Developers guidelines

DEVELOPER WORLD THE FAST TRACK FROM MIND TO MARKET

August 2009

Bluetooth™ HID remote control

in Sony Ericsson phones

Sony Ericsson

Preface

Purpose of this document

This document describes how to create and maintain Bluetooth™ Human Interface Device (HID) configuration files for Sony Ericsson mobile phones.

The document is intended for content providers who want guidelines for the optimal creation of HID configuration files and the elements required for an appealing remote control application.

People who can benefit from this document are:

- Software developers
- Operators and service providers
- Content providers

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Sony Ericsson Developer World

At www.sonyericsson.com/developer, developers find the latest technical documentation and development tools such as phone White papers, Developers guidelines for different technologies, Getting started tutorials, SDKs (Software Development Kits) and tool plugins. The Web site also features news articles, go-to-market advice, moderated discussion forums offering free technical support and a Wiki community sharing expertise and code examples.

For more information about these professional services, go to the Sony Ericsson Developer World Web site.

Document conventions

Products

Sony Ericsson mobile phones are referred to in this document using generic names as follows:

Generic names Series	**Sony Ericsson mobile phones**
C510	C510, C510c, C510a
C702	C702, C702c, C702a
C901	C901, C901a, C901 GreenHeart™
C902	C902, C902c
C903	C903, C903a
C905	C905, C905c, C905a
G502	G502, G502c
G705	G705, G705u
Jalou™	Jalou™ F100i, BeJoo™ F100i
K320	K320i, K320c
K510	K510i, K510c
K530	K530i
K550	K550i, K550c, K550im
K600	K600i, K608i, V600i
K610	K610i, K610c, K610im, K618i
K630	K630i

Generic names Series	**Sony Ericsson mobile phones**
K660	K660i
K700	K700i, K700c
K750	K750i, K750c, D750i
K770	K770i
K790	K790i, K790c, K790a
K800	K800i, K800c
K810	K810i, K818c
K850	K850i, K858c
Naite™	Naite™ J105i, Naite™ J105a
S500	S500i, S500c
S700	S700i, S700c, S710a
T650	T650i, T658c
T700	T700
T707	T707, T707a
T715	T715, T715a
V640	V640i
V800	V800, Vodafone 802SE
W300	W300i, W300c
W508	W508, W508c, W508a, W518a
W550	W550i, W550c
W580	W580i, W580c
W595	W595, W595s
W600	W600i
W610	W610i, W610c
W660	W660i
W700	W700i, W700c
W705	W705, W705u
W710	W710i, W710c
W715	W715
W760	W760i, W760c
W800	W800i, W800c

Generic names Series	**Sony Ericsson mobile phones**
W810	W810i, W810c, W810a
W830	W830i, W830c
W850	W850i, W850c
W880	W880i, W888c
W890	W890i
W900	W900i
W902	W902
W910	W910i, W908c
W980	W980i
W995	W995, W995a
Z520	Z520i, Z520c, Z520a
Z525	Z525a
Z530	Z530i, Z530c
Z550	Z550i, Z550c, Z550a
Z558	Z558i, Z558c
Z610	Z610i
Z710	Z710i, Z710c
Z750	Z750i
Z770	Z770i
Z780	Z780i, Z780a
Z800	Z800i

Terminology and abbreviations

FTP	File Transfer Profile
HID	Human Interface Device
HTML	Hypertext Markup Language
MMS	Multimedia Messaging Service
OBEX	Object Exchange protocol
OPP	Object Push Profile
TAR	Tape Archiver
USB	Universal Serial Bus
WAP	Wireless Application Protocol
XML	Extensible Markup Language

Typographical conventions

The following typographical conventions are used in this document.

XML element names are written inside “<“ and “>”:
<ACTION>

XML attributes are written inside double quotes:
“MODIFIERS”

Code is written in Courier font:

```
<ACTION>
....
</ACTION>
```

Trademarks and acknowledgements

Document history

Change history		
2004-05-10	R1A	First edition
2004-05-27	R1B	Revised first edition
2004-10-08	R2A	Second edition. V800 series added
2004-10-26	R2B	Minor editorial changes
2005-04-15	R3A	Third edition. Z800 series added
2005-08-04	R4A	Fourth edition. K750, W800, Z520, K600, S600 and W600 series added
2005-08-08	R4B	Fourth revised edition. S600 series changed to W550 series
2005-09-13	R4C	Fourth revised edition. Minor editorial changes
2005-09-22	R4D	Fourth revised edition. Minor editorial changes
2005-10-24	R5A	Fifth edition. W900 series added
2005-10-27	R5B	Fifth revised edition. Minor editorial changes
2006-01-04	R6A	Sixth edition. W810 series added
2006-02-13	R7A	Seventh edition. K610 series added
2006-02-28	R8A	Eighth edition. K800, K790, Z530, W300 and K510 series added
2006-03-10	R8B	Eighth, revised edition. Minor changes

