

Zypad WL15xx

Wearable Computer

Rev 4 – January 2013 – 110125-00004

Trademarks

All trademarks both marked and not marked appearing in this document are the property of their respective owners.

Document Revision History

REVISION	DESCRIPTION	DATE
1	Preliminary Release	Dec 2011
2	Initial Release Swapped USB host and USB device on I/O Panel Updated LED indicator descriptions Changed time to press power button for shutdown from 5 to 3 sec. Added details about recharging the battery	Apr 2012
4	Added: Note about Power button Revision history Updated: Photos LED indicator table Battery section	Jan 2013

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Important User Information

In order to lower the risk of personal injury, electric shock, fire, or equipment damage, users must observe the following precautions as well as good technical judgment, whenever this product is installed or used.

All reasonable efforts have been made to ensure the accuracy of this document; however, Eurotech assumes no liability resulting from any error/omission in this document or from the use of the information contained herein.

Eurotech reserves the right to revise this document and to change its contents at any time without obligation to notify any person of such revision or changes.

Safety Notices and Warnings

The following general safety precautions must be observed during all phases of operation, service, and repair of this equipment. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the equipment. Eurotech assumes no liability for the customer's failure to comply with these requirements.

The safety precautions listed below represent warnings of certain dangers of which Eurotech is aware. You, as the user of the product, should follow these warnings and all other safety precautions necessary for the safe operation of the equipment in your operating environment.

Alerts that can be found throughout this manual

The following alerts are used within this manual and indicate potentially dangerous situations.



Danger, electrical shock hazard:

Information regarding potential electrical shock hazards:

- Personal injury or death could occur. Also damage to the system, connected peripheral devices, or software could occur if the warnings are not carefully followed.
- Appropriate safety precautions should always be used, these should meet the requirements set out for the environment that the equipment will be deployed in.



Warning:

Information regarding potential hazards:

- Personal injury or death could occur. Also damage to the system, connected peripheral devices, or software could occur if the warnings are not carefully followed.
- Appropriate safety precautions should always be used, these should meet the requirements set out for the environment that the equipment will be deployed in.



Information and/or Notes:

These will highlight important features or instructions that should be observed.

Installation in Enclosures

In the event that the product is placed within an enclosure, together with other heat generating equipment, ensure proper ventilation.

Do Not Operate in an Explosive Atmosphere

Do not operate the equipment in the presence of flammable gases or fumes. Operation of any electrical equipment in such an environment constitutes a definite safety hazard.

Use an Appropriate Power Supply

Use only the Li-Ion battery pack provided by Eurotech. The use of any other battery pack not sold/manufactured by Eurotech in the Zypad WL15xx will void your warranty and may result in damage to your system.

Li-Ion battery packs may get hot, ignite, explode, or cause serious injury if used in an inappropriate way. Follow these safety warnings for proper use:

- Do not place the battery pack in fire or heat the battery in any way.
- Do not reverse the polarity of the battery pack.
- Do not short the terminals of the battery pack.
- Do not carry or store battery packs together with metal objects.
- Do not pierce the battery pack with nails, strike the battery pack with a hammer, step on the battery pack or in any way expose it to strong impacts or shocks.
- Do not solder directly onto the battery pack.
- Do not expose battery pack to liquid, or allow the battery contacts to get wet.
- Do not disassemble or modify the battery pack: The battery pack contains safety and protection devices, which, if damaged, may cause the battery pack to generate heat, ignite or explode.
- Do not discharge the battery pack using any device except for the specified device. When it is used in devices other than the specified devices, the battery pack can be damaged or its life expectancy reduced. If the device causes any abnormal current to flow, it may cause the battery pack to become hot, ignite, or explode and to cause serious injury.
- In the event that the battery pack leaks and the fluid gets into your eyes, do not rub the eye. Rinse well with water and immediately seek medical attention. If left untreated, the battery fluid may cause permanent damage to the eyes.
- To avoid damaging your Zypad WL15xx or the AC adapter, users should insure that all connectors are properly aligned before connecting them.



Warning:

If the battery is incorrectly replaced, there may be a danger of explosion. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Use Antistatic Precautions

To avoid damage caused by ESD (Electro Static Discharge), always use appropriate antistatic precautions when handling any electronic equipment.

Use in a Vehicle

Do not use your Zypad WL15xx while driving a vehicle. If you must use your Zypad WL15xx, park the vehicle first. Always secure your Zypad WL15xx while driving. Do not place your Zypad WL15xx on the passenger seat or where it can break loose in a collision or sudden stop. For vehicles equipped with an airbag, remember that an airbag inflates with great force. Do not place your Zypad WL15xx in the area over the airbag or in the airbag deployment area. Use of the Zypad WL15xx for navigation still means that you need to drive with due care and attention.


Life Support Policy

Eurotech products are not authorized for use as critical components in life support devices or systems without the express written approval of Eurotech.

Warranty

For Warranty terms and conditions users should contact their local Eurotech Sales Office. See [Eurotech Worldwide Presence](#), page 32 for full contact details.

CE Notice

The product described in this manual is marked with the  label in accordance with the 1999/5/EC regulation. Eurotech shall not be liable for use of its products with equipment (i.e. power supplies, personal computers, etc.) that are not CE marked.

WEEE

The information below is issued in compliance with the regulations as set out in the 2002/96/EC directive, subsequently superseded by 2003/108/EC. It refers to electrical and electronic equipment and the waste management of such products. When disposing of a device, including all of its components, subassemblies, and materials that are an integral part of the product, you should consider the WEEE directive.

The symbol to the right has been attached to the equipment or, if this has not been possible, on the packaging, instruction literature, and/or the guarantee sheet. By using this symbol, it states that the device has been marketed after August 13, 2005 and implies that you must separate all of its components when possible and dispose of them in accordance with local waste disposal legislations.



- Because of the substances present in the equipment, improper use or disposal of the refuse can cause damage to human health and to the environment.
- With reference to WEEE, it is compulsory not to dispose of the equipment with normal urban refuse and arrangements should be instigated for separate collection and disposal.
- Contact your local waste collection body for more detailed recycling information.
- In case of illicit disposal, sanctions will be levied on transgressors.

RoHS

This device, including all its components, subassemblies and the consumable materials that are an integral part of the product, has been manufactured in compliance with the European directive 2002/95/EC known as the RoHS directive (Restrictions on the use of certain Hazardous Substances). This directive targets the reduction of certain hazardous substances previously used in electrical and electronic equipment (EEE).

Technical Assistance

If you have any technical questions, cannot isolate a problem with your device, or have any enquiry about repair and returns policies, contact your local Eurotech Technical Support Team.

See [Eurotech Worldwide Presence](#), page 32 for full contact details.

Transportation

When transporting any device or system, for any reason, it should be packed using anti-static material and placed in a sturdy box with enough packing material to adequately cushion it.



