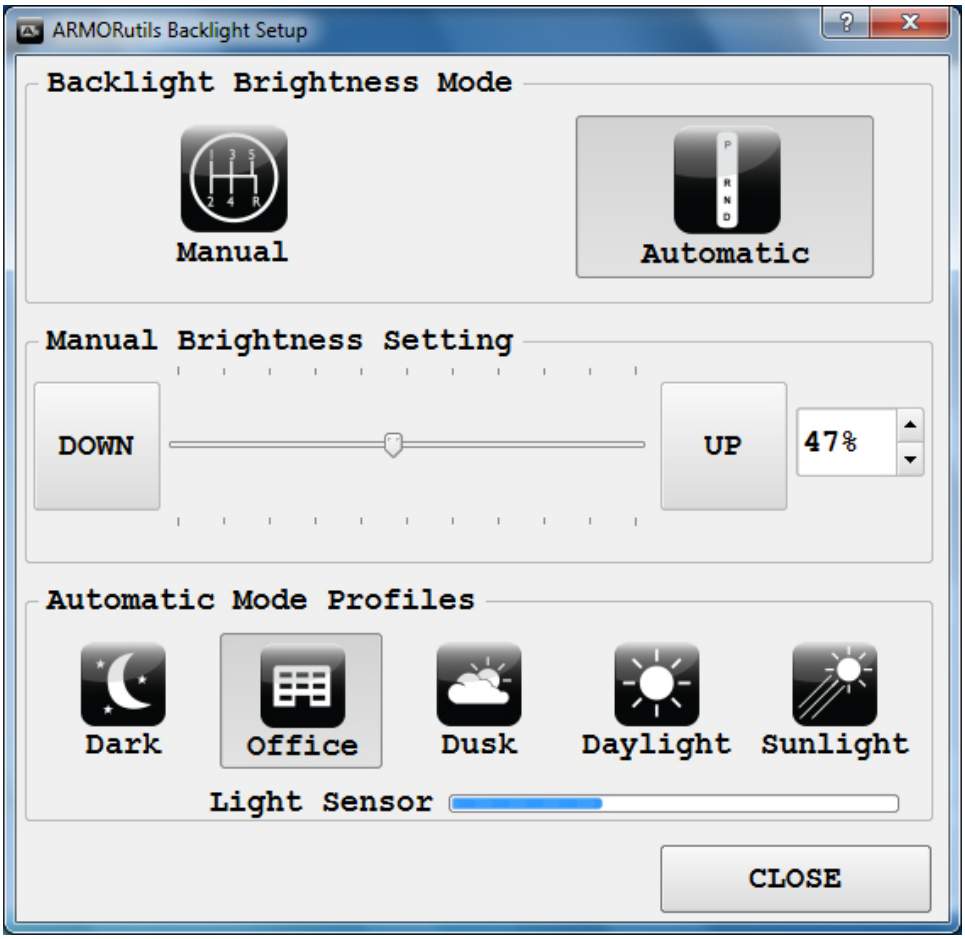


Figure 52. ARMORutils Backlight Setup Dialog

Automatic Brightness Mode

The Automatic brightness mode is initially activated by default. Automatic brightness adjustment is controlled by the ambient light sensor (ALS) located on the indicator panel on the front of your X7 tablet. The ALS monitors the surrounding (ambient) light level and automatically adjusts the backlight level to maintain the same relative screen brightness. For example, if you are working in an office near a window and someone opens the blinds, the surrounding light will suddenly increase. The ALS will measure the increase in light level and automatically increase your screen and indicator brightness to compensate.

Unlike Manual mode, where you can vary the brightness across the full adjustment range, in Automatic mode, the total range of brightness adjustment is smaller and is determined by the selected Automatic Mode Profile.

Automatic Brightness Mode Profiles

Everyone's eyes react differently to changes in light levels and there may be times when a particular 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.

When you first start ARMORutils, the system defaults to the Office profile. Once you select a different profile, the tablet will continue to use that profile until you select another.

Manual Brightness Mode

Click on the **Manual** button to activate the automatic brightness control mode. To manually adjust screen brightness, click repeatedly on the **UP** or **DOWN** buttons in the Manual Brightness Setting panel or drag the slider. The current brightness level is displayed as a percentage in the window to the right of the UP button. You can also adjust the brightness by clicking on the up and down arrows next to the percentage readout.

The manual controls change the brightness from 0% to 100% of the total available adjustment range for Manual mode. At the 0% point, the brightness low but the screen is not totally dark.

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.

Light Sensor Bar

The Light Sensor bar provides a visual indication that the ALS circuit is functioning correctly. Screen brightness changes in response to the changing ambient light level will occur gradually to allow your eyes to adjust and may not be readily apparent, but the Light Sensor bar gives an immediate indication that the ALS is controlling the screen brightness. The Light Sensor bar will continue to operate even when the backlight mode is set to Manual.

Wireless Setup Dialog Window

The Wireless Setup dialog allows you to enable or disable each wireless radio installed in your ARMOR X7. It also provides controls for external antennas connected through an X7 vehicle dock.

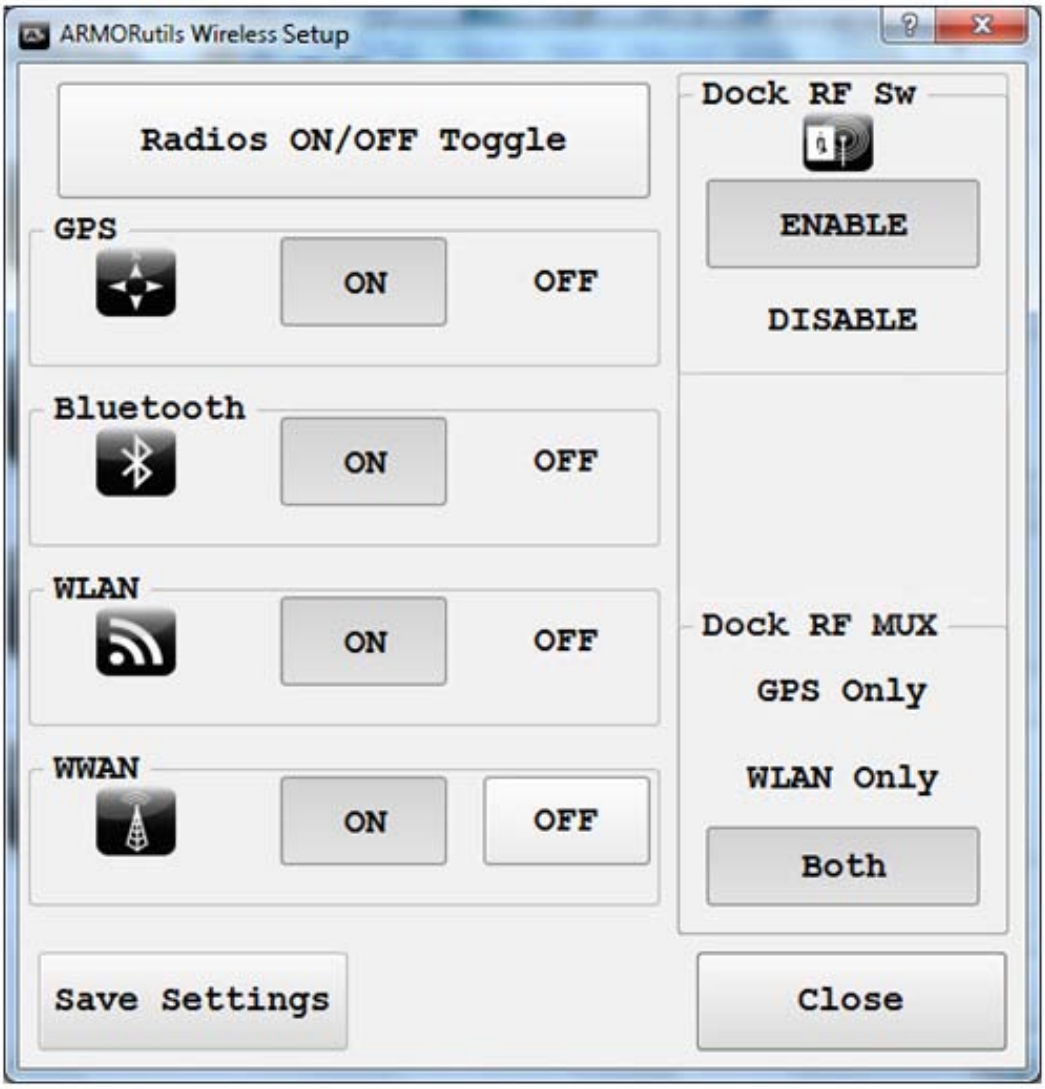


Figure 53. ARMORutils Wireless Setup Dialog

Radios ON/OFF Toggle Button

This button allows you to turn off or turn on all radios currently enabled with the Radio ON/Off buttons. This is particularly handy if you're on a commercial aircraft and you want to turn off all your enabled radios so you can continue working with the computer without causing interference with the aircraft's electronic systems. Refer to Enabling and Disabling Your Wireless Radios for information on how to use this button.

