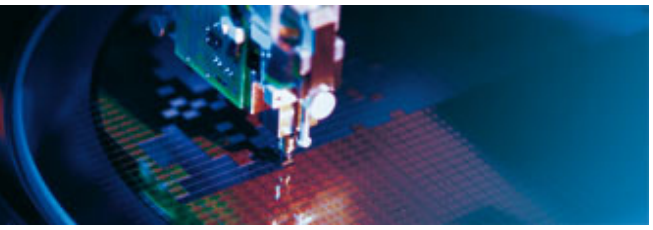
PROGRAMMER REFERENCE



Zypad WL15xx

Wearable Computer

Rev 2 – April 2012 – 110125-00022

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2	Initial release	Apr 2012

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Introduction

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. It is based on the Marvell® PXA320 processor and supports the Windows® CE 6.0 operating system. 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, Wi-Fi, and barcode reader.

With the Zypad WL15xx, you can quickly and easily create a wearable device which precisely meets your requirements. The Zypad WL15xx can be customized for your specific application at three user-type levels:

- End-User – Provide an out of the box operation by changing the default settings in the Windows® CE desktop
- Administer/Integrator – Create a customized configuration by modifying the system files in persistent memory
- Developer – Develop your own application using a standard Windows CE Software Development Kit (SDK) and the Eurotech Zypad WL15xx Development Kit (ZDK)

This document describes how to customize your system at the administrator/integrator and developer levels. It describes the system files, ZDK, and application programming interfaces (API) for handling tasks specifically related to the Zypad WL15xx feature set. This information is intended as a reference for developing software applications for the Zypad WL15xx series using C/C++ languages. The level of content provided assumes that the developer is familiar with the Windows CE 6.0 operating system and the basics of the C/C++ languages.

For information about customizing at the end-user level, see the Zypad WL15xx User Manual (Eurotech document #110125-0000).

Related Documents

The following documents are also important resources for the Zypad WL15xx. Download the standard release documents from the support site or contact your local sales representative.

Document	
Zypad WL15xx User Manual	110125-0000
Zypad WL15xx Quick Start	110125-0001

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.

About Your System

This section discusses several topics to familiarize you with the general system architecture and provides details about how to customize your Zypad WL15xx at the administrator/integrator level.

System Block Diagram

The following diagram illustrates the system organization of the Zypad WL15xx. Dotted lines indicate future options.

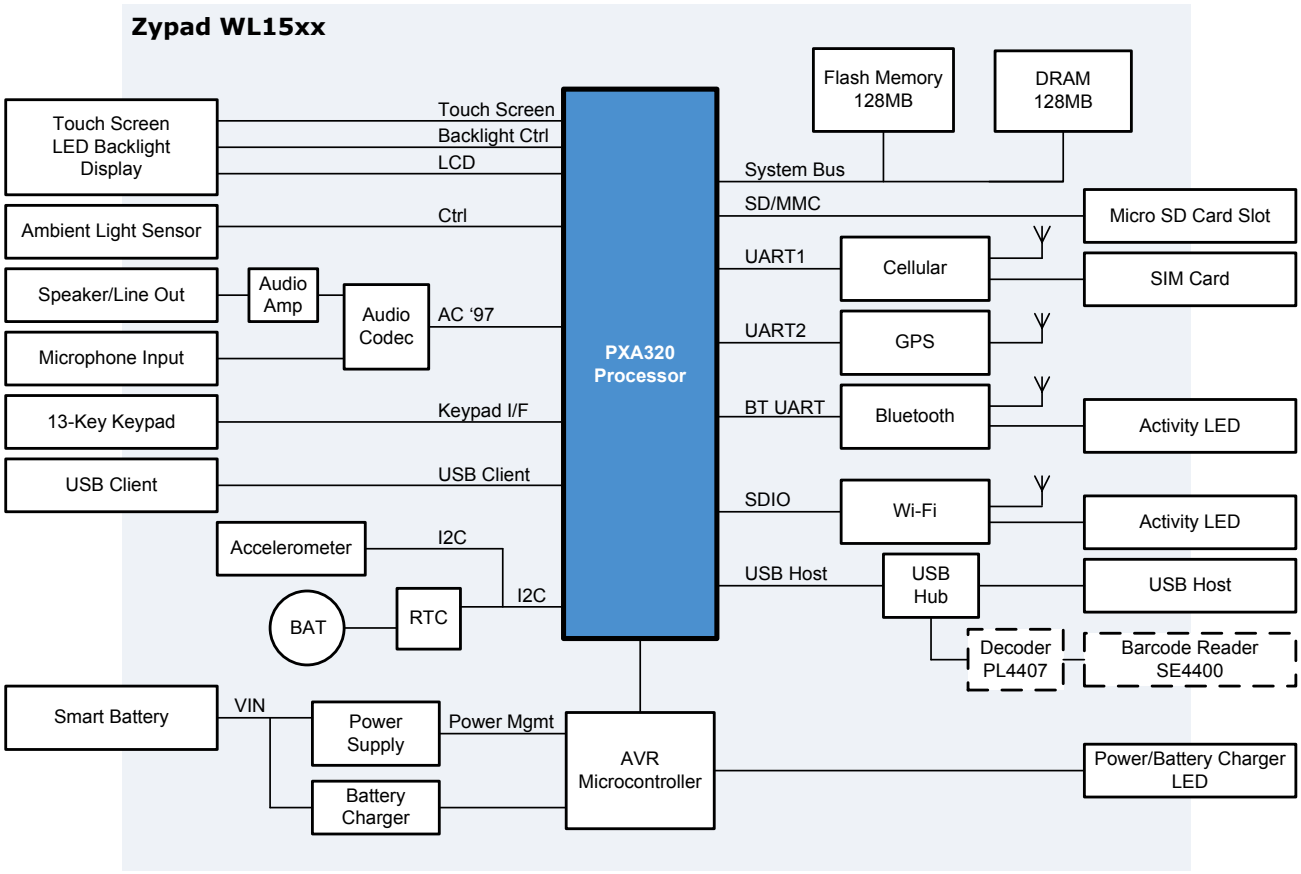

Figure 1. Zypad WL15xx Block Diagram

Hardware Features

Processor

- Marvell® PXA320 processor

Memory

- 128 MB SDRAM
- 128 MB flash memory

Communications

- Cellular with user accessible SIM card
- GPS with integrated antenna
- Bluetooth with integrated antenna
- IEEE 802.11b/g 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 on/off key with programmable backlight
- Ambient light sensor
- Accelerometer

Inputs and Outputs

- Expansion microSD card slot
- Three LEDs
  - Power On / Charge
  - Bluetooth activity
  - Wi-Fi/Cellular 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

- 3.7V Li-Ion interchangeable battery pack
- HW/SW advanced power management

Persistent Memory

The Zypad WL15xx includes non-volatile memory for system file storage, a flash disk, and a real-time clock (RTC) functionality. The system files and flash disk are stored in the on-board flash memory.

System File Storage

The Zypad WL15xx reserves a section of flash memory to store system files. These files are pre-loaded on your system with a default user configuration. For detailed information about these files, see System Files, page 9.

Flash Disk

The Zypad 15 WLxx reserves the area of flash memory not used for storing system files for user storage and persistent registry. The user storage is accessed through the `\FlashFX Disk` folder in the root directory of your Zypad WL15xx. To applications, this folder is the same as any other folder in the Windows CE file system.

Real-Time Clock

(To Be Determined)

System Files

The Zypad WL15xx stores the following system files in flash memory:

- `NK.BIN` – Windows CE image
- `SYSLOAD.OBM` – MOBM loader
- `SYSLOAD.ROM` – Boot loader
- `SYSLOAD.HWT` – Hardware table
- `SYSLOAD.BMP` – Image for splash screen
- `SYSLOAD.REG` – Updates to the default registry
- `SYSLOAD.EXE` – Any compiled executable

Subsequent sections describe how you can customize your system by modifying or replacing these system files.

For additional details about the system files, see the Getting Started Guide for Microsoft Windows CE (Eurotech document # 110010-1004).