Warning:

Any product returned to Eurotech that is damaged due to inappropriate packaging will not be covered by the warranty.

Product Overview

The Zypad WL15xx is a wearable computer designed to give the user instant access to computing capabilities while carrying out non-computer tasks in the field. Featuring hands-free operation, robust wireless capabilities, and built-in GPS tracking, this versatile wearable computer serves as an ideal tool for emergency search and rescue, healthcare, homeland security, maintenance, law enforcement, logistics, transportation, and defence applications.

Several configurations are available allowing you to choose the hardware based on your specifications. Available communications and localization options include cellular, GPS, Bluetooth, IEEE 802.15.4/Zigbee® Standard (future option), Wi-Fi, and barcode reader.

With the Zypad WL15xx, you can quickly and easily create a wearable device, loaded with your application software, which precisely meets your requirements. The system supports the Windows® CE 6.0 operating systems. Software support includes Eurotech’s Zypad Development Kit (ZDK) offering application programming interfaces (API) for handling tasks specifically related to the Zypad WL15xx feature set.

Components

Your Zypad WL15xx includes the following components:

- Zypad WL15xx
- Wrist strap with armband
- Stylus
- Lithium-ion battery pack
- AC adapter and regional power cord
- USB host cable (for terminal)
- Y-USB client cable (USB + Power)
- Zypad WL15xx Quick Start

Ensure you have received all the components for your system. For details about getting started, refer the Zypad WL15xx Quick Start (Eurotech document # 110125-0001).

Related Documents

This manual describes the Zypad WL15xx at the system level and is intended for system integrators and network administrators. The following documents are also important resources for the Zypad WL15xx.

Document	
Zypad WL15xx Quick Start	110125-0001
Zypad WL15xx Programmer Reference	110125-0002

Table 1. Related Documents

Check the Eurotech support site (<http://support.eurotech-inc.com/>) for errata reports and for the latest releases of these documents.

Features

Processor

- Marvell® PXA320 processor

Memory

- 128 MB SDRAM and 128 MB flash memory

Communications

- Cellular modem with user accessible SIM card
- GPS with integrated antenna
- Bluetooth or IEEE 802.15.4/Zigbee® Standard (future option) with integrated antenna
- IEEE 802.11b/g Wi-Fi with integrated antenna
- USB 1.1 Host and USB 1.1 Device ports operating at full speed

User Interface and Display

- 3.5-inch TFT high brightness display with QVGA resolution (320 x 240, 65K colors)
- Resistive touch panel
- LED backlight
- Keypad
 - Twelve programmable keys
 - One power key with programmable backlight
- Ambient light sensor
- Arm position detection (integrated accelerometer)

Inputs and Outputs

- Expansion microSD card slot
- Three LEDs
 - Power on/Charge
 - Wi-Fi/Cellular activity
 - Bluetooth activity
- Barcode reader
 - ZRS-2D Ring Scanner support
 - Optional integrated barcode reader

Audio Interface

- Integrated microphone with noise suppression feature
- Mono audio speaker
- Headset or stereo headphone jack
- Bluetooth audio I/O PCM codec

Power Supply

- Removable, rechargeable battery pack
- Advanced power management

Mechanical

- Light-weight plastic housing
- Adjustable wrist strap

Hardware Reference

This section gives an overview of the hardware features of the Zypad WL15xx including details about the I/O panel, keypad, wrist strap, stylus and battery.

System Overview

The following diagram illustrates the major components of the Zypad WL15xx.



Figure 1. Zypad WL15xx System Overview

I/O Panel

The following diagram illustrates the I/O panel of the Zypad WL15xx.

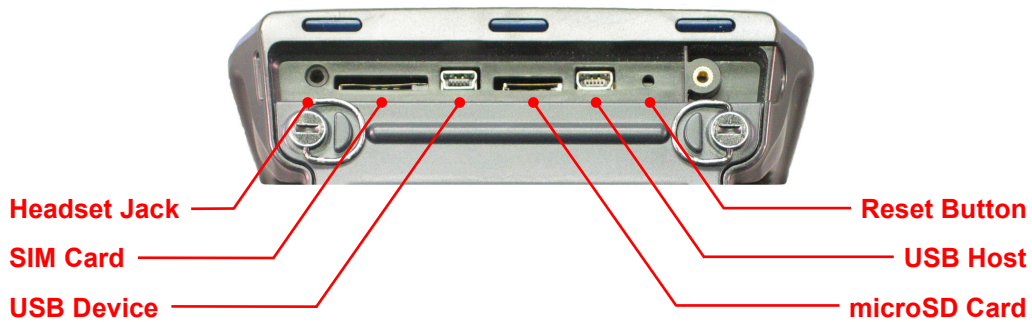


Figure 2. Zypad WL15xx I/O Panel

Connectors

The following table describes the connectors on the I/O panel.

Connector	Enclosure Connector	Description
Headset Jack	2.5 mm stereo jack	Headset or stereo headphone
USB Host	USB Mini AB receptacle	USB 1.1 host port
microSD Card	0.10 mm microSD memory card socket	Expansion slot for microSD card
USB Device	USB Mini-B receptacle	USB 1.1 device port
SIM Card	1.27 mm SIM card socket	SIM card socket for cellular applications

Table 2. I/O Panel Connectors

Reset Button

The Zypad WL15xx includes a reset button accessible through a small hole on the I/O panel. Use the end of the stylus to actuate the button. Pressing this button forces a system hard reset. All unsaved application data, open files, buffers, and memory contents are lost during a reset. The reset operation does not erase any program or saved data. Ensure that your data is saved and files are closed before activating a hardware reset.

Keypad

The following diagram illustrates the keypad of the Zypad WL15xx for systems without the internal barcode scanner.

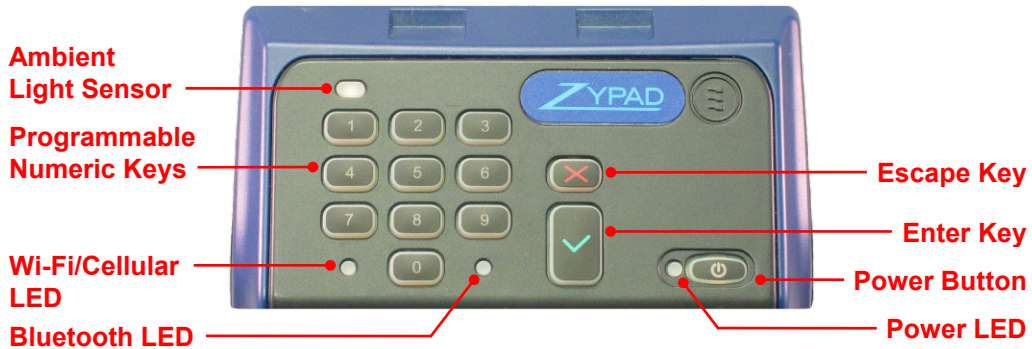


Figure 3. Zypad WL15xx Keypad

Programmable Keys

The ten numbered keys are programmed by the application layer software. For further details about this capability, see [Assigning button functions](#), page 19.