Radio ON/OFF Buttons.

There is an **ON** and an **Off** button for each radio that is installed or supported. When you first start your ARMOR X7, all installed radios are ON or enabled (default condition). Each radio can then be disabled by pressing its **OFF** button and re-enabled by pressing its **ON** button. Refer to Enabling and Disabling Your Wireless Radios for information on how to use these buttons.

NOTE: Radio options that may be available but are not installed will appear here also.

Dock RF Sw Button

The **Dock RF Sw** button enables or disables the antenna configuration that is selected by the Dock RF Mux switch. The initial setting for the Dock RF switch is "Enable". If the switch is set to "Disable", a docked tablet will use its internal antennas. **NOTE:** If the X7 does not sense a vehicle dock, it will utilize its internal antennas regardless of the setting of the Dock RF Sw.

Dock RF MUX Switch

Your X7 contains an RF multiplexer circuit that is configured by the **Dock RF Mux** switch. There are two RF coaxial connectors built into the base of the X7 dock: one for an external GPS antenna and one for a WLAN (Wi-Fi) antenna (see Vehicle Dock). Depending on the setting of the **Dock RF Mux** switch, the RF multiplexer will automatically switch your GPS and/or WLAN antennas to external antennas mounted on the vehicle whenever you dock the tablet.

You can select **GPS only**, **WLAN only**, or **Both** antennas. The default setting for the Dock RF MUX switch is "Both".

Save Settings Button

Regardless of how you configure your radios with the **Radio ON/OFF** buttons during your current session, they will return to their previously saved settings the next time you restart the computer unless you save your current changes. The same is true with any changes to the Dock RF or Dock RF Mux switches. You must click on the **Save Settings** button to save any current changes as your new default settings.

Buttons Setup Dialog Window

The Buttons Setup dialog window is shown in Figure 54. It allows you to assign two different functions for each programmable button (or "PB") labeled P1, P2 and P3. These buttons are located on the right control panel (see Figure 2).

The first function is activated by pressing and releasing a PB (**P1, P2, P3**). The second function is a combo function activated by first pressing and releasing the **Fn** button and then pressing and releasing a PB (**Fn+P1, Fn+P2, Fn+P3**). This provides a total of 6 individual functions that can be activated using the PBs. The function currently programmed is shown in the field next to the PB or the PB combo.

NOTE

If you exit ARMORutils completely, you will temporarily lose programmable button functionality. Restart ARMORutils to reactivate the PBs.

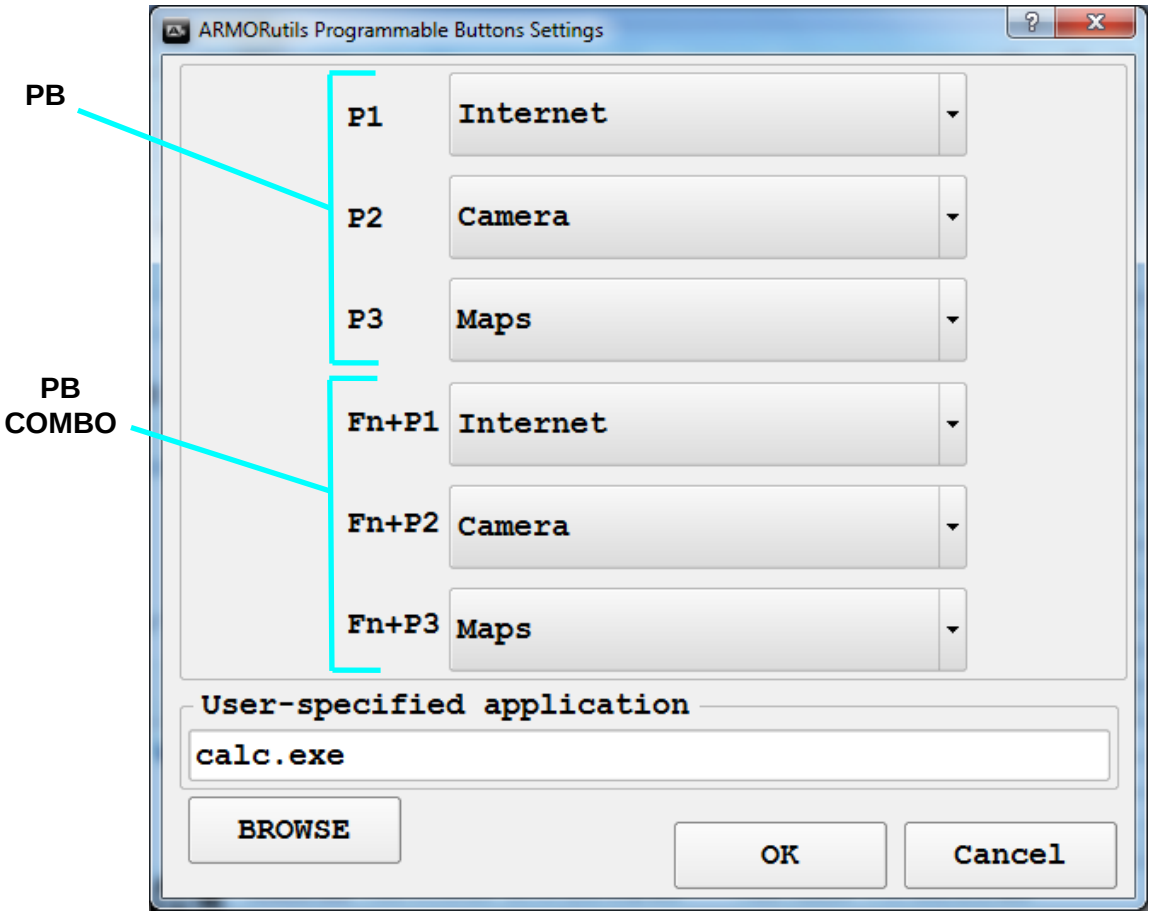


Figure 54. ARMORutils Buttons Settings Dialog

Selecting a Function

Click on the **menu arrow** next to the PB or PB combo and select the desired function, then click on the **OK** button to save your setting. Figure 55 shows a menu opened for the P3 button.

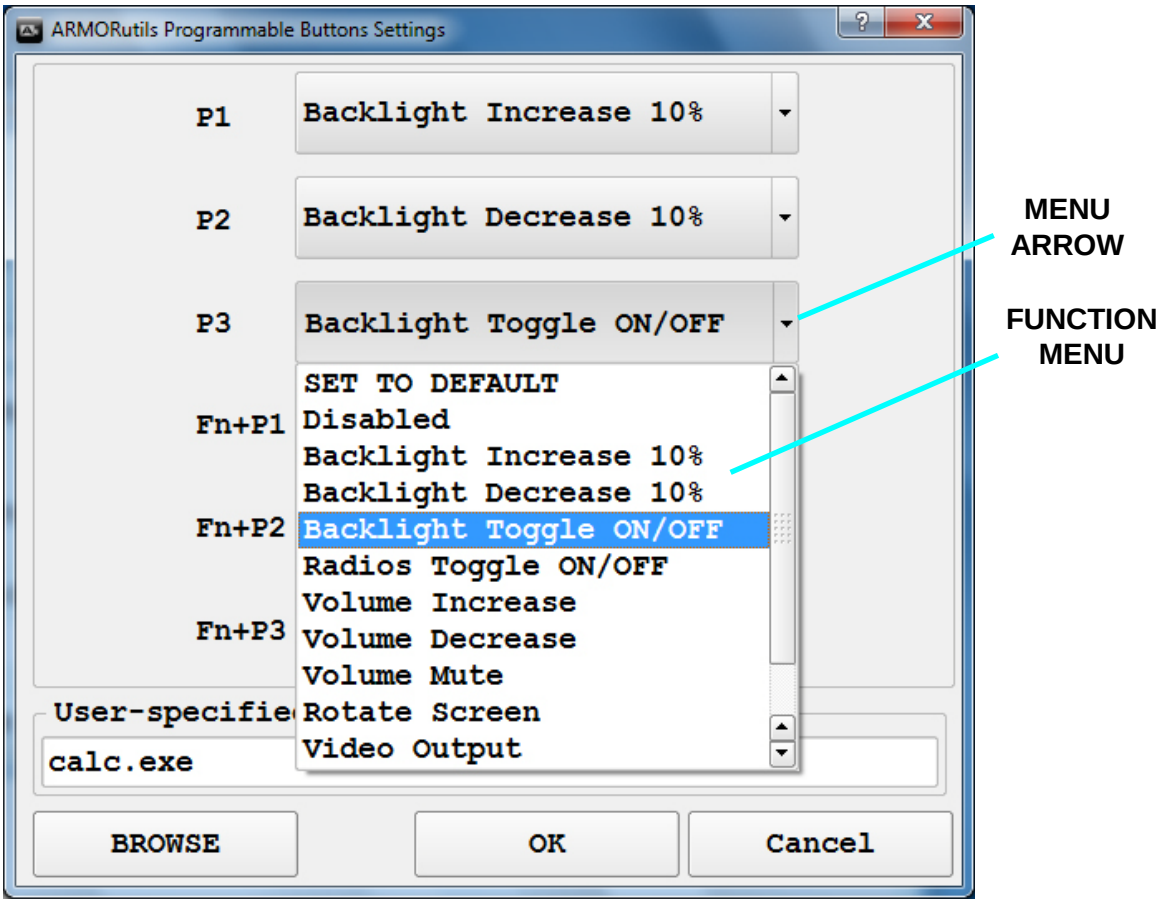


Figure 55. ARMORutils Programmable Button Options Menu

Available PB Functions

The currently available PB functions are listed below along with a brief description of their purpose (additional functions may be added in future releases of ARMORutils). You can assign any of these functions to any PB or PB combo.