Updating the System Files

You can modify and update your Zypad WL15xx by replacing the default system files (any number in any combination) using the following steps:

1. Copy the files to the root directory of a USB flash drive or microSD card.
2. Insert the external media into the Zypad WL15xx.
3. Press the reset button.
   The Zypad WL15xx reads the external media at boot and loads the new system files into on-board flash memory.

You can also update the system files using the application ADSImageUpdate. ADSImageUpdate performs an update to the flash memory of your target system at runtime.

For full details about this application, see the ADSImageUpdate Specification (Eurotech document # 110025-1004).

NK.BIN

The file NK.BIN is the Windows CE image. It contains the kernel, system drivers, applications, and other system files. During boot, the operating system performs the following operations:

- Mounts the user flash disk
- Amends the built-in registry with the persistent registry
- Amends the built-in registry with SYSLOAD.REG
- Loads drivers based on the system registry
- Runs launcher.exe
- Sets the desktop bit map
  - Launches the desktop, if enabled
  - Launches applications from folders specified in registry.
    The administrator/integrator defines these applications based on the security model.

When uploading a new BIN file to your system, you must ensure that the BIN file is for your specific platform with the same hardware configurations. For example, you cannot use a build designed for a system with 256MB RAM on a system with 128MB RAM. Be sure to modify your SYSLOAD.REG and SYSLOAD.HWT files to match the new image size.

Security Model

At boot, the Zypad WL15xx checks a sequence of folders based on the order defined in the registry keys. Once it finds an executable file, the launcher does not search any additional folders, so the order of the folders is important. This order affects launching applications and loading certain OS files. For example, you can allow launching user applications and updating the OS from external media. However, there is a trade-off between serviceability and security. Allowing these functions increases the serviceability of your system but decreases its security. Your specific application determines the level of serviceability versus security.

For additional details about launch order, see the Eurotech Support Forum Topic 513.

SYSLOAD.OBM

The SYSLOAD.OBM pre-loader initializes the processor in preparation for running the SYSLOAD.ROM boot loader.

SYSLOAD.ROM

The boot loader, included in SYSLOAD.ROM, performs the following operations at boot:

- Reads the SYSLOAD.HWT file
- Displays the splash screen from SYSLOAD.BMP
- Checks for new system files loaded on external media that may be installed in the Zypad WL15xx and copies these files into on-board flash
- Copies the Windows CE image into RAM and launches it

SYSLOAD.HWT

SYSLOAD.HWT is the hardware table for your Zypad WL15xx. This text file defines specific aspects of your hardware that the boot loader and Windows CE operating system need to start up, such as where the image resides in on-board flash and how large it is. For information on modifying SYSLOAD.HWT, see the Eurotech Support Forum Topic 290.

SYSLOAD.BMP

SYSLOAD.BMP is the image used as the splash screen at boot. The default image is the Eurotech logo, but you can change this image for your specific application by updating the SYSLOAD.BMP file in on-board flash memory. To update this file, follow the procedure Updating the System Files, page 9. This file must be less than 256k in size and either 4 bit-per-pixel (bpp) or 8 bpp.

For additional details about displaying your logo or splash screen during boot, see the Eurotech Support Forum Topic 2297.

SYSLOAD.REG

SYSLOAD.REG is a text file that contains updates to the image registry that will be applied at boot. It can define what drivers are available to the system at boot, as well as many other operational parameters. The settings in SYSLOAD.REG supersede the settings in the image registry. You can customize your system by changing the SYSLOAD.REG file. The file must be less than 256k in overall size. To update this file, follow the procedure Updating the System Files, page 9. For details about the registry keys that are associated with a specific ZDK API, see the API Reference sections.

SYSLOAD.EXE

SYSLOAD.EXE can be any compiled executable that you want to run at system startup. Once copied to the on-board flash, this executable will be run whenever the Zypad WL15xx comes up from either a hard-reset or a loss of power situation. The registry entries do not control its execution. It always runs after the Windows CE shell program. SYSLOAD.EXE is optional, but if it is used, it must be less than 256k in size.

Development Environment

This section provides details about customizing your Zypad WL15xx at the developer level. It describes the ZDK for the Windows CE operating system including system requirements, distribution, installation, directory structure, and additional resources.

Development Tools

The Microsoft Windows XP operating system is the development platform for the Zypad WL15xx. To develop applications for the Zypad WL15xx, you will need the following:

- Development personal computer (PC)
- Microsoft Visual Studio 2005 Service Pack 1 or later
- Zypad WL 15 xx ZDK (optional)
- ADSAPI (optional)
- ActiveSync Version 4.5.0 or later

Distribution

You can download the latest release of the ZDK from the Eurotech support site (http://support.eurotech-inc.com/). The ZDK is distributed as `wl11xx-wince600-xxx.zip` where xxx indicates the version.

The typical distribution includes the following files:

- `CONTENTS` - Package contents and checksums
- `RELEASE` - Releases notes
- `INSTALL` - Installation notes of the operating system image
- `wl11xx-wince600-sdk-xxx.msi` - SDK related to the operating system image
- `wl11xx-wince600-usbdisk-xxx.zip` - image to be installed on the Zypad WL15xx

The ZDK is part of the SDK environment for the Zypad WL15xx. It is automatically installed when the `wl11xx-wince600-sdk-xxx.msi` is installed on the development PC. Also, the `ZDK.ddl` is loaded into the Zypad WL15xx operating system images.

Installation

To install the SDK on a development PC, complete the following steps:

1. Run the `wl11xx-wince600-sdk-xxx.msi` file for the SDK. A Setup Wizard will start to help in the SDK installation.
2. In the Setup Wizard, click **Next**.
3. If an error message appears, the appropriate version of the application development tools required by the SDK is not installed. For information about application development tools that the SDK requires, click **Open Browser**.
4. To accept the terms of the end-user license agreement (EULA), select **Accept**, and then click **Next**.
5. In the **User Name** box, type your name.
6. In the **Organization** box, type the name of your company, and then click **Next**.
7. If you want a custom installation, click **Custom**, and then select the functionality that you want to install and the destination directory.
8. If you want to install all functionality provided with the SDK, click **Complete**, and then select the destination directory.
9. Click **Next**.
10. To install the SDK, click **Install**.
11. To complete the installation, click **Finish**.

Directory Structure

After installation, the ZDK files are in the directory you selected during the installation procedure. The following table lists the contents of this directory.

(To Be Determined)

Table 2. Directory Structure

ADSAPI

The ADSAPI are a specific set of API functions common to several Eurotech products and supported by your Zypad WL15xx. These APIs are called from the ADSAPI library, which is located in the `\Windows\AdsApiDll.dll\` directory on your system. For full details about the ADSAPI, see the ADSImageUpdate Specification (Eurotech document # 110025-1004).

Visual Studio Remote Tools

Visual Studio ships with a set of tools commonly referred to as *Remote Tools*. These tools allow an application developer to perform a variety of programming tasks on a Windows CE based target device, such as the Zypad WL15xx. To use these tools, connect to the Zypad WL15xx using ActiveSync.

After a connection has been established between the remote tool and the target device, you will be able to perform various tasks, such as the following:

- Monitor the status of processes and threads on the target device
- Measure the performance of the target device
- View and edit the system registry on the target device

Although the Visual Studio IDE has a menu item for these tools (Target → Remote Tools), Eurotech recommends running these tools from the development machine's **Star** menu (Programs → Microsoft Visual Studio 2005 → Visual Studio Remote Tools).

Run the required tool, and then click the **Target → Connectivity Options** menu.

If you have installed an SDK for the Zypad WL15xx, you must select the WL1100_SDK platform.

If you have not installed the SDK, you can still connect to the Zypad WL15xx by editing the Platform Builder entry. Set Transport to TCP Connect Transport and Startup Server to ActiveSync Startup provider.