Power Button

The following table defines the functionality of the Power button.

Power Button	Description
Press and hold (1 sec.)	Turns on from shutdown/power off
Momentarily press (less than 1 sec.)	Enters or exits Suspend mode
Press and hold (3 sec.)	Performs a shutdown/power off

Table 3. Power Button



Note:

When the system is initializing, either from power off or Suspend, the Wi-Fi/Cellular and Bluetooth LEDs blink, assuming these features are enabled. Initiating Suspend before the blinking stops forces the system to sleep. In this case, a momentary press of the Power button will cause the system to reboot instead of waking up.

The Zypad WL15xx automatically transitions to a low power state based on an activity timer. For information about setting this timer, see [Sequencing Low Power](#), page 25.

Ambient light sensor

The ambient light sensor provides automatic adjustment for the backlight brightness. For further details, see [Setting backlight power saving properties](#), page 16.

LED Indicators

The Zypad WL15xx uses three light-emitting diodes (LEDs) to indicate system operation. The following tables describe the LED functionalities.

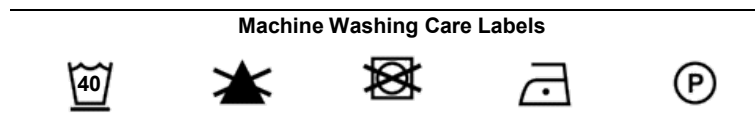
LED	Color	System Operation	LED Status
Power	Green	Off	Off
		Normal, Battery installed and fully charged	On
		Battery charging	Blinking (period = 1 sec, duty cycle = 50 %)
		Hot-swapping battery	Blinking (period = 1/4 sec for 60-90 sec)
Bluetooth	Blue	Bluetooth is not initialized	Off
		Bluetooth initializing	Blinking
		Bluetooth active and communicating	On
Wi-Fi/Cellular	Orange	Wi-Fi/Cellular are not initialized	Off
		Wi-Fi/Cellular initializing	Blinking
		Wi-Fi/Cellular active and communicating	On

Table 4. LED Indicators

Wrist Strap and Stylus

The Zypad WL15xx is housed in a light-weight plastic enclosure and includes a replaceable, adjustable wrist strap. This wrist strap ensures a secure grip, ideal weight distribution, and maximum comfort, even over clothing. Eurotech suggests that users wear a cotton wrist sweatband under the wrist strap for improved comfort when using the Zypad WL15xx on bare skin. The Zypad WL15xx fits comfortably onto either arm.

The wrist strap can be removed for machine washing using the following instructions:



Your Zypad WL15xx includes a stylus to tap or write on the touch screen, in the same way as a PC mouse or pen.



Note:

To avoid damaging the screen, always use the stylus supplied with your Zypad WL15xx.

The following diagram illustrates how the wrist strap and stylus are attached to the enclosure.

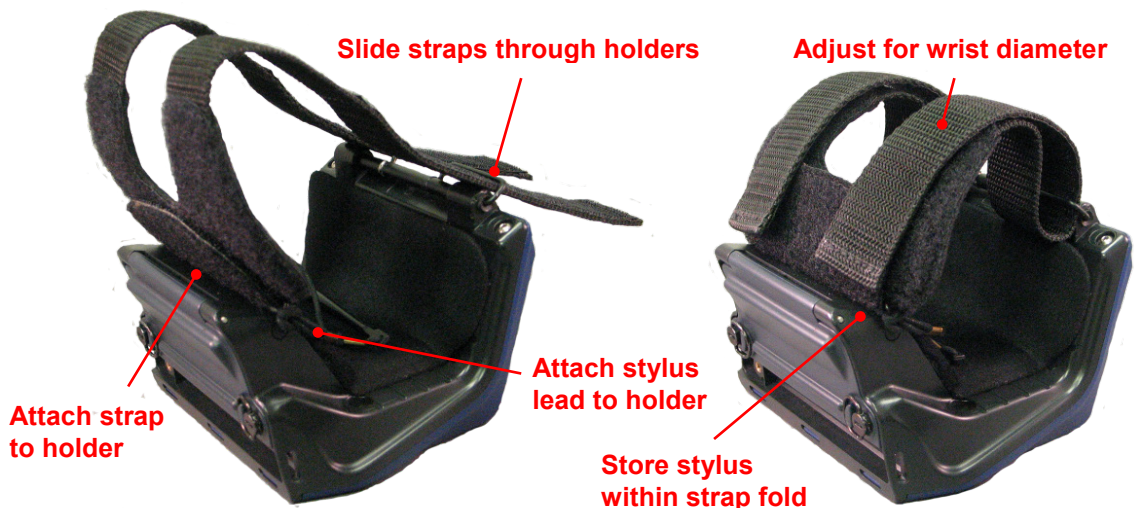


Figure 4. Zypad WL15xx Wrist Strap and Stylus

Battery

The Zypad WL15xx accepts input power from a removable, rechargeable Li-Ion battery. Install a battery by aligning it with the enclosure and pressing it into place. Secure the external locking screws. For specifications about the battery, see [System Specifications](#), page 28.



Note:

Use only the Li-Ion battery pack provided by Eurotech. The use of any other battery pack will void your warranty and may damage your system. The battery pack is discharged when shipped and must be fully charged before first use.

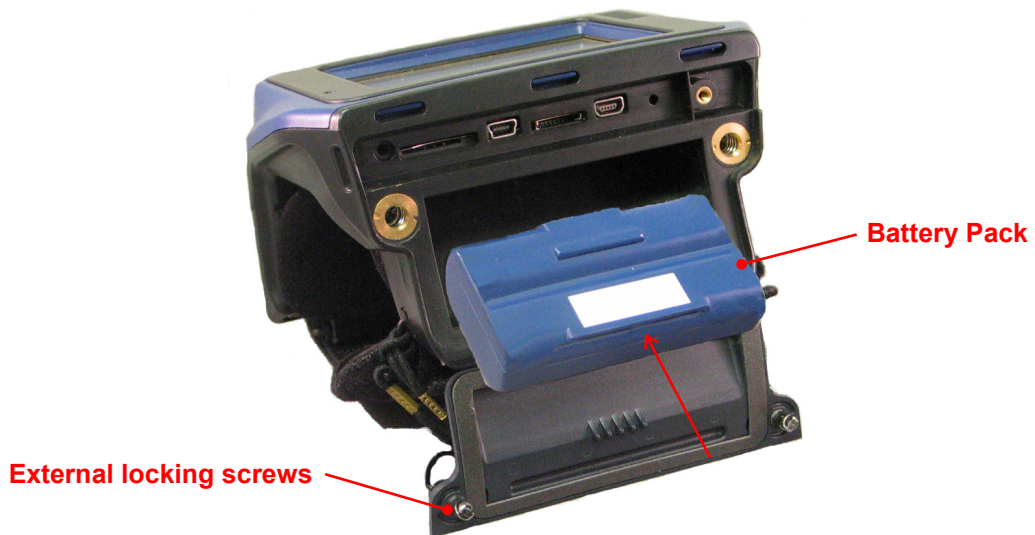


Figure 5. Zypad WL 15xx Battery Pack

Charging the Battery

Charge the battery pack using one of the following methods.