- Set to Default – Returns the setting to its factory default function.
- Disabled – Disables the button or button combo.
- Backlight Increase 10% - Increases screen and indicator brightness in steps.
- Backlight Decrease 10% - Decreases screen and indicator brightness in steps.
- Backlight Toggle ON/OFF – Toggles the screen on and off.
- Radios Toggle ON/OFF – Toggles all enabled radios on and off.
- Volume Increase – Increases sound volume in steps.

- Volume Decrease – Decreases sound volume in steps.
- Volume Mute – Toggles volume ON or OFF.
- Rotate Screen 90 degrees – Rotates the screen 90 degrees clockwise with each press.
- Video Output Cycle – Not currently supported.
- Sleep/Hibernate – Will place the tablet in Sleep or Hibernate mode.
- Launch User-Specified Application – Allows you to select and launch an installed application or utility.
- <ENTER> key – Replicates pressing the keyboard "Enter" key
- <UP> key – Replicates pressing the keyboard "Up Arrow" key
- <DOWN> key – Replicates pressing the keyboard "Down Arrow" key
- <PAGE UP> key – Replicates pressing the keyboard "Page Up" key
- <PAGE DOWN> key – Replicates pressing the keyboard "Page Down" key

"Set to Default" Function

Select this function to return a PB or PB combo's programming to its factory default settings. The factory default settings for the X7 are:

P1 - Backlight Increase 10%
P2 - Backlight Decrease 10%
P3 - Backlight Toggle ON/OFF
Fn + P1 - Radios Toggle ON/OFF
Fn + P2 - Disabled
Fn + P3 - Disabled

NOTE: You are currently not able to change the PB default settings. If you need to have the default settings changed, please contact DRS Technical Support.

"Launch User-Specified Application" Function

Selecting this function enables the **User-specified application** panel at the bottom of the PB window. This function allows you to select an executable file to launch an installed application or utility using a PB or PB combo. You can manually type in the path to the file or hit the **BROWSE** button and search for the file in Windows Explorer.

To launch the application, press the assigned PB or PB combo.

Configuration Dialog Window

The Configuration Dialog window provides visual confirmation of those wireless radios that are installed in your X7. If a radio is installed and available, the associated icon and status will appear in dark contrast. The status of the installed radios is displayed in parentheses next to the word “Installed”. When the radio is enabled, the status is “ON”. If the radio is disabled, this status will change to “OFF”.

If a radio is not installed, the status will be “Not Detected” or “Not Installed” and the icon and text will be grayed out, as illustrated in Figure 56.

The bottom panel of the dialog window lists the current versions of your system BIOS, ARMORutils and operating system, as well as the ARMOR model number and the unit serial number.

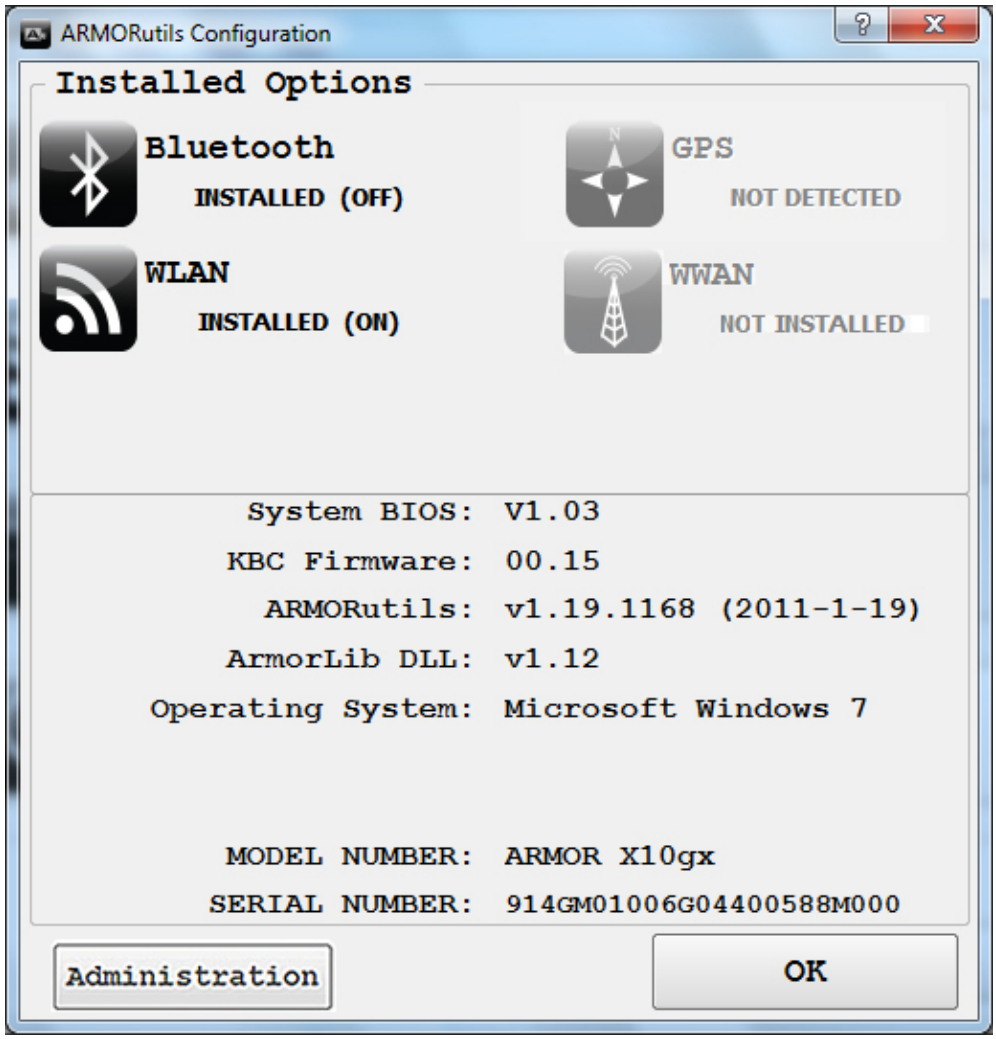


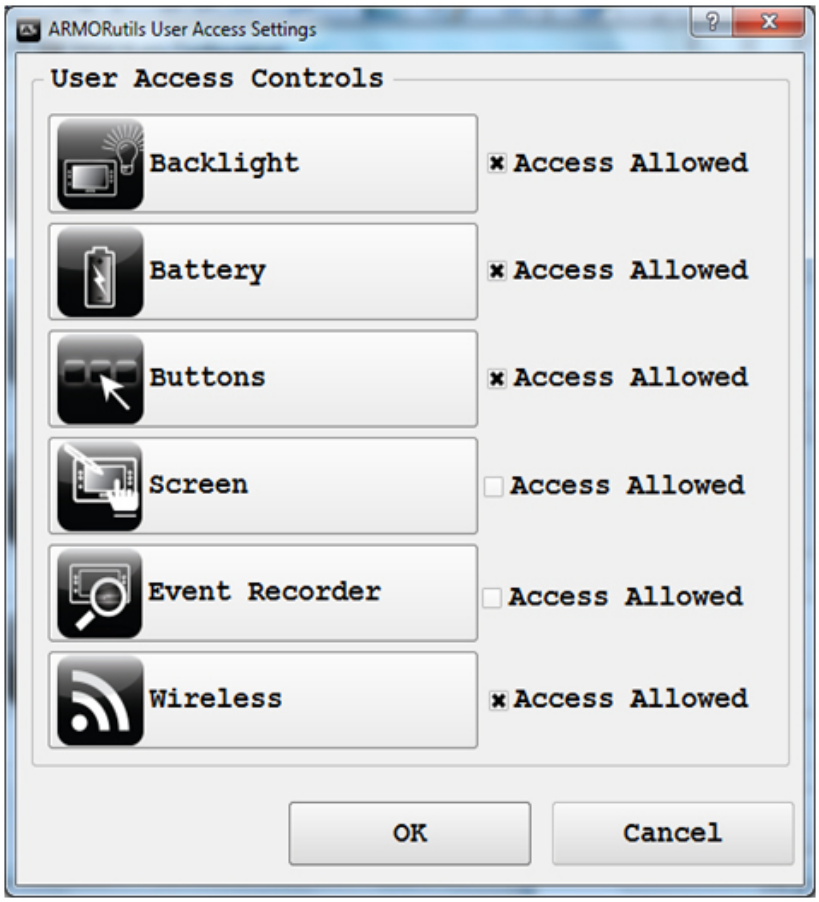
Figure 56. ARMORutils Configuration Dialog

Administration Button

The Administration button is normally hidden from view. To make this button available, press and hold the **Fn** button on the right control panel and click on the **Configuration** option on the **ARMORutils Main window**. The Configuration dialog window will re-open with the Administration button visible. Click on the **Administration** button to open the User Access Settings window shown in Figure 57.