Using the ZDK

Functional Overview

The ZDK provides a set of functions for accessing and controlling features specific to the Zypad WL15xx. These functions are grouped into the following categories:

- System
  - System management
  - Registry management
  - Accelerometer
  - Barcode reader
  - GPS
- User Interface
  - Keypad
  - Display
  - Audio
- Communication
  - Wi-Fi
  - Cellular
  - Bluetooth

The following diagram illustrates the Zypad WL15xx software model.

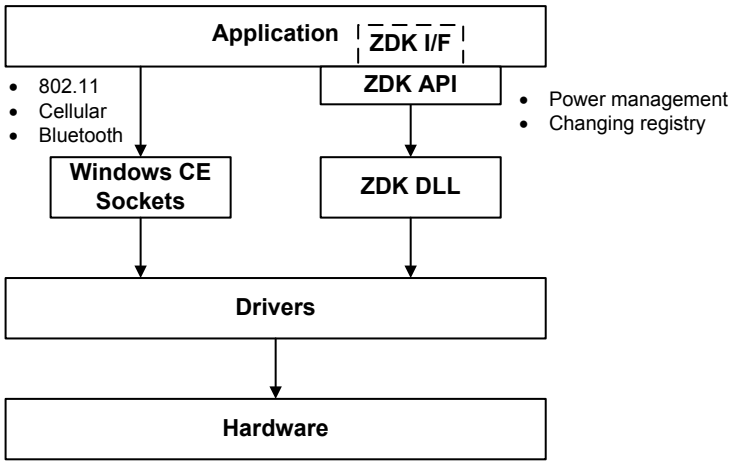

Figure 2. Zypad WL15xx Software Model

The subsequent sections for each of these categories provide detailed descriptions of the functions including related registry settings. The following registry is used by multiple functions in different categories and is provide in this section for reference:

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\DIO1]
     "Dll"="dio.dll"
     "Order"=dword:2
     "Prefix"="DIO"
     "DeviceArrayIndex"=dword:0
     "FriendlyName"="Digital IO Port 1"
```

Several configurations of the Zypad WL15xx are available allowing you to choose the hardware based on your specifications. Available options include cellular, GPS, Bluetooth, Wi-Fi, and barcode reader. The API supported by your system depends on your specific configuration.

API Reference: System

System functions retrieve information related to the platform configuration and characterization, provide a means for an orderly shutdown of the system, manage the registry, and control the accelerometer, barcode reader, and GPS receiver.

System Management

System management functions retrieve system information and perform an orderly shutdown of the system.

Registry Keys

```
[HKEY_LOCAL_MACHINE\Software\EuroTecH]
        "Release"="Standard"
        "OSVersion"=dword:060000
        "FwVersion"=dword:000001
        "NotSupported"=dword:0
        "HwVersion"=dword:1500
        "EquipmentConfiguration"=dword:00E7

[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Battery]
        "Prefix"="BAT"
        "Dll"="battery.dll"
        "Flags"=dword:8
        "Order"=dword:3
        "ForceShutdown"=dword:1
        "IClass"="{DD176277-CD34-4980-91EE-67DBEF3D8913}"
```

Type Definitions

```
typedef struct _PZYPAD_SYSTEM_INFO
{
        DWORD OsVersion;
        DWORD FwVersion;
        DWORD HwVersion;
        TCHAR Release[MAX_PATH];
        BOOL  NotSupported;
}ZYPAD_SYSTEM_INFO,*PZYPAD_SYSTEM_INFO;
```

Members:

`OsVersion`	Contains the operating system version in the form `0x00XXYYZZ => "XX.YY.ZZ"`.
`FwVersion`	Contains the firmware version in the form `0x0000XXYY => "XX.YY"` or `0xFFFFFF` if an error occurs when reading the firmware version.
`HwVersion`	Contains the hardware version in the form 0x0000ABDC => "WLABCD" where ABCD is the Zypad model number or 0xFFFFFF if an error occurs when reading the hardware version.
`Release`	Release description or “Standard” if there is no entry for release.
`NotSupported`	TRUE if it is an unofficial release. FALSE if it is an official release or if there is no entry for this registry.

ZYPAD_GetSystemInfo

```
BOOL ZYPAD_GetSystemInfo(PZYPAD_SYSTEM_INFO pSystemInfo)
```

Parameters

`pSystemInfo` pointer to the `ZYPAD_SYSTEM_INFO` structure

Return Value

Returns a TRUE if the OS version was read from the registry key successfully or FALSE otherwise.

Remarks

Reads the registry key `[HKEY_LOCAL_MACHINE\Software\EuroTecH]` and writes Zypad version information to the `ZYPAD_SYSTEM_INFO` structure.

To get extended error information, call `GetLastError`.

ZYPAD_Shutdown

```
BOOL ZYPAD_Shutdown()
```

Parameters

None

Return Value

Returns FALSE on error, otherwise Zypad WL15xx will shutdown, and this function will not return.

Remarks

Turns off power to the Zypad WL15xx.

Registry Management

Registry management functions operate on the internal registry.

ZYPAD_EraseRegistry

```
BOOL ZYPAD_EraseRegistry()
```

Parameters

None

Return Value

Returns TRUE if the registry is successfully set to be reset to the factory defaults on soft reset or FALSE otherwise.

Remarks:

Erases the `HKEY_LOCAL_MACHINE` registry. After this function is called, a system reset is mandatory.

To get extended error information, call `GetLastError`.

Accelerometer

Accelerometer functions set accelerometer control, calibrate the accelerometer, and read the current angle.

Registry Keys

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Accelerometer]
        "Dll"="Accelerometer.dll"
        "Prefix"="ACC"
        "Order"=dword:8
        "Index"=dword:1    ; ACC1
        "Disabled"=dword:0
        "ArmUpDownThreshold"=dword:30
        "CalibDataSize"=dword:8     ; 8 = 8bit data,; 10 = 10bit data
        "ShowBuildDate"=dword:0
```

Type Definitions

```
typedef struct _MMA7455L_AXIS_DATA
{
        AXIS_DATA out_x;
        AXIS_DATA out_y;
        AXIS_DATA out_z;
}MMA7455L_AXIS_DATA, *PMMA7455L_AXIS_DATA;
```

ZYPAD_Accelerometer_Enable

`BOOL ZYPAD_Accelerometer_Enable(BOOL bEnable)`

Parameters

`bEnable` if TRUE, to enable the accelerometer
if FALSE, to disable the accelerometer

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks:

Enables or disables the accelerometer control.

To get extended error information, call `GetLastError`.

ZYPAD_Accelerometer_Calibrate

`BOOL ZYPAD_Accelerometer_Calibrate(PUCHAR pXYZData)`

Parameters

`pXYZData` pointer to the `MMA7455L_AXIS_DATA` structure

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks:

Calibrates the accelerometer and writes the 8-bit calibrated xyz-axis data to the `MMA7455L_AXIS_DATA` structure.

To get extended error information, call `GetLastError`.

ZYPAD_GetAccelerometerAngle

```
BOOL ZYPAD_GetAccelerometerAngle(PCHAR pAngle)
```

Parameters

`pAngle` UCHAR pointer filled with current accelerometer angle

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks:

Retrieves the current accelerometer x-axis angle (8-bit data) and writes the value `pAngle`.

To get extended error information, call `GetLastError`.

ZYPAD_Accelerometer_GetData8

```
BOOL ZYPAD_Accelerometer_GetData8(PUCHAR pXYZData)
```

Parameters

`pXYZData` pointer to the `MMA7455L_AXIS_DATA` structure

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks:

Retrieves the current accelerometer angle for the xyz-axis (8-bit data) and writes the values to the `MMA7455L_AXIS_DATA` structure.

To get extended error information, call `GetLastError`.

ZYPAD_Accelerometer_GetData10

```
BOOL ZYPAD_Accelerometer_GetData10(PUCHAR pXYZData)
```

Parameters

`pXYZData` pointer to the `MMA7455L_AXIS_DATA` structure

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks:

Retrieves the current accelerometer angle for the xyz-axis (10-bit data) and writes the values to the `MMA7455L_AXIS_DATA` structure.

To get extended error information, call `GetLastError`.

Backlight

Additional accelerometer functions control the operation of the backlight based on the position of the user's arm.