Charging Method	Charging Time (Max Hours)
Battery charger station (up to four batteries simultaneously)	6
USB device port directly to AC adapter	6
USB device port to host PC using the Y-USB client cable	11

Table 5. Charging Methods

Recovering from a Low Charge

If the battery drains below 10% charge during system use, complete the following steps to reboot the system and recharge the battery pack:

1. Remove the battery pack for 15 sec. minimum.
2. Plug the AC adapter into the USB device port.
3. Boot the system.
4. Install the battery pack to recharge.

Replacing the Battery

The Zypad WL15xx supports “hot-swapping” the battery. Complete the following steps to swap the battery pack:

1. Ensure that the system is not plugged into external power.
2. Initiate sleep by selecting Suspend from the Start menu on the Windows CE desktop or by pressing the Power button.
3. Remove the battery by unscrewing the locking screws and pulling it from the enclosure. Once the battery has been removed, you have approximately one minute to replace the battery. While the battery is removed, the Power LED blinks rapidly (four times per second).
4. Insert a fully charged replacement battery into the enclosure. The Power LED will continue to blink even though power has been restored.
5. Press the Power button to stop the LED from blinking and to wake the system.

If the battery is not replaced after a minute, the system will have to be rebooted when adequate power is restored.

Configuring the Zypad WL15xx

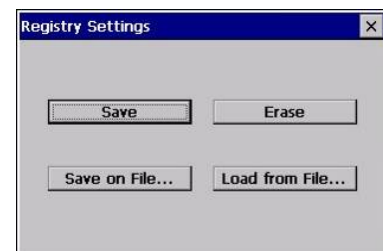
The Zypad WL15xx's flexible design enables several configurations supporting many possible combinations to meet your system requirements. This section describes configuring features that are specific to the Zypad WL15xx. This document does not cover features that are common to the Windows CE operating system. For additional information about using the Windows CE operating system, see the Windows CE Online Help.

Saving Your Configuration

Each time you modify any of the system parameters, save the Registry in order to maintain the changes at power off.

To save the Registry, perform the following steps:

1. In Control Panel, open Registry Manager.
2. Tap **Save**.
3. Tap **X** to close the window.



Note:

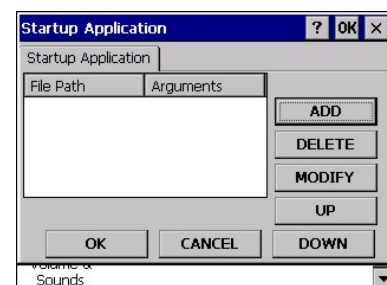
Those system parameters that are associated with registry key settings in the file `SYSLoad.REG` will be overwritten when the Zypad WL15xx is rebooted. For further details about registry key settings, see the *Zypad WL15xx Programmer Reference (110125-0002)*.

Starting Your Application at Boot

You can select the applications that you wish to run automatically and can set the order in which they will run when the Zypad WL15xx boots.

To select the startup applications, perform the following steps:

1. In Control Panel, open Startup.
2. In the **Startup Application** tab, tap **Add**.
3. Browse and select the application you want to add.
4. Using the **UP** and **DOWN** buttons, set the order the applications will run.
5. Tap **OK** to close the window.



Customizing for Your Application

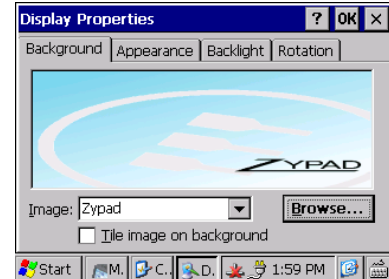
Display and Backlight

The Zypad WL15xx includes a QVGA display with integrated touch panel and LED backlight. The following options allow you to customize this display for your specific application.

Changing the background

To change the background of the desktop, perform the following steps:

1. In Control Panel, open Display.
2. In the **Background** tab, browse and select your image.
3. Tap **OK** to close the window.



Note:

`SYSLOAD.BMP` is the image used as the splash screen at boot and the desktop image when the operating system is launched. Any changes made to the background using this procedure will be overwritten when the Zypad WL15xx is rebooted.

To change this image for your specific application, update the `SYSLOAD.BMP` file in on-board flash memory.

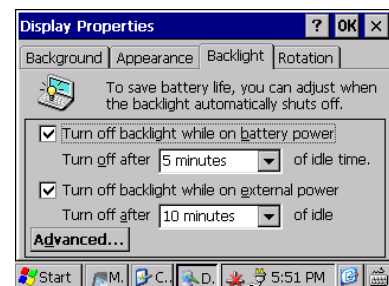
For further details, see the *Zypad WL15xx Programmer Reference (110125-0002)*.

Setting backlight power saving properties

The Zypad WL15xx includes an integrated accelerometer that detects the position of the user's arm. When the arm that wears the device is hanging down beside the user's body, the Zypad WL15xx turns off the backlight in order to save battery power. When the arm is lifted up, the backlight turns on. In addition, the backlight turns off when the system is idle. You can control when the backlight automatically turns off or can disable these power saving properties.

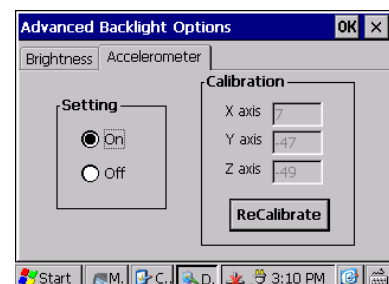
To setup if and when the backlight turns off, perform the following steps:

1. In Control Panel, open Display.
2. In the **Backlight** tab, select the checkbox for the power saving options you want to enable.
3. Select the time period from the drop-down list box.
4. Tap **OK** to close the window.



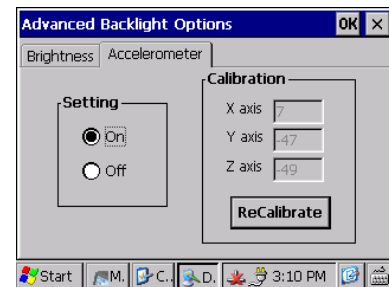
To disable the arm position backlight control, perform the following steps:

1. In Control Panel, open Display.
2. In the Backlight tab, tap **Advanced**.
3. In the **Accelerometer** tab, tap the **Off** option button.
4. Tap **OK** to close the window.