User Access Settings Window

This window allows an administrator to deny access by users to a particular dialog window or function. Uncheck the applicable box and click **OK** to disable user access. The disabled dialog window button will appear grayed out in the user's ARMORutils main window, as illustrated in Figure 58. Here, the Screen Setup and Button Setup options are disabled.



Disables access to the Backlight Setup dialog.

Disables access to the Charger Settings and Conditioning Menu windows.

Disables access to the Buttons Setup dialog.

Disables access to the Screen Setup dialog.

Disables access to the Event Recorder window in the Diagnostics dialog.

Disables access to the Wireless Setup dialog.

Figure 57. User Access Settings Dialog

Figure 58. Example of the ARMORutils Main Screen with Options Disabled

Battery Monitor Dialog

The Battery Monitor dialog window is shown in Figure 59. This window provides the following information about each battery:

- Current charge level (% of the maximum energy capacity)
- Current status – whether the battery is CHARGING, DISCHARGING, FULLY CHARGED, FULLY DISCHARGED, READY or NOT READY. A READY status indicates a waiting state, such as the batteries are fully charged and waiting to discharge or a second battery is waiting for the first battery to reach a particular charge level.

  NOTE: If the status is NOT READY, the system cannot read the battery status and a fault condition exists.
- Estimated time to 90% of full charge
- Estimated time to full charge if external power is connected or the estimated remaining operating time if on batteries only.

There are also four buttons on this window that open additional dialogs or information windows: **Battery 1 Details, Battery 2 Details, Charger Settings** and **Conditioning Menu**. The functions of these buttons is described in the following paragraphs.

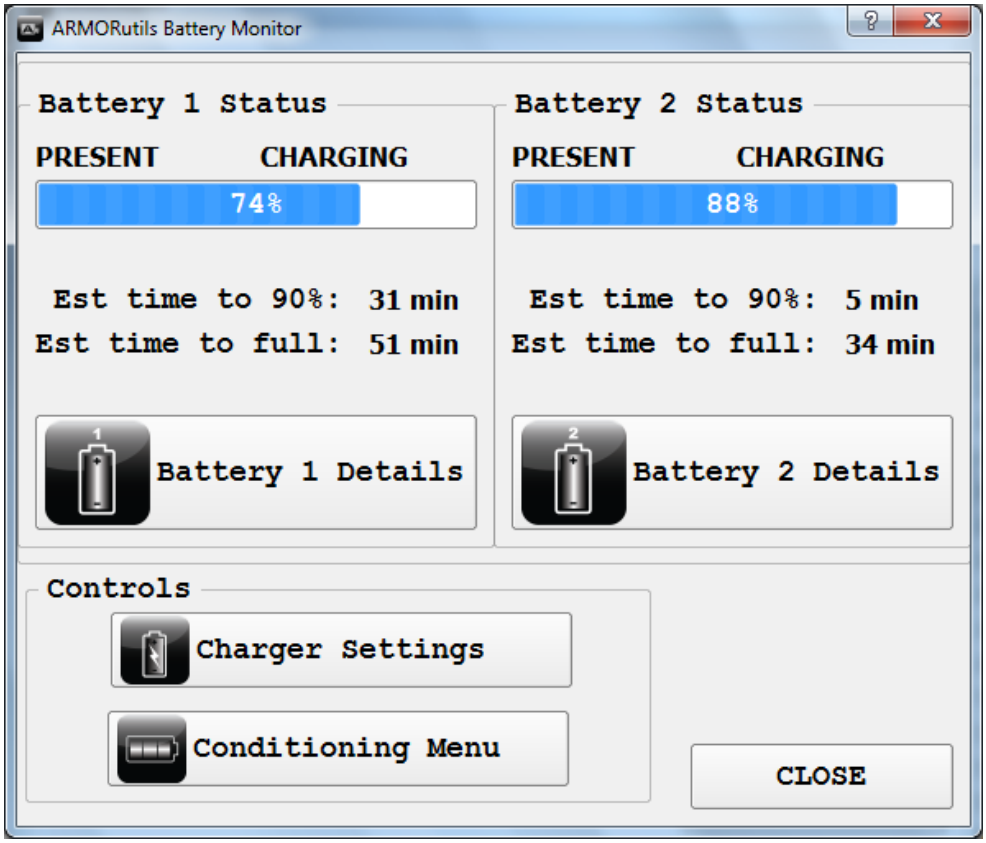


Figure 59. ARMORutils Battery Monitor Dialog

Battery 1 and Battery 2 Details Buttons

Select a **Battery Details** button to open a Battery Information window. Figure 60 shows a typical window for the #1 battery. This window provides the same % charge and status information as the Battery Monitor window but it also provides more detailed information about the battery including:

- the battery's serial number
- its current voltage, operating current and dissipated power in watts.
- the battery's remaining energy capacity in mAh
- it's maximum energy capacity in mAh
- the battery's design energy capacity in mAh
- it's accumulated cycle count

NOTE: A negative sign (-) appears next to a charge value in mAh when a battery is discharging. The absence of a sign indicates the battery is charging or is fully charged.

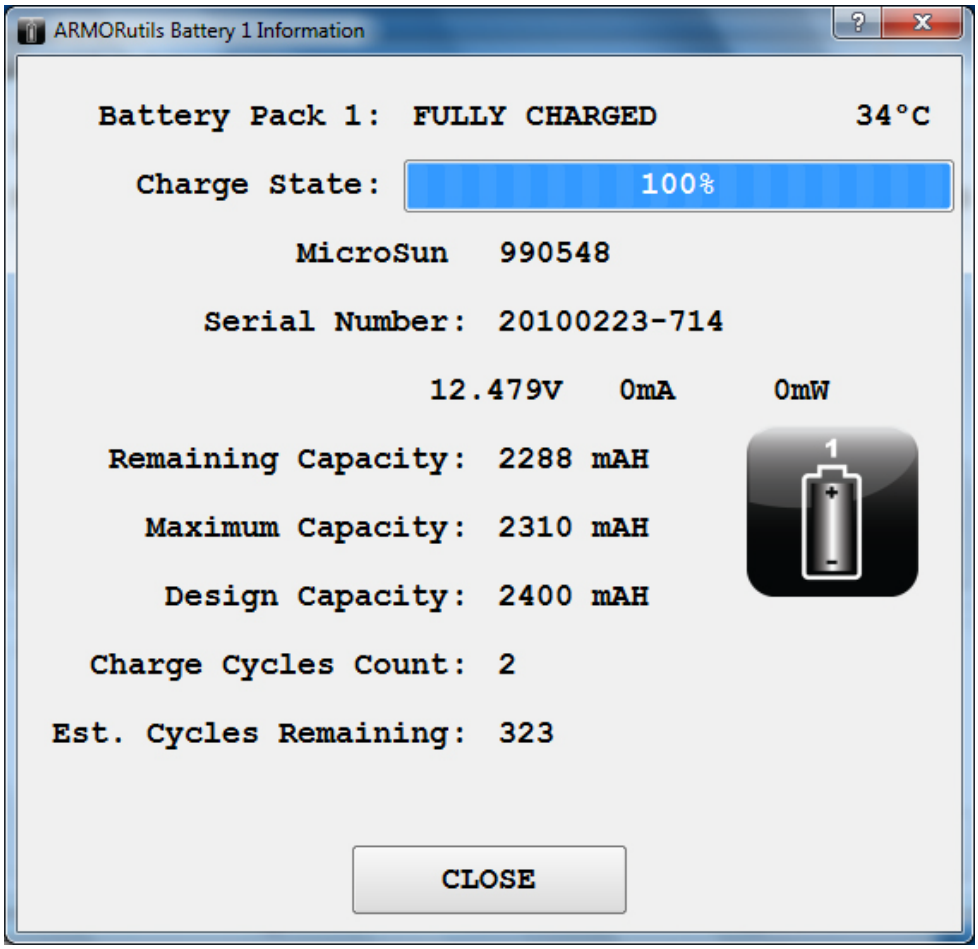


Figure 60. ARMORutils Battery Information Window

Remaining Capacity – This is the current energy level expressed in mAh instead of % of charge.