Registry Keys

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\LightControl]
        "Dll"="LightControl.dll"
        "Prefix"="BLC"
        "Order"=dword:9
        "Index"=dword:1    ; BLC1
        "ShowBuildDate"=dword:0
        "KeypadBacklightDisable"=dword:0
```

ZYPAD_SetAccelerometerStatus

```
BOOL ZYPAD_SetAccelerometerStatus(UCHAR Status)
```

Parameters

`Status` variable for accelerometer control setting

Return Value

Returns TRUE on success or FALSE otherwise.

Remark

Sets the operation of the accelerometer. The parameter `Status` can assume the following values:

0x00	Accelerometer is disabled
0x01	Accelerometer is enabled and configured for the left arm
0x02	Accelerometer is enabled and configured for the right arm

To get extended error information, call `GetLastError`.

ZYPAD_GetAccelerometerStatus

```
BOOL ZYPAD_GetAccelerometerStatus(PUCHAR pStatus)
```

Parameters

`pStatus` pointer to a variable for the current accelerometer control setting

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Retrieves the current setting for the accelerometer control. For valid configurations, see `ZYPAD_SetAccelerometerStatus`.

To get extended error information, call `GetLastError`.

ZYPAD_SetArmDownBacklightOnEnable

```
BOOL ZYPAD_SetArmDownBacklightOnEnable(UCHAR Status)
```

Parameters

`Status` variable for the arm down backlight on enable

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Sets the operation of the backlight when the user's arm is in the down position. The parameter `Status` can assume the following values:

0x00 Backlight will remain off and cannot be turned on by the touch screen when the user's arm is down.
0x01 Backlight can be turned on by the touch screen when the user's arm is down.

To get extended error information, call `GetLastError`.

ZYPAD_GetArmDownBacklightOnEnable

```
BOOL ZYPAD_GetArmDownBacklightOnEnable(PUCHAR pStatus)
```

Parameters

`pStatus` pointer to a variable for the current setting of the arm down backlight on enable

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Retrieves the current setting for the control of the backlight when the user's arm is in the down position. For valid configurations, see `ZYPAD_SetArmDownBacklightOnEnable`.

To get extended error information, call `GetLastError`.

Internal Barcode Reader

The barcode reader functions control the operation of the optional integrated bar code reader.

Registry Keys

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\OHCI]
     "InterfaceType"=dword:0    ; Internal
     "Prefix"="HCD"
     "Dll"="ohci2.dll"
     "Index"=dword:1
     "Order"=dword:5
     "Irq"=dword:3
     "SysIntr"=dword:11
     "MemBase"=dword:4C000000
     "MemLen"=dword:1000
     "UseExistingSettings"=dword:0
     "StatusAtBoot"=dword:1        ; 0 = turn off, 1 = turn on
     "StatusInSuspend"=dword:0     ; 0 = turn off, 1 = do not turn off
```

ZYPAD_SetScannerPower

```
BOOL ZYPAD_SetScannerPower(BOOL Enable)
```

Parameters

`Enable` if TRUE, to turn on the internal barcode reader power
if FALSE, to turn off the internal barcode reader power

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks:

Sets or clears the power enable output to turn the internal barcode reader on or off.

ZYPAD_GetScannerPower

```
BOOL ZYPAD_GetScannerPower(PBOOL pEnabled)
```

Parameters

`pEnabled` pointer to a variable for the current value of the internal barcode reader power enable output

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the current value of the internal barcode reader power enable output. If TRUE, the internal barcode reader power is enabled. If FALSE, the internal barcode reader power is disabled.

ZYPAD_SetScannerBootPower

```
BOOL ZYPAD_SetScannerBootPower(BOOL Enable)
```

Parameters

`Enable` if TRUE, to turn on the internal barcode reader power at boot
if FALSE, to turn off the internal barcode reader power at boot

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Writes the registry key that controls the internal barcode reader power at system boot and commits the changes to persistent storage. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\OHCI] "StatusAtBoot"`.

ZYPAD_GetScannerBootPower

```
BOOL ZYPAD_GetScannerBootPower(PBOOL pEnabled)
```

Parameters

`pEnabled` pointer to a variable for the internal barcode reader power setting when the system boots

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the registry key that controls the internal barcode reader power at system boot. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\OHCI] "StatusAtBoot"`.

ZYPAD_SetScannerSleepPower

```
BOOL ZYPAD_SetScannerSleepPower(BOOL Enable)
```

Parameters

`Enable` if TRUE, to turn on the internal barcode reader power during Suspend mode
if FALSE, to turn off the internal barcode reader power during Suspend mode

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Writes the registry key that controls the internal barcode reader power during Suspend mode and commits the changes to persistent storage. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\OHCI] "StatusInSuspend"`.

ZYPAD_GetScannerSleepPower

```
BOOL ZYPAD_GetScannerSleepPower(PBOOL pEnabled)
```

Parameters

`pEnabled` pointer to a variable for the internal barcode reader power setting when the system is in Suspend mode

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the registry key that controls the internal barcode power when the system is in Suspend mode. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\OHCI] "StatusInSuspend"`.

ZYPAD_SetScannerHostTrig

```
BOOL ZYPAD_SetScannerHostTrig(BOOL Enable)
```

Parameters

`Enable` if TRUE, to start scan
if FALSE, to stop scan

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks:

Sets or clear the host trigger output to start or stop the internal barcode reader.

GPS

The GPS functions control the integrated GPS receiver.

Registry Keys

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial2]
       "Order"=dword:4
       "StatusAtBoot"=dword:1      ;0 = turn off, 1 = turn on
       "StatusInSuspend"=dword:0   ;0 = turn off, 1 = do not turn off
```

ZYPAD_SetGpsPower

```
BOOL ZYPAD_SetGpsPower(BOOL Enable)
```

Parameters

`Enable` if TRUE, to turn on the GPS receiver power
if FALSE, to turn off the GPS receiver power

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks:

Sets or clears the GPS power enable output.

ZYPAD_GetGpsPower

```
BOOL ZYPAD_GetGpsPower(PBOOL pEnabled)
```

Parameters

`pEnabled` pointer to a variable for the current value of the GPS receiver power enable output

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the current value of the GPS receiver power enable output. If TRUE, the GPS receiver power is enabled. If FALSE, the GPS receiver power is disabled.

ZYPAD_SetGpsBootPower

```
BOOL ZYPAD_SetGpsBootStatus(BOOL Enable)
```

Parameters

`Enable` if TRUE, to turn on the GPS receiver power at boot
If FALSE, to turn off the GPS receiver power at boot

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Writes the registry key that controls the GPS receiver power at system boot and commits the changes to persistent storage. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\Serial2] "StatusAtBoot"`.

ZYPAD_GetGpsBootPower

```
BOOL WL1100_GetGpsBootStatus(PBOOL pEnabled)
```

Parameters

`pEnabled` pointer to a variable for the GPS receiver power setting when the system boots

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the registry key that controls the GPS receiver power at system boot. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\Serial2] "StatusAtBoot"`.

ZYPAD_SetGpsSleepPower

```
BOOL ZYPAD_SetGpsSleepPower(BOOL Enable)
```

Parameters

`Enable` if TRUE, to turn on the GPS receiver during Suspend mode
if FALSE, to turn off the GPS receiver during Suspend mode

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Writes the registry key that controls the GPS receiver power during Suspend mode and commits the changes to persistent storage. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\Serial2] "StatusInSuspend"`.

ZYPAD_GetGpsSleepPower