To recalibrate the arm position, perform the following steps while wearing the system:

1. In Control Panel, open Display.
2. In the Backlight tab, tap **Advanced**.
3. In the **Accelerometer** tab, tap the **Off** option button.
4. While holding your arm in a horizontal position, tap **ReCalibrate**. The entries for the X, Y, and Z axis will change.
5. After the calibration is complete, tap the **On** option button.
6. Tap **OK** to close the window.



Note:

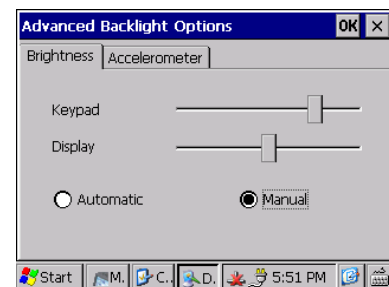
The system parameters set by the first two procedures correspond to the [HKEY_CURRENT_USER\ControlPanel\Backlight] registry key. The system parameters set by the last procedure correspond to the [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Accelerometer] registry key. Registry changes made by these procedures are persisted immediately after modification. For further details, see the *Zypad WL15xx Programmer Reference (110125-0002)*.

Setting backlight brightness

By default, the backlight brightness is automatically controlled by the ambient light sensor.

To control the backlight brightness manually, perform the following steps:

1. In Control Panel, open Display.
2. In the **Backlight** tab, tap **Advanced**.
3. In the **Brightness** tab, select the **Manual** option button and adjust the brightness for the keypad and display using the sliders.
4. Tap **OK** to close the window.



Note:

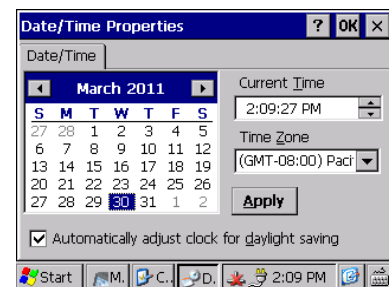
The system parameters set by this procedure correspond to the [HKEY_CURRENT_USER\ControlPanel\Backlight] registry key. Registry changes made by these procedures are persisted immediately after modification. For further details, see the *Zypad WL15xx Programmer Reference (110125-0002)*.

Setting date/time

The Zypad WL15xx includes a battery-backed real-time clock to save the time and date when power is turned off.

To set the time and date, perform the following steps:

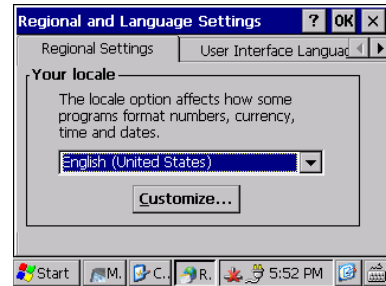
1. In Control Panel, open Date/Time.
2. In the **Date/Time** tab, set the date, time, and time zone.
3. Select the **Automatically adjust clock for daylight saving** checkbox, if desired.
4. Tap **OK** to close the window.




The current time is displayed in the Notification area of the Taskbar.

To change the format of the time, perform following steps:

1. In Control Panel, open Regional Settings.
2. In the **Regional Setting** tab, select your locale from the drop-down list.
3. Tap **OK** to close the window.



Touch screen

The Zypad WL15xx includes a resistive touch screen for user input. Use the attached stylus to tap or write on the screen. The Windows CE operating system includes a virtual keyboard and transcriber handwriting recognition utility for inputting data. Both options are accessible by tapping the  icon on the Task Bar and selecting **Keyboard** or **Transcriber**.

Calibrating the touch screen

To calibrate the touch screen, perform the following steps:

1. In Control Panel, open Stylus.
2. In the **Calibration** tab, tap the **Recalibrate** button and then follow the onscreen instructions.
3. Tap **OK** to close the window.



Note:

The system parameters set by this procedure correspond to the [HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\TOUCH] registry key. Registry changes made by this procedure are persisted immediately after modification.

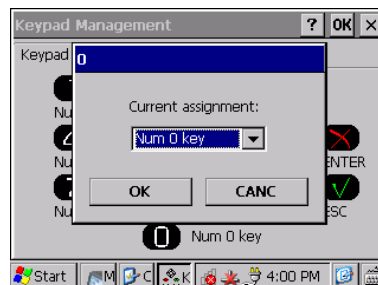
Keypad

The Zypad WL15xx includes a 12-key programmable keypad. By default, the keys are assigned as shown in following screen shot. You can easily customize this keypad for your application by assigning specific functions to each button.

Assigning button functions

To assign button functions, perform the following steps:

1. In Control Panel, open Keypad.
2. For each button, tap on the image and select the assigned function.
3. Tap **OK** to close the window.



Note: The system parameters set by this procedure correspond to the [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Keypad] registry key. Save the registry in order to persist the changes. For details, see [Saving Your Configuration](#), page 15.

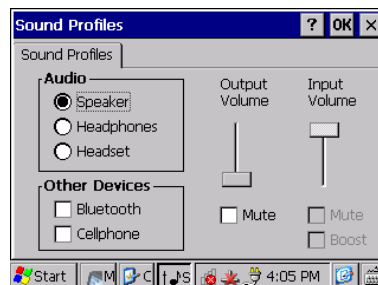
Audio

The Zypad WL15xx provides an internal microphone and speaker. As a second audio option, the system includes an audio jack for connection to an external headset. The internal speaker and microphone are automatically disabled when an external headset is connected.

Selecting the audio profile

The Zypad WL15xx stores seven distinct audio profiles as shown in the following screen capture. To select the audio profile for your application, perform the following steps:

1. In Control Panel, open Sound Mixer.
2. Select the option box for the desired Sound Profile.
3. Adjust the output and input volumes for your application.
4. Tap **OK** to close the window.



Note: The system parameters set by this procedure correspond to the [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\WaveDev] registry keys. Save the Registry in order to persist the changes. For details, see [Saving Your Configuration](#), page 15.

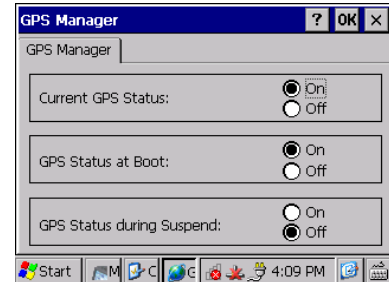
Using the GPS

The Zypad WL15xx includes an integrated GPS receiver and antenna supporting navigation applications and allowing users to geographically reference the data sent over a wireless network. By default, the GPS receiver power is enabled at boot and disabled during suspend mode. To save battery power, you can adjust these settings.