Maximum Capacity – This is the current maximum energy capacity that the battery can achieve. This value is determined primarily by the battery's age, operating temperature history and total number of accumulated charge cycles.

Design Capacity – This is the maximum capacity that the battery was designed to hold.

Charge Cycles Count – This is the total number of times the battery has been discharged below the 30% level and then recharged.

Est. Cycles Remaining – This is a rough estimate of the number of remaining cycles before your battery reaches it's 80% capacity, at which point it is a candidate for replacement. This estimate is based on an industry average of 400 cycles under nominal usage. When the remaining cycles count reaches 0, you should consider replacing the battery.

Charger Settings Button

Click on the **Charger Settings** button to open the **Charger Control Settings** window shown in Figure 61. In this window, you can decide what charging policy the system will use when two batteries are installed.

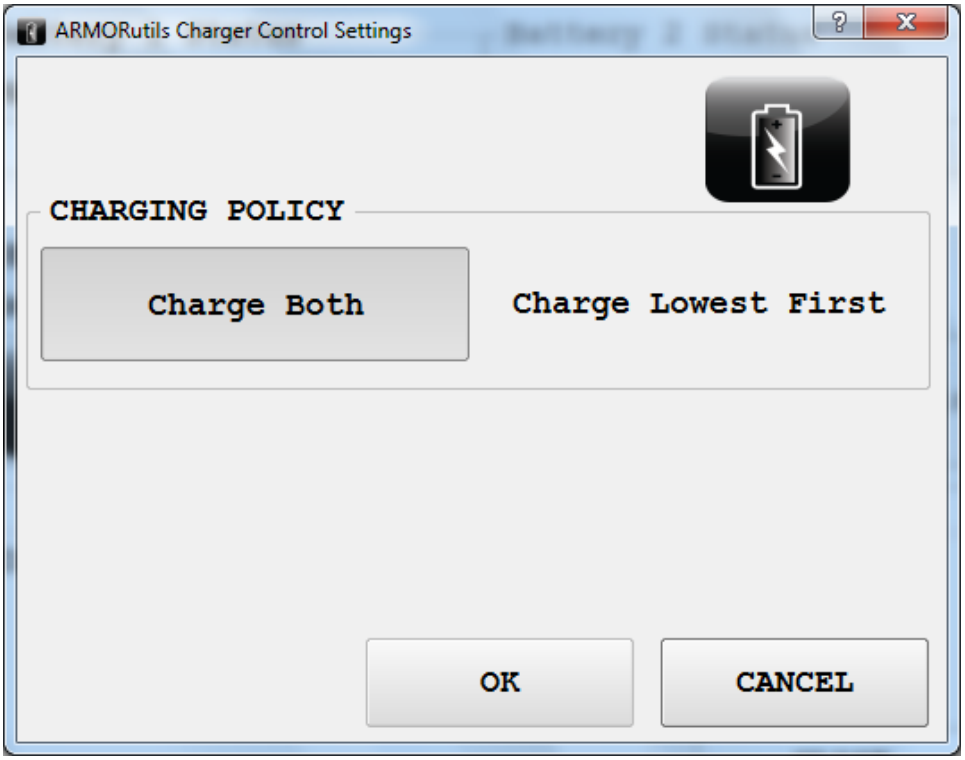


Figure 61. ARMORutils Charger Control Settings Window

Charge Both

If you select **Charge Both**, both batteries will charge at the same time regardless of individual battery charge level. The total charge level indicated is determined by adding the charge of both batteries and dividing this sum by 2.

Charge Lowest First

If you choose **Charge Lowest First**, 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.

Click on **OK** to save the new default setting. Select **CANCEL** to exit without changing the policy.

Conditioning Menu Button

Click on the **Conditioning Menu** button to open the Battery Conditioning window shown in Figure 62. This window will display the conditioning cycle information for each battery. It also allows you to select a single battery to condition, or to select both batteries.

Your X7 batteries are self conditioning/calibrating and do not normally require conditioning.

NOTE

Conditioning, or calibration, should only be performed if you notice that the levels reported by Windows or ARMORutils are consistently different from actual battery performance, as this adds to the total cycle count of the battery.

The conditioning process consists of first charging the battery to a full charge, then drawing the charge down to its minimum, followed by charging the battery back to a full charge. **NOTE:** A negative value may appear for the discharge cycle mAh reading; this is normal.

The entire conditioning process takes about 8 hours for two batteries.

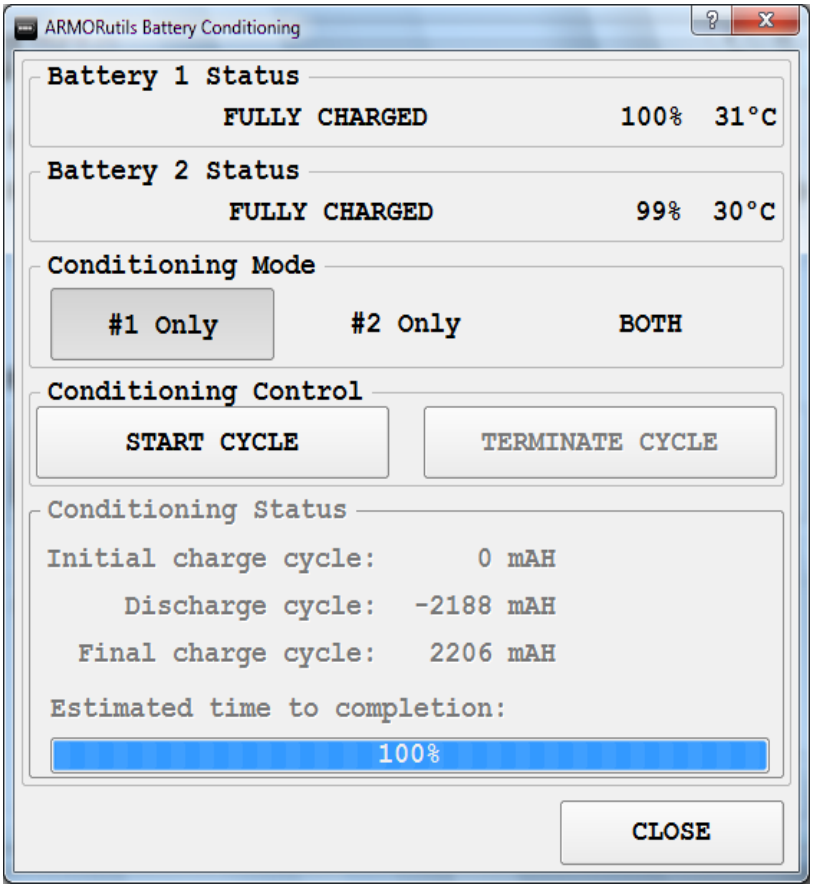


Figure 62. Battery Conditioning Window

Start Cycle Button

Click on the **START CYCLE** button to begin the conditioning process.

Terminate Cycle Button

Click on the **TERMINATE CYCLE** button at any time to stop the conditioning process. **NOTE:** If you terminate the conditioning process, you will have to start again from the beginning.

Screen Setup Dialog Window

The Screen Setup dialog (Figure 63) is used to select the current display mode and to access calibration routines for both the touch and pen screens. There are three display modes: **Dual**, **Touch Only** and **Pen Only**. The example below shows the system is in Dual Mode (Dual mode option grayed out), which means both the Touch Only and Pen Only modes are available.