```
BOOL ZYPAD_GetGpsSleepPower(PBOOL pEnabled)
```

Parameters

`pEnabled` pointer to a variable for the GPS receiver power setting when the system is in Suspend mode

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the registry key that controls the GPS receiver power when the system is in Suspend mode. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\Serial2] "StatusInSuspend"`.

API Reference: User Interface

User interface functions control operations related to the keypad, display, and audio interface of the system.

Keypad

Using the keypad functions, you can configure the keypad buttons for your specific application. Each button can be associated with a particular key of a standard keyboard.

Registry Keys

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Keypad]
     ; VK keys used for built-in keypad
     "KeyNum0"=dword:60            ;VK_NUMPAD0
     "KeyNum1"=dword:61            ;VK_NUMPAD1
     "KeyNum2"=dword:62            ;VK_NUMPAD2
     "KeyNum3"=dword:63            ;VK_NUMPAD3
     "KeyNum4"=dword:64            ;VK_NUMPAD4
     "KeyNum5"=dword:65            ;VK_NUMPAD5
     "KeyNum6"=dword:66            ;VK_NUMPAD6
     "KeyNum7"=dword:67            ;VK_NUMPAD7
     "KeyNum8"=dword:68            ;VK_NUMPAD8
     "KeyNum9"=dword:69            ;VK_NUMPAD9
     "KeyV"=dword:0D               ;VK_RETURN
     "KeyX"=dword:1B               ;VK_ESCAPE
```

ZYPAD_SetDefaultKeys

```
BOOL ZYPAD_SetDefaultKeys(PUCHAR pKeys)
```

Parameters

`pKeys` an array of virtual key codes to be generated by the hardware keypad

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Sets the virtual key codes generated by the keypad to those stored in the array `pKeys`. The array size is set to 12.

To get extended error information, call `GetLastError`.

ZYPAD_GetDefaultKeys

```
BOOL ZYPAD_GetDefaultKeys(PUCHAR pKeys)
```

Parameters

`pKeys` an array of virtual key codes to be generated by the hardware keypad

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the setting for the virtual key codes generated by the keypad and writes them to the array `pKeys`. The array size is set to 12.

To get extended error information, call `GetLastError`.

Display and Backlight Brightness

The display functions manage the display and the keypad backlight. An application can read the backlight attribute and use these levels to adjust the backlight. In addition, it is possible to automatically set the brightness depending on the ambient light.

Registry Keys

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\LightControl]
        "Dll"="LightControl.dll"
        "Prefix"="BLC"
        "Order"=dword:9
        "Index"=dword:1      ; BLC1
        "ShowBuildDate"=dword:0
        "KeypadBacklightDisable"=dword:0
```

ZYPAD_SetKeypadBacklightEnable

```
BOOL ZYPAD_SetKeypadBacklightEnable(UCHAR Status)
```

Parameters

`Status` if 1, to enable the keypad LED power
if 0, to disable the keypad LED power

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Writes the registry key that controls the keypad LED power, commits the changes to persistent storage, and enables or disables the keypad LED power. The registry key is `[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\LightControl] "KeypadBacklightDisable"`.

To get extended error information, call `GetLastError`.

ZYPAD_GetKeypadBacklightEnable

```
BOOL ZYPAD_GetKeypadBacklightEnable(PBOOL pEnable)
```

Parameters

`pEnable` pointer to a variable for the current keypad LED power enable status

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the registry key that controls the keyboard LED power. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\LightControl] "KeypadBacklightDisable"`.

ZYPAD_SetBrightnessControl

```
BOOL ZYPAD_SetBrightnessControl(UCHAR Control)
```

Parameters

`Control` variable for control setting of display and keypad brightness

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Sets the control of the display and keypad brightness. The parameter `Control` can assume the following values:

0x00 Display/keypad brightness must be set using the functions `ZYPAD_SetDisplayBrightness` and `ZYPAD_SetKeyboardBrightness`

0x01 Display/keypad brightness are set by the system accordingly to the ambient brightness

To get extended error information, call `GetLastError`.

ZYPAD_GetBrightnessControl

```
BOOL ZYPAD_GetBrightnessControl(PUCHAR pControl)
```

Parameters

`pControl` pointer to a variable for the current display and keypad brightness control setting

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Retrieves the current control setting for the display and keypad brightness. For valid values for `Control`, see `ZYPAD_SetBrightnessControl`.

To get extended error information, call `GetLastError`.

ZYPAD_SetDisplayBrightness

```
BOOL ZYPAD_SetDisplayBrightness(UCHAR Brightness)
```

Parameters

`Brightness` variable for the display brightness setting

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Sets the brightness of the display. The parameter `Brightness` must be in the range 0 to 100.

To get extended error information, call `GetLastError`.

ZYPAD_GetDisplayBrightness

```
BOOL ZYPAD_GetDisplayBrightness(PUCHAR pBrightness)
```

Parameters

`pBrightness` pointer to a variable for the current display brightness setting

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Retrieves the current brightness setting for the display. For valid values for `Brightness`, see `ZYPAD_SetDisplayBrightness`.

To get extended error information, call `GetLastError`.

ZYPAD_SetKeyboardBrightness

```
BOOL ZYPAD_SetKeyboardBrightness(UCHAR Brightness)
```

Parameters

`Brightness` variable for the keypad brightness setting

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Sets the brightness of the keypad. The parameter `Brightness` must be in the range 0 to 100.

To get extended error information, call `GetLastError`.

ZYPAD_GetKeyboardBrightness

```
BOOL ZYPAD_GetKeyboardBrightness(PUCHAR pBrightness)
```

Parameters

`pBrightness` pointer to a variable for the current keypad brightness setting

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Retrieves the current brightness setting for the keypad. For valid values for `Brightness`, see `ZYPAD_SetKeyboardBrightness`.

To get extended error information, call `GetLastError`.

Audio

Using the audio functions, you can configure the input and output audio settings. All functions described in this section, with the exceptions of `ZYPAD_EnableBluetoothAG`, `ZYPAD_SetBluetoothAGVolume`, and `ZYPAD_GetBluetoothAGVolume`, use the Windows CE Waveform Audio application programming interface (API).

Registry Keys

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\WaveDev\]
     "Prefix"="WAV"
     "Dll"="wavedev.dll"
     "Index"=dword:1
     "Order"=dword:a
     "Priority256"=dword:95
     ;volume settings
     "AudioProfile"=dword:0
     "PCMVol"=dword:FFFFFFFF ;WAV
     "MasterVol"=dword:FFFFFFFF
     "OutputRenderMonoOnly"=dword:1
     "IClass"="{A32942B7-920C-486b-B0E6-92A702A99B35}"  ; power managed device
     "SpeakerInVol"=dword:b800b800
     "SpeakerInMute"=dword:1
     "SpeakerOutVol"=dword:d555d555
     "SpeakerOutMute"=dword:0
     "HeadphonesInVol"=dword:b800b800
     "HeadphonesInMute"=dword:0
     "HeadphonesOutVol"=dword:d555d555
     "HeadphonesOutMute"=dword:0
     "HeadsetInVol"=dword:b800b800
     "HeadsetInMute"=dword:0
     "HeadsetOutVol"=dword:d555d555
     "HeadsetOutMute"=dword:0
     "Cellular_SpeakerInVol"=dword:b800b800
     "Cellular_SpeakerInMute"=dword:0
     "Cellular_SpeakerOutVol"=dword:d555d555
     "Cellular_SpeakerOutMute"=dword:0
     "Cellular_HeadsetInVol"=dword:b800b800
     "Cellular_HeadsetInMute"=dword:0
     "Cellular_HeadsetOutVol"=dword:d555d555
     "Cellular_HeadsetOutMute"=dword:0
     "Cellular_BluetoothInVol"=dword:b800b800
     "Cellular_BluetoothInMute"=dword:0
     "Cellular_BluetoothOutVol"=dword:d555d555
     "Cellular_BluetoothOutMute"=dword:0

     "RecordSel"=dword:0     ;SELECT_MIC           0x0000
                             ;SELECT_CD            0x0101
                             ;SELECT_VIDEO  0x0202
                             ;SELECT_AUX           0x0303
                             ;SELECT_LINE   0x0404
                             ;SELECT_STEREO 0x0505
                             ;SELECT_MONO   0x0606
                             ;SELECT_PHONE  0x0707
     "RecordVol"=dword:CCCCCCCC
     "PhoneVol"=dword:00000000
     "PCMVol"=dword:FFFFFFFF
     "MicVol"=dword:B800B800
     "LineVol"=dword:B800B800
     "MonoVol"=dword:d555d555
     "HeadphoneVol"=dword:CCCCCCCC
     "MasterVol"=dword:FFFFFFFF
```

```
"MasterMute"=dword:0
"HeadphoneMute"=dword:0
"MonoMute"=dword:0
"LineMute"=dword:0
"MicMute"=dword:0
"PCMMute"=dword:0
"PhoneMute"=dword:0
"RecordMute"=dword:0
```