Enabling/disabling the GPS receiver power

To enable or disable the GPS receiver power, perform the following steps:

1. In Control Panel, open GPS Manager.
2. In the **GPS Manager** tab, tap the **On** or **Off** option button for the desired option.
3. Tap **OK** to close the window.



Note:

The system parameters set by this procedure correspond to the [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial2] registry key. Registry changes made by this procedure are persisted immediately after modification. For further details, see the *Zypad WL15xx Programmer Reference (110125-0002)*.

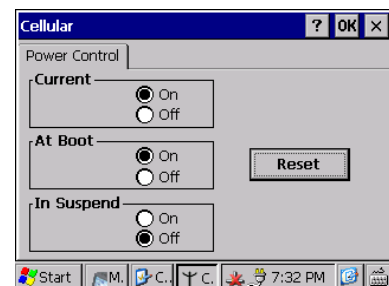
Connecting to a Cellular Network

As a configuration option, the Zypad WL15xx includes a GPRS cellular modem with integrated antenna. A user-accessible SIM card slot is provided on the [I/O Panel](#), page 10 to configure the modem. The Zypad WL15xx is intended primarily for data only. By default, the cellular modem power is enabled at boot and disabled during suspend mode. To save battery power, you can adjust these settings.

Enabling/disabling the cellular modem power

To enable or disable cellular modem power, perform the following steps:

1. In Control Panel, open Cellular.
2. In the **Power Control** tab, tap the **On** or **Off** option button for the desired option.
3. Tap **Reset** to reset the cellular driver.
4. Tap **OK** to close the window.



Note:

The system parameters set by this procedure correspond to the [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial] registry key. Registry changes made by this procedure are persisted immediately after modification. For further details, see the *Zypad WL15xx Programmer Reference (110125-0002)*.

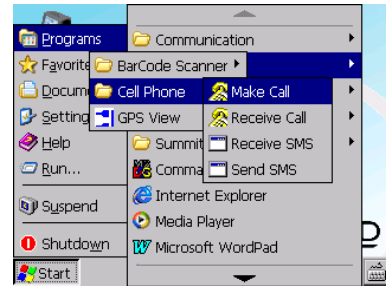
Setting network properties

You can set up your network connection using the Windows CE networking settings in **Control Panel** → **Network Connections** → **GPRS**.

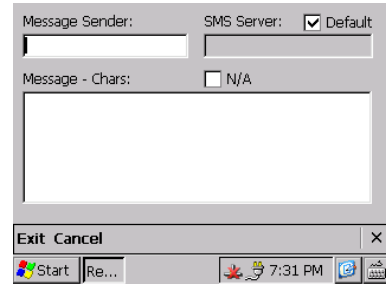
Receiving/Sending SMS text messaging

To receive or send SMS text messages, perform the following steps:

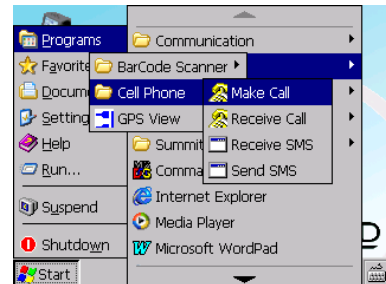
1. To receive a message, tap **Start** → **Programs** → **Eurotech** → **Cell Phone**, and then tap **Receive SMS**.



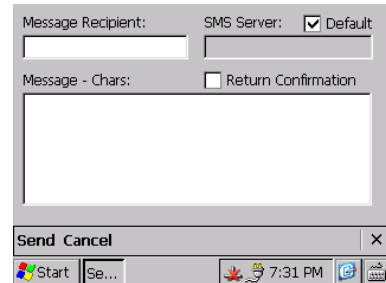
2. Receive message in the **Message** text box.
3. Tap **Exit** to close the window.



4. To send a message, tap **Start** → **Programs** → **Eurotech** → **Cell Phone**, and then tap **Send SMS**.



5. Enter the recipient phone number in the **Message Recipient** text box.
6. Enter your message in the **Message** text box.
7. Tap **Send** to send the message.
8. Tap **Exit** to close the window.



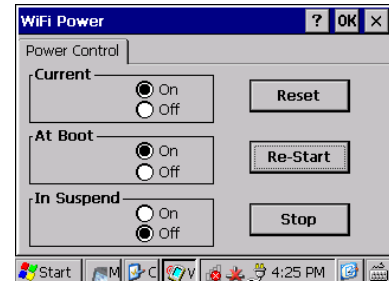
Connecting to a Wireless Network

The Zypad WL15xx includes a Summit Data Communications IEEE 802.11b/g module with integrated antenna allowing connection to a Wi-Fi network. By default, the Wi-Fi module power is enabled at boot and disabled during suspend mode. To save battery power, you can adjust these settings.

Enabling/disabling the Wi-Fi module power

To enable or disable Wi-Fi module power, perform the following steps:

1. In Control Panel, open Wi-Fi Power.
2. In the **Power Control** tab, tap **Stop**.
3. Tap the **On** or **Off** option button for the desired option.
4. Tap **Re-Start** to re-start the Wi-Fi driver.
5. Tap **OK** to close the window.



Note:

The system parameters set by this procedure correspond to the [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\SDHC2] registry key. Registry changes made by this procedure are persisted immediately after modification. For further details, see the *Zypad WL15xx Programmer Reference (110125-0002)*.

Changing the password in the SCU

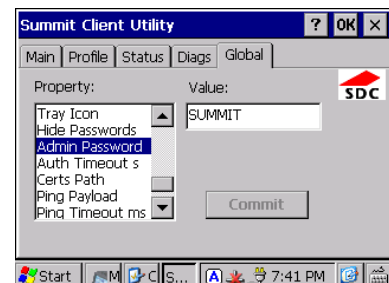
Initially, your Zypad WL15xx is not set up to connect to a wireless network. Summit Data Communications provides the Summit Client Utility (SCU) that allows you to configure the module and monitor its status. This utility is installed on the Zypad WL15xx. This section describes how to log in to the SCU and to change the password.

To log in and change the password, perform the following steps:

1. Double-tap the SCU icon on the desktop.
2. In the **Main** tab, tap **Admin Login**.
3. Enter the password **SUMMIT**, and then tap **OK**.



4. In the **Global** tab, select Admin Password from the drop-down list box.
5. Enter the new password, and then tap **Commit**.
6. Tap **OK** to close the window.



After you have established an Administrator password, you can set up your network connection using the SCU and standard Windows CE networking settings. Detailed information about the SCU is available at <http://www.summitdatacom.com>.

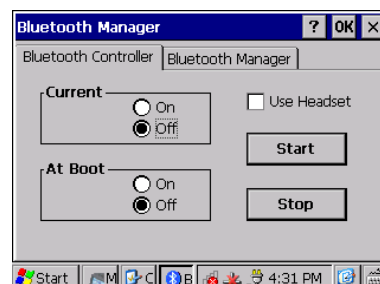
Connecting to a Bluetooth Device

The Zypad WL15xx includes a Bluetooth module with integrated antenna supporting connections to various Bluetooth devices. Common devices include a host PC for file transfers, a headset for audio input and output, a modem for wireless networking, and a scanner for barcode reading. By default, the Bluetooth module power is enabled at boot and disabled during suspend mode. To save battery power, you can adjust these settings.