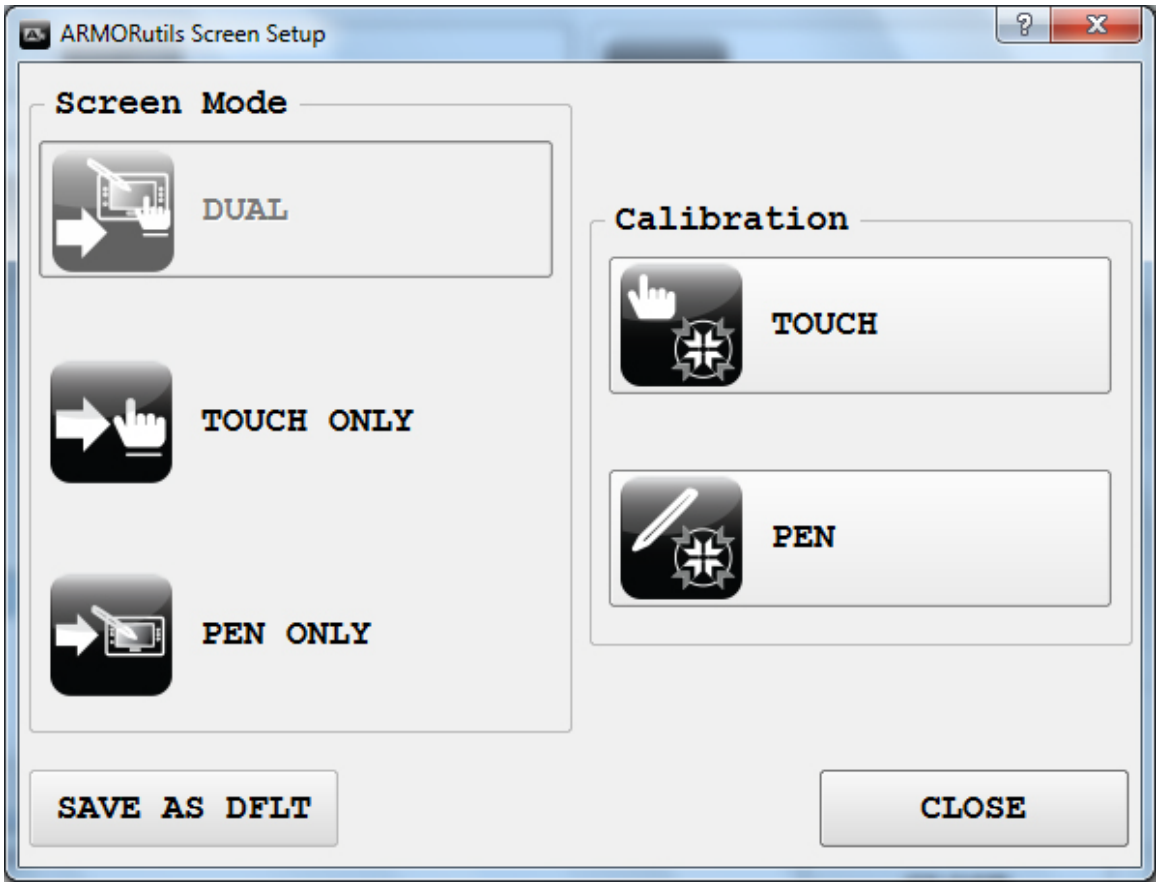


Figure 63. ARMORUtils Screen Setup Dialog

Screen Mode Options

These options allow you to select the current display mode. For example, click on the **Touch Only** button to enable only the touch screen and disable the pen screen. Click **OK** to change to the new mode. The Touch Only mode option will become grayed, as illustrated in Figure 64.

The **Touch Only** option is grayed out because it is the mode that is enabled and is not available for selection. The **Dual Mode** and **Pen Only** options are contrasted, indicating that these two modes are available.

Click on the **Pen Only** option to enable the pen screen and disable the touch screen, or click on **Dual Mode** to enable both screens.

Click on **SAVE AS DFLT** to activate the new display mode. The button will change to a darker color to indicate the change was saved.

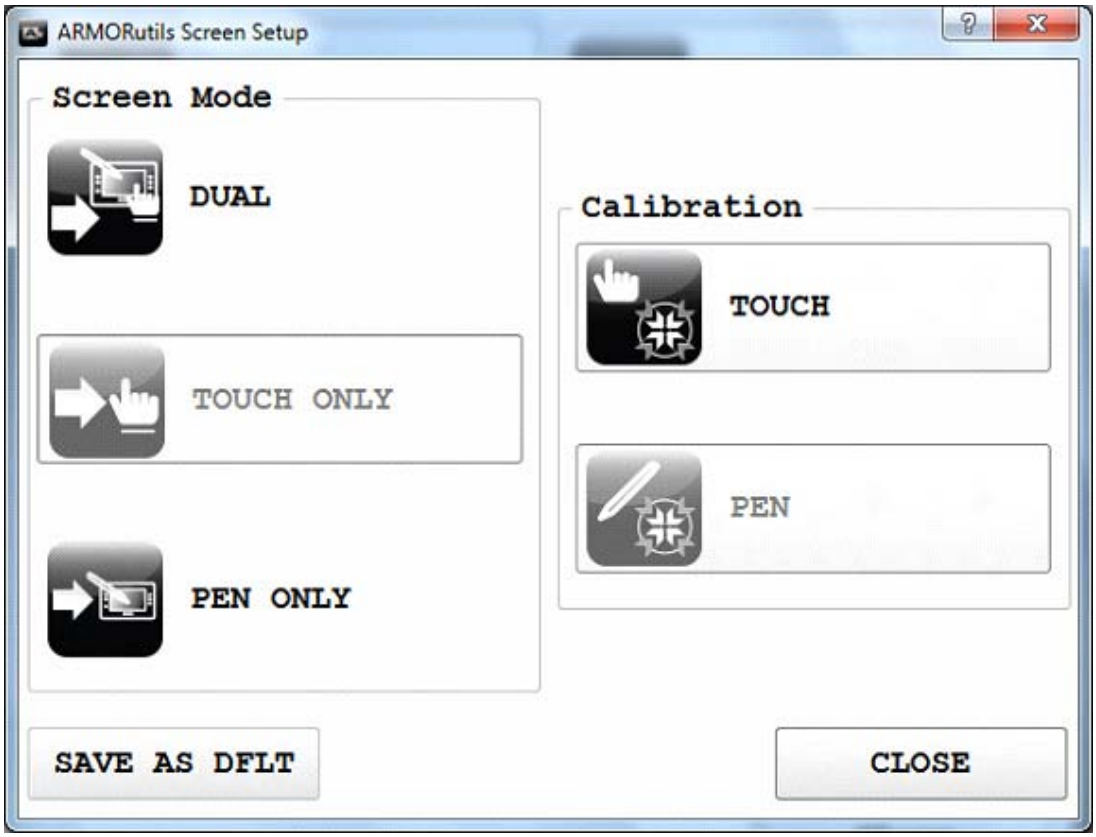


Figure 64. Screen Setup Dialog with Touch Screen Only Enabled

NOTE

You can also find options to change the display mode through pen and touch utilities in Windows Control Panel. However, you should only use ARMORutils to change the display mode since ARMORutils will override any screen mode options selected in the Windows utilities.

Calibration Options

To calibrate a screen, click on **TOUCH** or **PEN** option in the Calibration panel. Follow the on-screen instructions. If one of the screen calibration options is grayed out, it is not available with the current mode setting.

Diagnostics Dialog Window

The Diagnostics window displays the following internal temperatures of the X7 tablet, as shown in the example in Figure 65:

- CPU core temperature (DTS and Diode)
- CPU Mainboard temperature
- Battery #1 temperature
- Battery #2 temperature

This temperature information can be used by DRS to diagnose possible system problems.

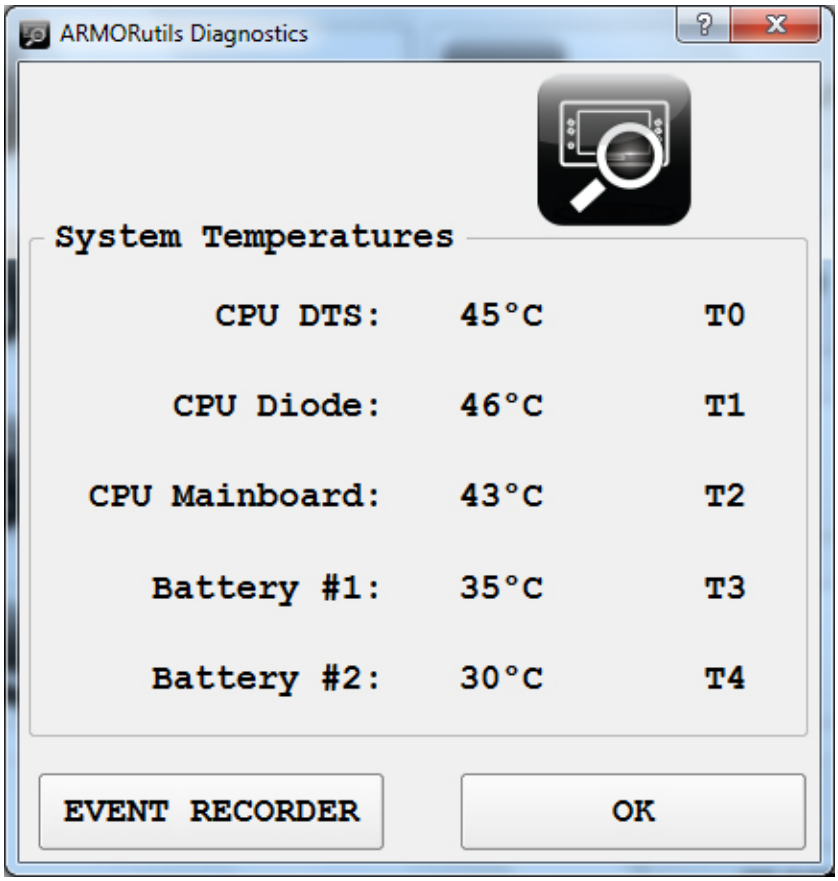


Figure 65. ARMORutils Diagnostics Dialog

Event Recorder Button

Click on the **Event Recorder** button to open the Event Recorder window shown in Figure 66. This window provides entry fields and options to create a log file of temperature variations and battery status over time. For instructions on how to use the Event Recorder function, refer to Creating an Event Log.