ZYPAD_SetAudioProfile

```
BOOL ZYPAD_SetAudioProfile(DWORD Profile)
```

Parameters

`Profile` variable for the desired audio profile

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Configures the audio inputs and outputs. The current defined profiles are:

- `0x00 SPEAKER_AUDIO_PROFILE_INDEX`
- `0x01 HEADPHONES_AUDIO_PROFILE_INDEX`
- `0x02 HEADSET_AUDIO_PROFILE_INDEX`
- `0x03 BLUETOOTH_AUDIO_PROFILE_INDEX`
- `0x04 CELLULAR_SPEAKER_AUDIO_PROFILE_INDEX //With Speaker and Mic`
- `0x05 CELLULAR_HEADSET_AUDIO_PROFILE_INDEX //With Headset`
- `0x06 CELLULAR_BLUETOOTH_AUDIO_PROFILE_INDEX //With Bluetooth`

Gets the current audio profile, compares it to the desired profile, and configures the audio inputs and outputs if there are desired changes.

ZYPAD_GetAudioProfile

```
BOOL ZYPAD_GetAudioProfile(PDWORD pdwProfile)
```

Parameters

`pdwProfile` pointer to a variable for the current audio profile

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Retrieves the current audio profile. For the current defined profiles, see `ZYPAD_SetAudioProfile`.

To get extended error information, call `GetLastError`.

ZYPAD_GetAudioProfileCaps

```
BOOL ZYPAD_GetAudioProfileCaps(PDWORD pdwCaps)
```

Parameters

`pdwCaps` pointer to a variable for the current audio profile capabilities

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Retrieves the current audio profile capabilities. The defined audio profile capabilities are:

- `0x01L AUDIO_PROFILE_RECORD`
- `0x02L AUDIO_PROFILE_INPUT_BOOST`

To get extended error information, call `GetLastError`.

ZYPAD_SetAudioInVolume

```
BOOL WL1100_SetAudioInVolume(DWORD dwVolume)
```

Parameters

`dwVolume` variable for the audio input volume level
High_Word|Low_Word -- Left_Volume|Right_Volume

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Sets the input path (Left/Right) volume for the current profile.

ZYPAD_GetAudioInVolume

```
BOOL ZYPAD_GetAudioInVolume(PDWORD pdwVolume, BOOL bPhysical)
```

Parameters

`pdwVolume` pointer to a variable for the audio input volume level

`bPhysical` if TRUE, to read physical real value of volume level
if FALSE, to read registry setting of volume level

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Retrieves the input path (Left/Right) volume for the current audio profile.

To get extended error information, call `GetLastError`.

ZYPAD_SetAudioInMute

```
BOOL ZYPAD_SetAudioInMute(DWORD dwMute)
```

Parameters

`dwMute`	if 0 the audio input is not muted, otherwise it is muted, High_Word|Low_Word -- Left_Mute|Right_Mute

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Sets the input path (Left/Right) mute for the current audio profile.

ZYPAD_GetAudioInMute

```
BOOL ZYPAD_GetAudioInMute(PDWORD pdwMute, BOOL bPhysical)
```

Parameters

`pdwMute`	pointer to a variable for the audio input mute setting
`bPhysical`	if TRUE, to read physical real value of mute setting if FALSE, to read registry setting of mute setting

Return

Returns TRUE on success or FALSE otherwise.

Remarks

Retrieves the input path (Left/Right) mute settings the current audio profile. For valid values of the input mute settings, see `ZYPAD_SetAudioInMute`.

To get extended error information, call `GetLastError`.

ZYPAD_SetAudioInBoost

```
BOOL ZYPAD_SetAudioInBoost(DWORD dwBoost)
```

Parameters

`dwBoost`	if 0 the audio input boost is disabled, otherwise it is enabled

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Sets the input (record) boost setting for the current profile.

ZYPAD_GetAudioInBoost

```
BOOL ZYPAD_GetAudioInBoost(PDWORD pdwBoost)
```

Parameters

`pdwBoost` pointer to a variable for the audio input boost setting

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Retrieves the input (record) boost setting for the current audio profile. For valid values of the input boost settings, see `ZYPAD_SetAudioInBoost`.

To get extended error information, call `GetLastError`.

ZYPAD_SetAudioOutVolume

```
BOOL WL1100_SetAudioOutVolume(DWORD dwVolume)
```

Parameters

`dwVolume` variable for the audio output volume level,
High_Word|Low_Word -- Left_Volume|Right_Volume

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Sets the output path (Left/Right) volume for the current audio profile.

ZYPAD_GetAudioOutVolume

```
BOOL ZYPAD_GetAudioOutVolume(PDWORD pdwVolume, BOOL bPhysical)
```

Parameters

`pdwVolume` pointer to a variable for the audio output volume level

`bPhysical` if TRUE, to read physical real value of volume level
if FALSE, to read registry setting of volume level

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Retrieves the output path (Left/Right) volume for the current audio profile.

To get extended error information, call `GetLastError`.

ZYPAD_SetAudioOutMute

```
BOOL ZYPAD_SetAudioOutMute(DWORD dwMute)
```

Parameters

`dwMute`	if 0 the audio output is not muted, otherwise it is muted High_Word|Low_Word -- Left_Mute|Right_Mute

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Sets the output path (Left/Right) mute for the current audio profile.

ZYPAD_GetAudioOutMute

```
BOOL ZYPAD_GetAudioOutMute(PDWORD pdwMute, BOOL bPhysical)
```

Parameters

`pdwMute`	pointer to a variable for the audio output mute setting
`bPhysical`	if TRUE, to read physical real value of mute setting if FALSE, to read registry setting of mute setting

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Retrieves the output path (Left/Right) mute settings for the current audio profile. For valid values of the output mute settings, see `ZYPAD_SetAudioOutMute`.

To get extended error information, call `GetLastError`.

ZYPAD_EnableBluetoothAG

```
BOOL ZYPAD_EnableBluetoothAG(BOOL Enable)
```

Parameters

`Enable`	if TRUE, to enable the Bluetooth AG Gateway if FALSE, to disable the Bluetooth AG Gateway

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Enables or disables the Bluetooth AG Gateway.

ZYPAD_SetBluetoothAGVolume

```
BOOL ZYPAD_SetBluetoothAGVolume(USHORT usDevice, USHORT usVolume)
```

Parameters

`usDevice`	if 0, to set volume setting for the microphone if 1, to set volume setting for the speaker
`usVolume`	variable for the volume setting in the range of 0 -TBD

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Sets the volume for the Bluetooth AG microphone or speaker.

ZYPAD_GetBluetoothAGVolume

```
BOOL ZYPAD_GetBluetoothAGVolume(USHORT usDevice, PUSHORT pusVolume)
```

Parameters

`usDevice`	if 0, to get volume setting for the microphone if 1, to get volume setting for the speaker
`pusVolume`	pointer to a variable for the current volume setting

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Retrieves the current volume for the Bluetooth AG microphone or speaker.

API Reference: Communication

Wi-Fi

Configurations of the Zypad WL15xx can include an integrated wireless module. The Wi-Fi functions control operation of this module.