Enabling/disabling the Bluetooth module power

To enable or disable Bluetooth module power, perform the following steps:

1. In Control Panel, open Bluetooth Manager.
2. In the **Bluetooth Controller** tab, tap **Stop** to stop the driver.
3. Tap the **On** or **Off** option button for the desired option.
4. Tap **Start** to restart the Bluetooth driver.
5. Tap **OK** to close the window.



Before you can connect to a Bluetooth device, you must add the device to the Zypad WL15xx as a Trusted device. Follow the steps within Windows CE to add your devices.



Note:

The system parameters set by this procedure correspond to the [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial3] registry key. Registry changes made by this procedure are persisted immediately after modification. For further details, see the *Zypad WL15xx Programmer Reference (110125-0002)*.

ZigBee (future option)

As a future option, a ZigBee module replaces the Bluetooth module for connectivity to a wireless personal area network. If your application requires this feature, contact your local Eurotech sales representative.

Using a Barcode Reader

The Zypad WL15xx supports an external ZRS-2D Ring Scanner or integrated barcode reader. The integrated barcode reader is available as a configuration option.

Using the external ring reader

To use the ZRS-2D, connect the ring scanner to the USB host port on the Zypad WL15xx as shown in the following figure. The system automatically recognizes the ring scanner. No additional software installation is required.



Figure 6. ZRS-2D Ring Scanner

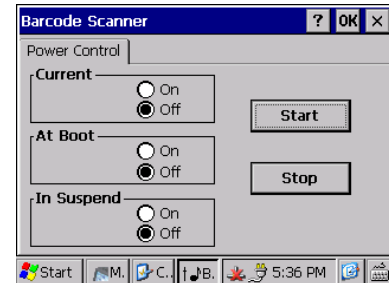
For additional information about the ZRS-2D Ring Scanner, see the *ZRS-2D User Manual* (Eurotech document ZRS2DWUSM12200903).

Using the integrated barcode reader

As a configuration option, the Zypad WL15xx includes an integrated barcode reader. By default, the barcode reader power is enabled at boot and disabled during suspend mode. To save battery power, you can adjust these settings.

To enable or disable integrated barcode reader power, perform the following steps:

1. In Control Panel, open Barcode Scanner.
2. In the **Power Control** tab, tap **Stop** to stop the driver.
3. Tap the **On** or **Off** option box for the desired option.
4. Tap **Start** to start the barcode reader driver.
5. Tap **OK** to close the window.



Note:

The system parameters set by this procedure correspond to the [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\OHCI] registry key. Registry changes made by this procedure are persisted immediately after modification.

For further details, see the *Zypad WL15xx Programmer Reference (110125-0002)*.

Connecting to Your Host PC

The Zypad WL15xx provides a USB device port for transferring data to or from a host PC. Eurotech recommends using Microsoft ActiveSync for transferring and synchronizing files between the Zypad WL15xx and a host PC running Windows XP. For host PCs running Windows Vista or Windows 7, use Windows Mobile Device Center.



Note:

You must install a USB ActiveSync driver on your PC. This driver, in addition to detailed instructions, is available on the Eurotech Support Forums, Topic ID 300 at

http://support.eurotech-inc.com/forums/topic.asp?TOPIC_ID=300&SearchTerms=usb_driver.activesync

Transferring data to/from a PC

To transfer data to or from a host PC, perform the following steps:

1. Start Microsoft ActiveSync on the host PC.
2. Turn on your Zypad WL15xx.
3. Using the Y-USB client cable provided with the Zypad WL15xx, connect the USB device port on the Zypad WL15xx to a USB port on the host PC.
4. Tap the **Explore** button at the top of the ActiveSync window. Your Zypad WL15xx is detected as a Mobile Device.
5. Navigate to the target directory on your Zypad WL15xx and then copy the desired files to the host PC.
6. Close all windows, and exit ActiveSync.

Power Management

Power management on the Zypad WL15xx includes power sequencing to control power usage and monitoring the battery status.

Sequencing Low Power States

The Zypad WL15xx automatically manages low power states for the processor and all the peripherals based on an activity timer. If the user is inactive for a user-defined time, the system will transition to a lower power state. The following table defines these states.

Power State	Description	Wake Event
User Idle	No user interaction for a specified time period	User request
Suspend	Internal peripheral devices are powered down, and the processor is in its lowest power mode. The system status is frozen to the SDRAM. You can manually transition to Suspend using the Power Button.	Power button

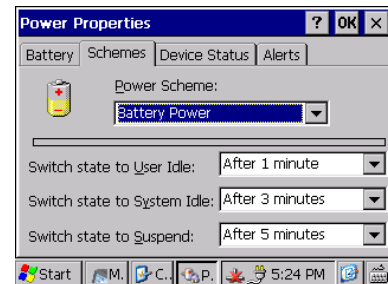
Table 6. Low Power State

Controlling transitions to low power states

The following screen shot shows the default settings for the transitions between states.

To change these transition time periods, perform the following steps:

1. In Control Panel, open Power.
2. In the **Schemes** tab, select **Battery Power** from the drop-down list.
3. Select the time period from the drop-down list box for each state.
4. Tap **OK** to close the window.



Note:

The system parameters set by this procedure correspond to the [HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Power] registry key. Save the registry in order to persist the changes. For details, see [Saving Your Configuration](#), page 15.

Monitoring Battery Status

The Zypad WL15xx accepts input power from a removable, rechargeable Smart Battery. The battery status is displayed in the notification area of the taskbar as described in the following table.

Icon	Description
	Battery is charged and providing power to the Zypad WL15xx.
	Battery is very low and needs to be charged.
	AC adapter is providing power to the Zypad WL15xx and is charging the battery pack.
	AC adapter is providing power to the Zypad WL15xx

Table 7. Battery Status

Accessing battery status details

To access detailed information about the battery status, perform the following steps:

1. In Control Panel, open Power.
2. In the **Battery** tab, read the status and percentage of power remaining.
3. Tap **OK** to close the window.



A low battery power status indicates that there is less than 30 minutes of operation remaining. For this event, the Zypad WL15xx can provide a user alert and can shutdown the system before battery power is lost. By default, the alert is enabled with a 5 second shutdown timeout. During shutdown, all applications and active process are terminated. This event may result in loss of all unsaved data and files.