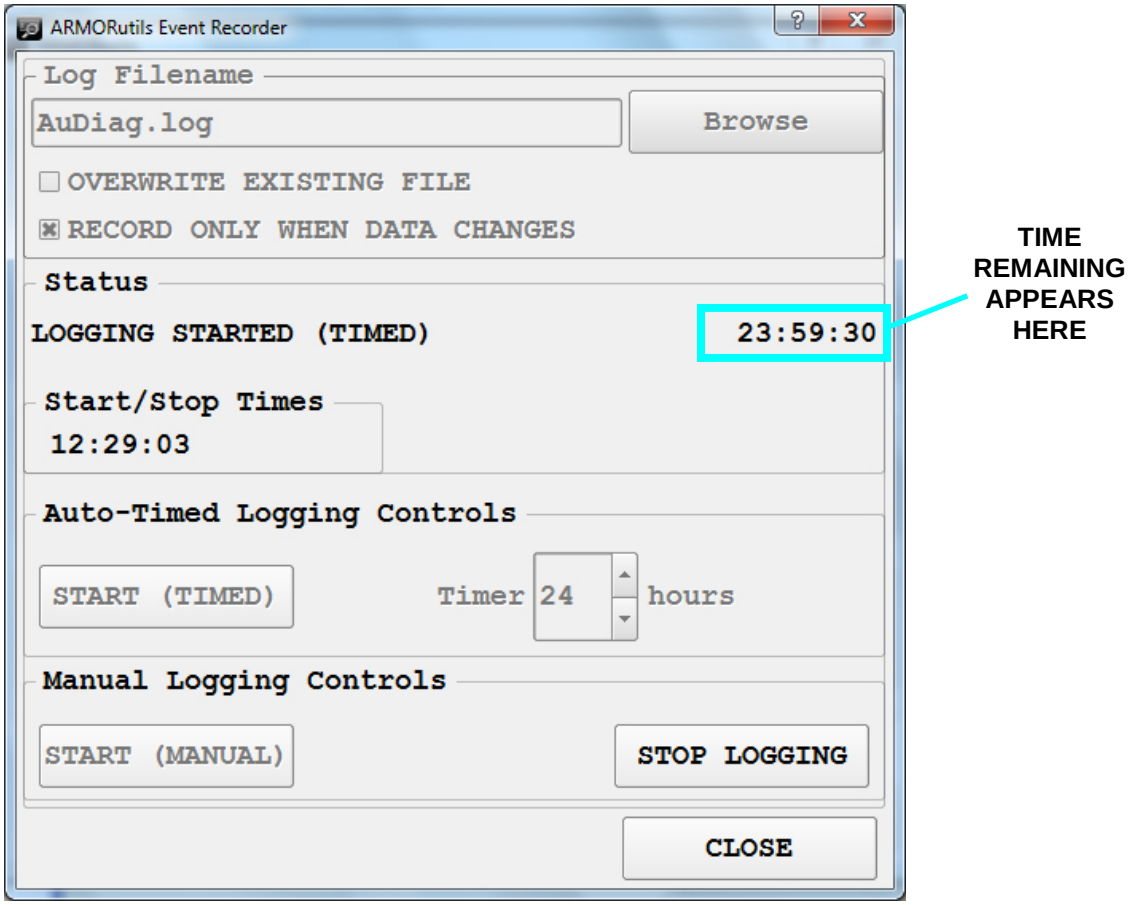


Figure 66. ARMORUtils Event Recorder Window

Log Filename

The filename that appears in the Log Filename field when you first open the Event Recorder window is the default log file in the ARMORutils application folder. You can use this default log filename or enter a new filename. You can also click on the **BROWSE** button to select from other stored files or create a different folder to store your files.

"Overwrite Existing File" Option

If you start a new logging session, the data will be appended to the existing file shown in the **Log Filename** field by default. If you want to save your logging as a different file, enter the new filename. If you want your new log file to overwrite a displayed filename, check the **Overwrite Existing File** option. You can browse to select a file already created or you can create a new file and/or folder.

"Record Only When Data Changes" Option

The Event Recorder program normally logs a line of data ever 6 seconds. This can result in a very large file if the logging runs for long periods of time. The file size can be reduced considerably by checking the **Record only when data changes** option. With this option selected, the recorder will only enter a line of data when any data point changes.

Your Event Recorder is pre-configured from the factory with this option checked. Uncheck it if you want to record data continuously.

Status

The Status panel displays the time the logging was started, the time remaining (if Auto Logging is used) and the time logging was stopped (either at the end of an auto-timed period or when the STOP LOGGING button was selected).

Timer

Here you can set the duration of your logging session by typing in the number of hours directly or by using the up/down arrows. The current maximum auto-timed logging duration is 168 hours (1 week).

Start Timed Button

Click on this button to start the timed logging period.

Start Manual Button

Click on this button to manually start the logging process. The logging process will continue until you select the STOP LOGGING button or the computer is turned off.

Stop Logging Button

Click on this button to stop logging either in auto-timed or manual mode. **NOTE:** In manual mode, the logging will continue until you stop it or turn power off to the computer.

Close Button

Click on this button to close the Event Recorder window. Your logging session will continue in the background.

Using the Event Log File

In addition to temperature change, the event log also records other key information about the batteries, such as their manufacturer, model number, serial numbers and a history of their charging and discharging during the logging period. A sample event log printout is shown in Figure 67. The battery status codes and column headings are defined in the header.

You can open and view the log file in any text application. The file can be printed out or exported to a database program like Microsoft Excel or Access and converted to a graph or chart.

```
================================================================================
20110207-16:11:25 - ARMORutils diagnostics data logging - STARTED
      ARMORutils:  v1.20.1187
    ArmorLib DLL:  v1.12
            BIOS:  V1.03
    KBC Firmware:  00.17

Operating System:  Microsoft Windows 7
    Model Number:  ARMOR X10gx
   Serial Number:  914GM01006G04400588M000
--------------------------------------------------------------
      Battery #1:    Mfgr=MicroSun  M/N=990548  S/N=20100906-103
--------------------------------------------------------------
      Battery #2:    Mfgr=MicroSun  M/N=990548  S/N=20100927-204
--------------------------------------------------------------------------------
STATUS CODES:                                    TEMPERATURE SENSORS:
        PR = present                               T0=CPU DTS
        NP = not present                           T1=CPU Diode
       RDY = ready                                 T2=CPU Mainboard
        NR = not ready                             T3=Battery #1
        FC = fully charged                         T4=Battery #2
        FD = fully discharged
       CHG = charging                              EP=External Power
       DCH = discharging
       CC1 = battery conditioning charge cycle 1
       CDC = battery conditioning discharge cycle
       CC2 = battery conditioning charge cycle 2
--------------------------------------------------------------------------------
 Date-Time Stamp                                  |--- System Temperatures ----|
YYYYMMDD-HH:MM:SS - Battery 1  Battery 2   EP   T0    T1    T2    T3    T4
================= = =========  =========  ===  ====  ====  ====  ====  ====
20110207-16:11:25 - CHG  77%   CHG  96%    PR  46°C  46°C  43°C  38°C  32°C
20110207-16:11:31 - CHG  77%   CHG  97%    PR  46°C  46°C  43°C  38°C  32°C
20110207-16:11:37 - CHG  77%   CHG  97%    PR  46°C  46°C  44°C  38°C  32°C
20110207-16:11:43 - CHG  78%   CHG  97%    PR  46°C  46°C  43°C  38°C  32°C
20110207-16:11:49 - CHG  78%   CHG  97%    PR  46°C  46°C  44°C  38°C  32°C
20110207-16:11:55 - CHG  78%   CHG  97%    PR  47°C  47°C  44°C  38°C  32°C
20110207-16:12:01 - CHG  78%   CHG  97%    PR  47°C  46°C  44°C  38°C  32°C
20110207-16:12:07 - CHG  78%   CHG  97%    PR  46°C  46°C  44°C  38°C  32°C
20110207-16:12:13 - CC1  78%   CHG  97%    PR  47°C  47°C  44°C  38°C  32°C
20110207-16:12:19 - CC1  78%   RDY  97%    PR  46°C  46°C  44°C  38°C  32°C
20110207-16:12:31 - CC1  78%   RDY  97%    PR  47°C  47°C  44°C  38°C  32°C
20110207-16:12:49 - CC1  79%   RDY  97%    PR  47°C  47°C  44°C  38°C  32°C
20110207-16:13:37 - CC1  80%   RDY  97%    PR  47°C  47°C  44°C  38°C  32°C
20110207-16:13:43 - CC1  80%   RDY  97%    PR  46°C  46°C  44°C  38°C  32°C
20110207-16:13:49 - CC1  80%   RDY  97%    PR  47°C  47°C  44°C  39°C  32°C
20110207-16:14:25 - CC1  81%   RDY  97%    PR  47°C  47°C  44°C  39°C  32°C
20110207-16:15:31 - CC1  82%   RDY  97%    PR  47°C  47°C  44°C  39°C  32°C
20110207-16:16:19 - CC1  83%   RDY  97%    PR  47°C  47°C  44°C  39°C  32°C
20110207-16:16:37 - CC1  83%   RDY  97%    PR  48°C  47°C  44°C  39°C  32°C
20110207-16:16:43 - CC1  83%   RDY  97%    PR  48°C  48°C  44°C  39°C  32°C
20110207-16:16:55 - CC1  83%   RDY  97%    PR  47°C  47°C  44°C  39°C  32°C
20110207-16:17:15 - ARMORutils diagnostics data logging - STOPPED
```

DEFINITIONS

Figure 67. Sample Event Log File

ARMORutils About Window

The About window (Figure 68) 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.