Registry Keys

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\SDHC2]
     "CardDetectIRQGpioPin"=dword:68
     "StatusAtBoot"=dword:1        ;0 = power off at boot, 1 = power on at boot
     "StatusInSuspend"=dword:0     ;0 = power off during Suspend mode,
                                   ;1 = power on during Suspend mode
     "FastPathDisabled"=dword:1    ;Disabled Fast Path to have Summit WiFi card work
     "DisableSimuEjectInsert"=dword:1   ;WiFi card will be always inserted
```

ZYPAD_SetWiFiPower

```
BOOL ZYPAD_SetWiFiPower(BOOL Enable)
```

Parameters

`Enable` if TRUE, to turn on the Wi-Fi module power
if FALSE, to turn off the Wi-Fi module power

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks:

Turns the Wi-Fi module power on or off. If the power is turned off, this function calls `ZYPAD_WiFiSimuCardRemove()` to remove the SD card prior to power off.

If the power is turned on, the Cellular/Wi-Fi LED is on. If the power is turned off and the Cellular device power is off, the Cellular/Wi-Fi LED is off.

ZYPAD_GetWiFiPower

```
BOOL ZYPAD_GetWiFiPower(PBOOL pEnabled)
```

Parameters

`pEnabled` pointer to a variable for the current value of the Wi-Fi module power enable output

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the current value of the Wi-Fi module power enable output. If TRUE, the Wi-Fi module power is enabled. If FALSE, the Wi-Fi module power is disabled.

ZYPAD_SetWiFiBootPower

```
BOOL ZYPAD_SetWiFiBootPower(BOOL Enable)
```

Parameters

`Enable` if TRUE, to turn on the Wi-Fi module power at boot
if FALSE, to turn off the Wi-Fi module power at boot

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Writes the registry key that controls the Wi-Fi module power at system boot and commits the changes to persistent storage. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\SDHC2] "StatusAtBoot"`.

ZYPAD_GetWiFiBootPower

```
BOOL ZYPAD_GetWiFiBootPower(PBOOL pEnabled)
```

Parameters

`pEnabled` pointer to a variable for the Wi-Fi module power setting when the system boots

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the registry key that controls the Wi-Fi module power at system boot. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\SDHC2] "StatusAtBoot"`.

ZYPAD_SetWiFiSleepPower

```
BOOL ZYPAD_SetWiFiSleepPower(BOOL Enable)
```

Parameters

`Enable` if TRUE, to turn on the Wi-Fi module power during Suspend mode
if FALSE, to turn off the Wi-Fi module power during Suspend mode

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Writes the registry key that controls the Wi-Fi module power during Suspend mode and commits the changes to persistent storage. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\SDHC2] "StatusInSuspend"`.

ZYPAD_GetWiFiSleepPower

```
BOOL ZYPAD_GetWiFiSleepPower(PBOOL pEnabled)
```

Parameters

`pEnabled` pointer to a variable for the Wi-Fi module power setting when the system is in Suspend mode

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the registry key that controls the Wi-Fi module power when the system is in Suspend mode. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\SDHC2] "StatusInSuspend"`.

ZYPAD_SetWiFiWait

```
BOOL ZYPAD_SetWiFiWait(BOOL enabled)
```

Parameters

`enabled` if TRUE, to stop the Wi-Fi module
if FALSE, to start the Wi-Fi module

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks:

Sets or clears the Wi-Fi module enable output to start or stop the module.

ZYPAD_ResetWiFi

```
BOOL ZYPAD_ResetWiFi(void)
```

Parameters

none

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Toggles the Wi-Fi module card detect input/output to simulate card remove/insert action.

ZYPAD_GetWiFiActive

```
BOOL ZYPAD_GetWiFiActive(PBOOL pEnabled)
```

Parameters

`pEnabled` pointer to a variable for the current value of the Wi-Fi module activity input.

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the current value of the Wi-Fi module activity input. If TRUE, there is Wi-Fi activity. If FALSE, there is no Wi-Fi activity.

ZYPAD_WiFiSimuCardRemove

```
BOOL ZYPAD_WiFiSimuCardRemove(void)
```

Parameters

none

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Simulates card remove action.

ZYPAD_WiFiSimuCardRmvIns

```
BOOL ZYPAD_WiFiSimuCardRmvIns(void)
```

Parameters

none

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Simulates card insert action.

Cellular

Configurations of the Zypad WL15xx can include an integrated cellular module. The cellular functions control operation of this module.

Registry Keys

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial]
        "Order"=dword:4
        "StatusAtBoot"=dword:1      ;0 = turn off, 1 = turn on
        "StatusRunning"=dword:1     ;0 = enable, 1 = disable
        "StatusInSuspend"=dword:0   ;0 = turn off, 1 = do not turn off

[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\PMZ]
        "Dll"="pmz.dll"
        "Order"=dword:3
        "Index"=dword:1
        "Prefix"="PMZ"
        "WiFiWakeupReStart"=dword:0                ; 0 = disable, 1 = enable
        "WiFiBootUpReStart"=dword:0                ; 0 = disable, 1 = enable
        "ShowBuildDate"=dword:0
        "PriorityPowerDownIntThread"=dword:61      ;0x61=97 CE Device Driver highest
        "PriorityBatteryRemovedIntThread"=dword:61;0x61=97 CE Device Driver highest
        "PriorityLEDThread"=dword:64               ;0x64
        "DebugRedLEDBlinking"=dword:1              ;0 = disable, 1 = enable
```

ZYPAD_EnableCellularPower

```
BOOL ZYPAD_EnableCellularPower(BOOL Enable)
```

Parameters

`Enable` if TRUE, to turn on the Cellular device power
if FALSE, to turn off the Cellular device power

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks:

Turns the Cellular device power on or off.

If the power is turned on, the Cellular/Wi-Fi LED is on. If the power is turned off and the Wi-Fi module power is off, the Cellular/Wi-Fi LED is off.

Notes:
This function is reserved for OS use only. It is not available for application use.

ZYPAD_SetCellularPower

```
BOOL ZYPAD_SetCellularPower(BOOL Enable)
```

Parameters

`Enable` if TRUE, to turn on the Cellular device power
if FALSE, to turn off the Cellular device power

Return Value

Returns TRUE

Remarks:

Sets an event to stop or start the Cellular device during the normal system running period.

ZYPAD_GetCellularPower

```
BOOL ZYPAD_GetCellularPower(PBOOL pEnabled)
```

Parameters

`pEnabled` pointer to a variable for the current value of the Cellular device power enable

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the current value of the Cellular device power enable output. If TRUE, the Cellular device power is enabled. If FALSE, the Cellular device power is disabled.

ZYPAD_SetCellularRunningStatus

```
BOOL ZYPAD_SetCellularRunningStatus(BOOL Enable)
```

Parameters

`Enable` if TRUE, to enable the Cellular controller
if FALSE, to disable the Cellular controller

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Writes the registry key that controls the Cellular enable and commits the changes to persistent storage. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\Serial] "StatusRunning"`.

ZYPAD_GetCellularRunningStatus

```
BOOL ZYPAD_GetCellularRunningStatus(PBOOL pEnabled)
```

Parameters

`pEnabled` pointer to a variable for the current Cellular controller enable

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the registry key that controls the Cellular enable. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\Serial] "StatusRunning"`.

ZYPAD_SetCellularBootPower

```
BOOL ZYPAD_SetCellularBootPower(BOOL Enable)
```

Parameters

`Enable`	if TRUE, to turn on the Cellular device power at boot if FALSE, to turn off the Cellular device power at boot

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Writes the registry key that controls the Cellular device power at system boot and commits the changes to persistent storage. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\Serial] "StatusAtBoot"`.

ZYPAD_GetCellularBootPower

```
BOOL ZYPAD_GetCellularBootPower(PBOOL pEnabled)
```

Parameters

`pEnabled`	pointer to a variable for the Cellular device power setting when the system boots

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the registry key that controls the Cellular device power at system boot. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\Serial] "StatusAtBoot"`.

ZYPAD_SetCellularSleepPower

```
BOOL ZYPAD_SetCellularSleepPower(BOOL Enable)
```

Parameters

`Enable`	if TRUE, to turn on the Cellular device power during Suspend mode if FALSE, to turn off the Cellular device power during Suspend mode

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Writes the registry key that controls the Cellular device power during Suspend mode and commits the changes to persistent storage. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\Serial] "StatusInSuspend"`.