Enabling/disabling low power warning

To enable or disable the battery alert, perform the following steps:

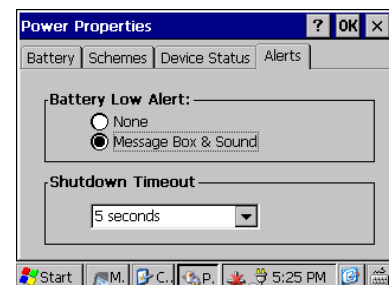
1. In Control Panel, open Power and then select the **Alert** tab.
2. To enable the alert, select the **Message Box & Sound** option box.
3. To disable the alert, select the **None** option box.
4. Tap **OK** to close the window.



Setting the shutdown timeout

To set the shutdown time out, perform the following steps:

1. In Control Panel, open Power.
2. In the **Alert** tab, select a shutdown timeout from the drop-down list box.
3. Tap **OK** to close the window.



Note:

The system parameters set by this procedure correspond to the [HKEY_LOCAL_MACHINE\Software\Eurotech\Power] registry key. Save the registry in order to persist the changes. For details, see [Saving Your Configuration](#), page 15.

Updating the Operating System

(This section to be determined.)

System Specifications

Processor

The Zypad WL15xx is based on the Marvell® PXA320 processor and is designed to meet the following performance specifications.

Parameter	Min	Typ.	Max	Units
Processor operating frequency	416			MHz

Power Supply

The Zypad WL15xx is designed to operate with the following power supply requirements.

Symbol	Parameter	Min	Typ.	Max	Units
Battery Pack					
V_{OUT}	Supply voltage		3.7		V
	Capacity			5200	mAh

Real-Time Clock

The Zypad WL15xx provides a RTC function that retains the system date and time. To supply backup power when the main power is disconnected, the system includes a long-life, lithium coin battery.

Parameter	Typ.	Units
Accuracy per month @ 25°C	+/-55	sec
Battery (TBD Lithium battery)	3	V
Life Time	(TBD)	Years

Communications

The Zypad WL15xx is designed to meet the following communication specifications.

Parameter	Specification
Wi-Fi	Summit Data Communications IEEE 802.11b/g module with integrated antenna
Bluetooth	Class 2 module with integrated antenna
GPS	SIRF III receiver module with integrated antenna
Cellular	Optional GPRS radio module, pre-certified, data only
USB	USB 1.1 host port, full speed, 500 mA max output current USB 1.1 device port, full speed

Audio

The Zypad WL15xx is designed to meet the following audio specifications.

Symbol	Parameter	Min	Typ.	Max	Units
Headset / Stereo Headphone					
V_{IN}	Full scale input voltage		(TBD)		Vrms
$Gain_{IN}$	Boost		(TBD)		dB
R_{IN}	Input impedance		(TBD)		k Ω
C_{IN}	Input capacitance		(TBD)		pF
P_{OUT}	Output power, 32 Ω load		(TBD)		mW(peak)

Mechanical

The Zypad WL15xx is designed to meet the following mechanical requirements.

Parameter	Specification
Weight	450 g total weight including battery

Environmental

The Zypad WL15xx is designed to meet the following environmental requirements.

Parameter	Specification
Operating temperature	-10°C to +50°C
Storage temperature	-20°C to +50°C
Relative humidity	95%, non condensing

Regulatory

The Zypad WL15xx is designed to meet the following regulatory requirements.

Requirement	Description
EMC	
R&TTE	The product shall be in accordance with the Class 2 product requirements specified in the R&TTE Directive, 1999/5/EC
EN55022	European EMC Directive 2004/108/EC Radiated Emissions Conducted Emissions Telecom Line Conducted Emissions
EN 55024	European EMC Directive 2004/108/EC -ESD -Radiated Immunity -Electrical Fast Transients -Surges -Conducted Immunity -Magnetic Immunity – N/A -Voltage Dips and Interruptions
EN 61000-3-2:	Power Supply Only
EN 61000-3-3:	Power Supply Only
EN 50371:2002	Generic standard to demonstrate the compliance of low power electronic and electrical apparatus, with basic restrictions relating to human exposure to electromagnetic fields (10MHz ~ 300GHz) – general public.
FCC compliance	FCC Part 15 Part B
Canadian ICES-003	Test Report based on FCC testing
Safety	
EN 60950-1	European Safety
UL 60950-1	US Safety
CSA C22.2 Number 60950-1	Canada Safety

Appendix A - Revision

This manual applies to the current revision of the Zypad WL15xx as given in the following sections.

Revision History

The following is an overview of the revisions to the system.

Revision A

Initial release

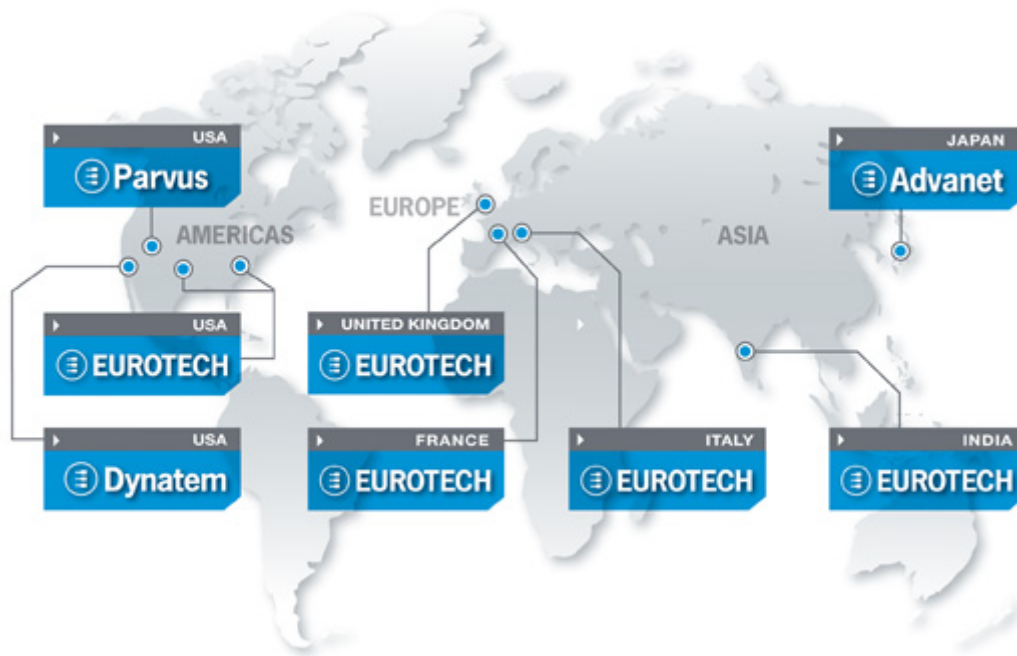
Revision B

Replaced display due to end-of-life
Migrated to newer internal GPS module
Updated battery hot-swap circuitry
Lowered run-time power consumption

Appendix B - Troubleshooting

(This section to be determined.)

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