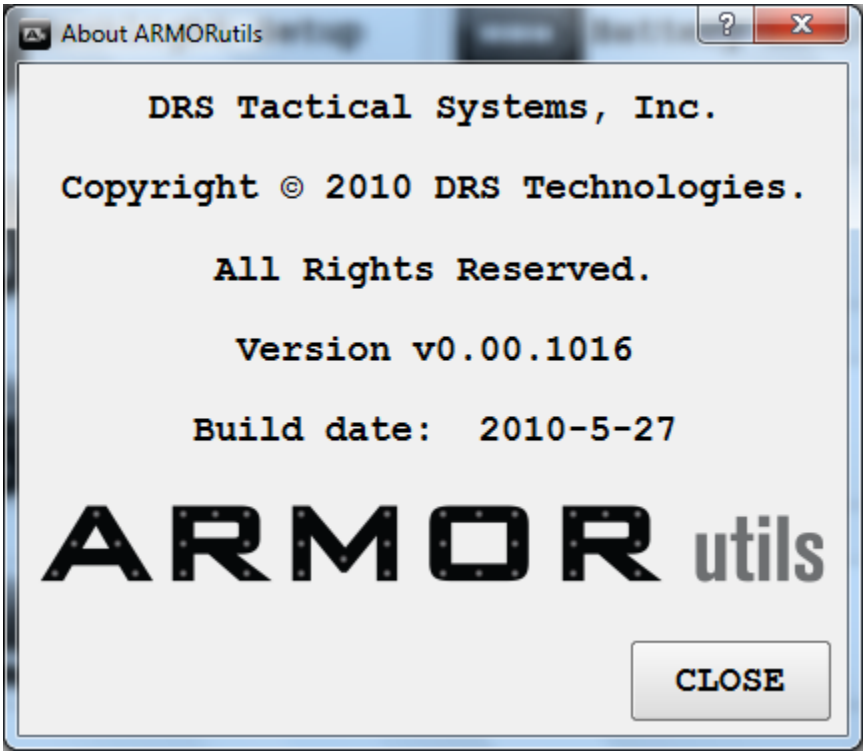


Figure 68. ARMORutils About Window

Getting Started with Windows 7

Click on **Start → Getting Started** to open the Windows welcome page (Figure 69) and access a number of helpful links and resources. **NOTE:** Screen content and layout may vary depending on your version of Windows 7 and any added service packs or updates.

Figure 69. Windows 7 Welcome Page

Help for Windows

For information on using Microsoft Window's features, options, applications and utilities, refer to the Microsoft help files and tutorials by clicking on the **Start** button and selecting **Help and Support.**

Windows Display Utilities

The following paragraphs provide a brief description of key Windows display utilities to help you configure and begin using your X7. A detailed description of all of the functions and capabilities of these and other Windows utilities is beyond the scope of this manual. Refer to the **Windows Help Resources** for in-depth descriptions and tutorials.

NOTE: Windows utilities and the way you get to them may vary depending on the version of your Windows operating system.

Pen and Touch Utility

The Pen and Touch utility is a Windows program that provides settings that effect how the active pen works with the pen screen and how a fingertip or passive stylus works with 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 70.

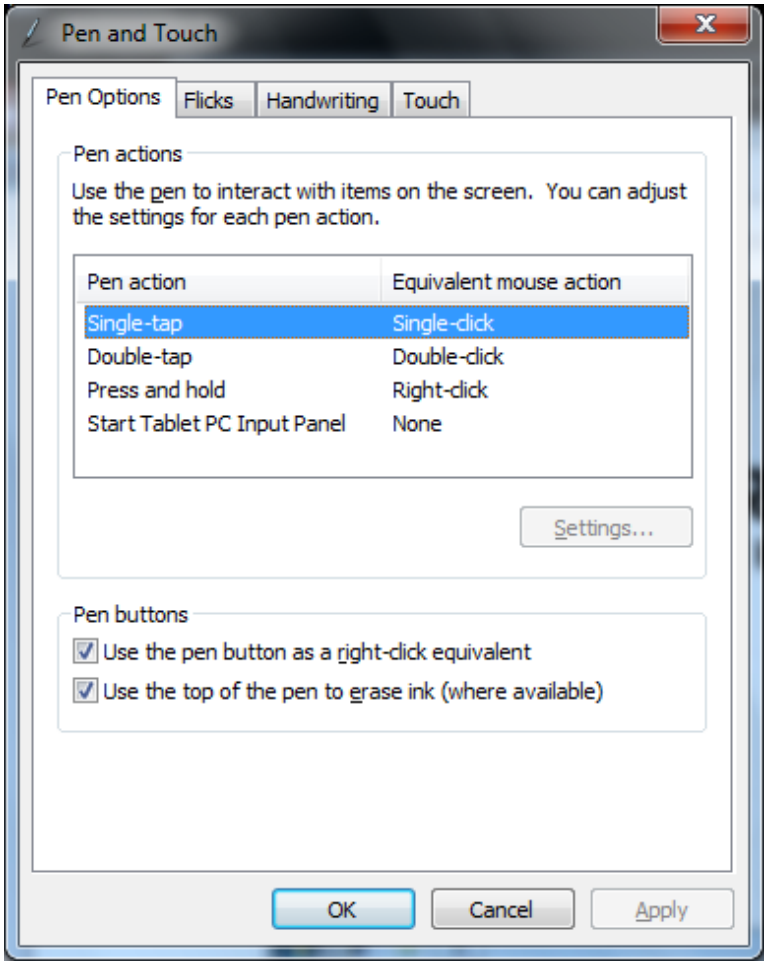


Figure 70. Pen and Touch Utility – Pen Options Tab

Pen Options Tab

The Pen Options tab opens by default and 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.

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.

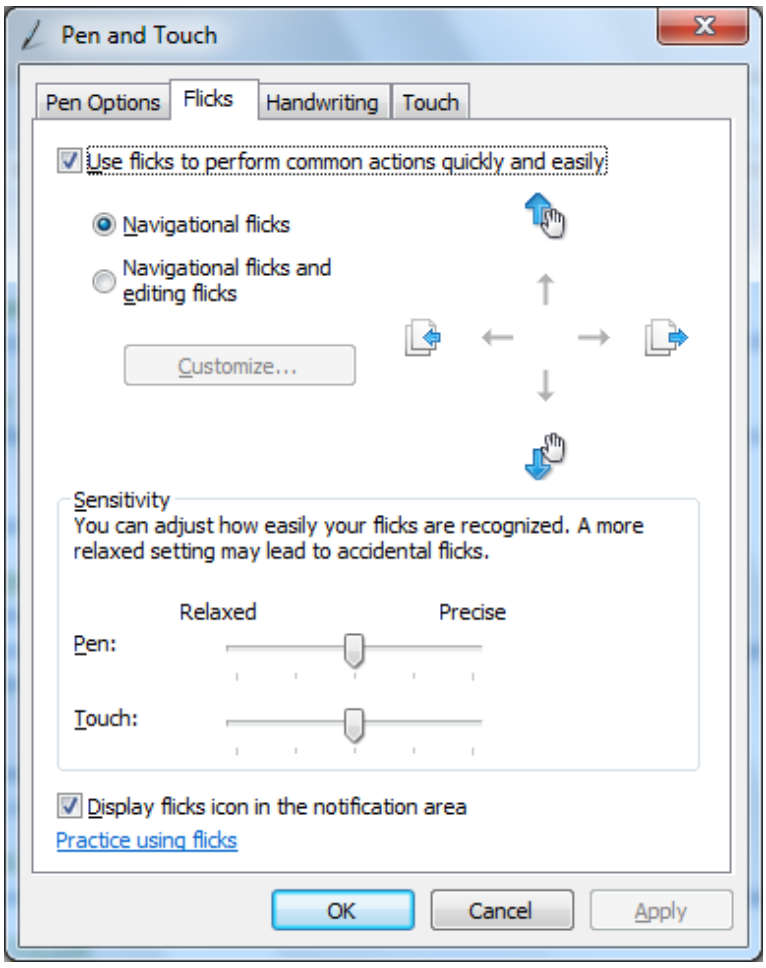


Figure 71. Pen and Touch Utility – Flicks Tab