ZYPAD_GetCellularSleepPower

```
BOOL ZYPAD_GetCellularSleepPower(PBOOL pEnabled)
```

Parameters

`pEnabled` pointer to a variable for the Cellular device power setting when the system is in Suspend mode

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the registry key that controls the Cellular device power when the system is in Suspend mode. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\Serial] "StatusInSuspend"`.

ZYPAD_ResetCellular

```
BOOL ZYPAD_ResetCellular(void)
```

Parameters

none

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Toggles the Cellular reset output to reset the Cellular device.

Notes:
This function is reserved for OS use only. It is not available for application use.

ZYPAD_SetCellularAPN

```
BOOL ZYPAD_SetCellularAPN(LPCWSTR lpszAPNSetting)
```

Parameters

`lpszAPNSetting` APN AT command string

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks:

Sets the Cellular device APN by sending the APN setting AT command to the device. This function also writes the APN setting to the registry key `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\Serial] "APNSetting"` and commits the changes to persistent storage.

ZYPAD_SendCellularATCommand

```
BOOL ZYPAD_SendCellularATCommand(LPCWSTR lpszATCommand)
```

Parameters

`lpszATCommand` AT command string

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks:

Sends the Cellular device an AT command. The Cellular device is at COM8.

Bluetooth

Configurations of the Zypad WL15xx can include an integrated Bluetooth module. Using the Bluetooth functions, you can enable or disable the Bluetooth module at boot and during normal system operation.

Registry Keys

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial3]
        "Order"=dword:4
        "StatusAtBoot"=dword:1          ;0 = turn off, 1 = turn on
        "StatusInSuspend"=dword:0       ;0 = turn off, 1 = do not turn off
        "UseHeadset"=dword:0
```

ZYPAD_SetBluetoothPower

```
BOOL ZYPAD_SetBluetoothPower(BOOL Enable)
```

Parameters

`Enable` if TRUE, to turn on the Bluetooth device power
if FALSE, to turn off the Bluetooth device power

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks:

Turns the Bluetooth device power on or off by writing to the power enable, CODEC enable, and reset signals.

ZYPAD_GetBluetoothPower

```
BOOL ZYPAD_GetBluetoothPower(PBOOL pEnabled)
```

Parameters

`pEnabled` pointer to a variable for the current value of the Bluetooth power enable output

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the current value of the Bluetooth power enable output. If TRUE, the Bluetooth device power is enabled. If FALSE, the Bluetooth device power is disabled.

ZYPAD_SetBluetoothBootPower

```
BOOL ZYPAD_SetBluetoothBootPower(BOOL Enable)
```

Parameters

`Enable` if TRUE, to turn on the Bluetooth device power at boot
if FALSE, to turn off the Bluetooth device power at boot

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Writes the registry key that controls the Bluetooth device power at system boot and commits the changes to persistent storage. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\Serial3] "StatusAtBoot"`.

ZYPAD_GetBluetoothBootPower

```
BOOL ZYPAD_GetBluetoothBootPower(PBOOL pEnabled)
```

Parameters

`pEnabled` pointer to a variable for the Bluetooth device power setting when the system boots

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the registry key that controls the Bluetooth device power at system boot. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\Serial3] "StatusAtBoot"`.

ZYPAD_SetBluetoothSleepPower

```
BOOL ZYPAD_SetBluetoothSleepPower(BOOL Enable)
```

Parameters

`Enable` if TRUE, to turn on the Bluetooth device power during Suspend Mode
if FALSE, to turn off the Bluetooth device power during Suspend Mode

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Writes the registry key that controls the Bluetooth device power during Suspend mode and commits the changes to persistent storage. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\Serial3] "StatusInSuspend"`.

ZYPAD_GetBluetoothSleepPower

```
BOOL ZYPAD_GetBluetoothSleepPower(PBOOL pEnabled)
```

Parameters

`pEnabled` pointer to a variable for the Bluetooth device power setting when the system is in Suspend mode

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the registry key that controls the Bluetooth device power when the system is in Suspend mode. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\Serial3] "StatusInSuspend"`.

ZYPAD_StartBluetooth

```
BOOL ZYPAD_StartBluetooth(void)
```

Parameters

none

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks:

Starts the Bluetooth device. While the Bluetooth device starts up, the Bluetooth LED blinks. After the device is active and communicating, the LED remains on.

ZYPAD_StopBluetooth

```
BOOL ZYPAD_StopBluetooth(void)
```

Parameters

none

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks:

Stops the Bluetooth device and turns off the Bluetooth LED.

ZYPAD_ResetBluetooth

```
BOOL ZYPAD_ResetBluetooth(void)
```

Parameters

none

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Toggles the signal to reset the Bluetooth device.

ZYPAD_GetBluetoothActive

```
BOOL ZYPAD_GetBluetoothActive(PBOOL pEnabled)
```

Parameters

`pEnabled` pointer to a variable for the current value of the Bluetooth device activity input

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the current value of the Bluetooth device activity input. If TRUE, there is Bluetooth activity. If FALSE, there is no Bluetooth activity.

ZYPAD_SetBluetoothUseHeadset

```
BOOL ZYPAD_SetBluetoothUseHeadset(BOOL Enable)
```

Parameters

`Enable` if TRUE, to enable the use of a Bluetooth headset
if FALSE, to disable the use of a Bluetooth headset

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Writes the registry key that controls the setting for using a Bluetooth headset and commits the changes to persistent storage. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\Serial3] "UseHeadset"`.

ZYPAD_GetBluetoothUseHeadset

```
BOOL ZYPAD_GetBluetoothUseHeadset(PBOOL pEnabled)
```

Parameters

`pEnabled` pointer to a variable for the Bluetooth headset use setting

Return Value

Returns TRUE on success or FALSE otherwise.

Remarks

Reads the registry key that controls the setting for using a Bluetooth headset. This registry key is `[HKEY_LOCAL_MACHINE\Drivers\\BuiltIn\\Serial3] "UseHeadset"`.

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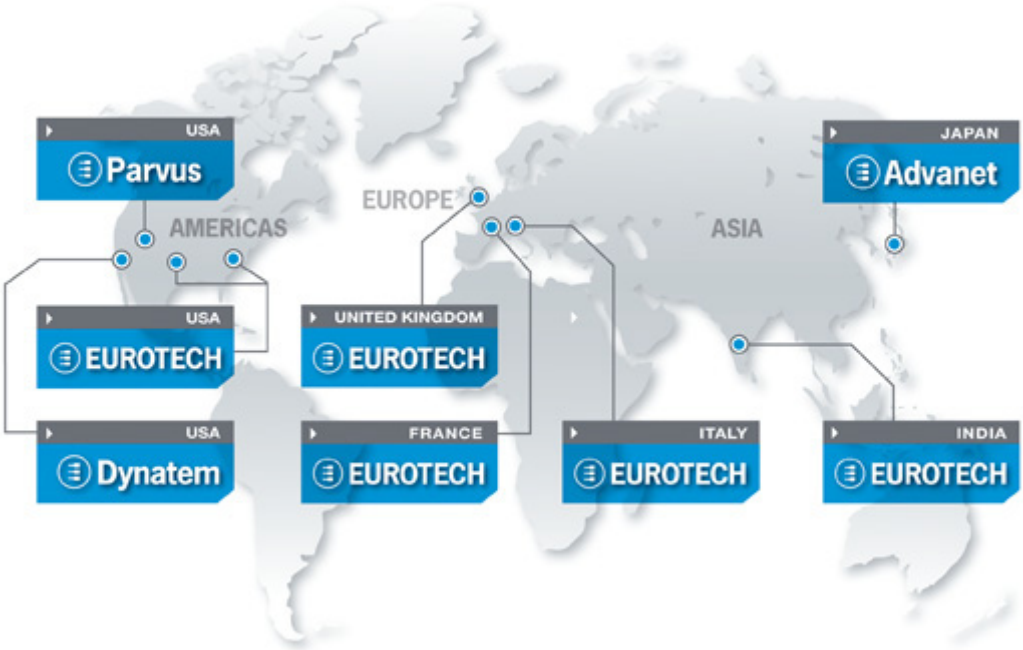

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