Change history		
2006-04-04	R9A	Ninth edition. W800 and Z525 series added
2006-05-23	R10A	Tenth edition. Z550, W850, Z710 and W710 series added
2006-06-19	R11A	11th edition. K610im added
2006-08-22	R12A	12th edition. K618i and Z610 series added
2006-09-25	R13A	13th edition. W830, Z558 and K320 series and the Z550a model added
2007-03-13	R14A	14th edition. W880, K550, W610, K810 and W660 series added
2007-04-24	R15A	15th edition. W580 and Z750 series added
2007-06-14	R16A	16th edition. K530, K850, S500, T650 and W910 series added
2007-08-21	R17A	17th edition. K770 series added
2007-09-18	R18A	18th edition. V640 series added
2007-11-06	R19A	19th edition. K630, K660 and W890 series added
2008-01-06	R20A	20th edition. W760 series added
2008-02-20	R21A	21st edition. C702, C902, W980 and Z770 series added
2008-05-20	R22A	22nd edition. G502 and Z780 series added
2008-06-20	R23A	23rd edition. C905 series added
2008-07-22	R24A	24th edition. T700, W595 and W902 series added
2008-11-06	R25A	25th edition. G705 and W705 series added. Editorial changes
2009-03-26	R26A	26th edition. C510, C901, C903, T707, W508, W715 and W995 series added
2009-06-25	R27A	27th edition. Naite™ and T715 series added
2009-08-12	R28A	28th edition. Jalou™ series added

Contents

Overview

The Sony Ericsson mobile phones referred to in this document all include the functionality for remote control of computer applications using Bluetooth HID (Human Interface Device) profile.

Bluetooth HID remote control

The Bluetooth HID (Human Interface Device) profile is built on the USB (Universal Serial Bus) HID standard. Bluetooth mouse devices, keyboards and other devices for computer remote control can be developed using this standard.

Through the *Bluetooth Specification, Human Interface Device (HID) Profile v1.0,* (https://www.bluetooth.org), a mobile phone can act as a HID device. When connected to a computer, the mobile phone acts like a combined keyboard and mouse. By assigning a combination of computer keyboard key presses to keys on the mobile phone keypad, the mobile phone can be used as a remote control device for computer applications.

The mobile phone keypad is configured for control of a computer application through a HID configuration file. This is a TAR file containing two other files – one XML file for the keypad key assignments and one image file containing the image to be shown on the phone screen. The image can, for example, display what functions are assigned to each key on the mobile phone keypad.

HID configuration files can be downloaded to the mobile phone using standard file transfer mechanisms. Users can modify configuration files using a computer. A few configuration files are pre-loaded into the mobile phone, for example, configurations that allow the user to navigate on a computer desktop or control presentation and media player applications.

User settings

The following keys can be configured through the HID configuration files:
0-9, **#**, *, **volume up,** and **volume down**.
For each of these keys, a UsageID can be assigned (see the *Universal Serial Bus, HID Usage Tables v1.11* http://www.usb.org/developers/devclass_docs/Hut1_11.pdf).

The navigation keys (joystick) and the two selection keys can also be configured. By default, they provide functions for moving the cursor and clicking the left and right mouse buttons.

Communication methods

The HID based remote control function uses Bluetooth communication.

HID configuration files can be transferred to mobile phones via the following communication methods:

- Download via Bluetooth wireless technology, Infrared, USB/serial cable or Over The Air (OTA) with the built in mobile browser client in the phone.
- Transfer from other mobile phones via Bluetooth wireless technology, Infrared or MMS.
- As email attachments.

Architecture

This chapter contains detailed information about the Bluetooth HID remote control implementation in Sony Ericsson mobile phones that support this feature.

The remote control menu

The ***Remote control*** menu in the phone is found under ***Connectivity/Bluetooth*** in the K700, S700, V800 and Z800 series. In the other phones mentioned in this document, the menu is found under ***Entertainment***. Here the user can see what HID configurations files are installed on the mobile phone. The user can choose to delete an HID configuration file or send it to another device.

Installing a mobile phone as an HID device

A Bluetooth connection between a mobile phone and a computer (pairing) can be initiated from either device. In some computer applications, the user has to explicitly enable the HID service for use with the mobile phone. Once the phone and computer are paired, the devices are automatically connected via the Bluetooth interface whenever they are in range and the Bluethooth transmitters/receivers are enabled.

Initiating a connection from a mobile phone

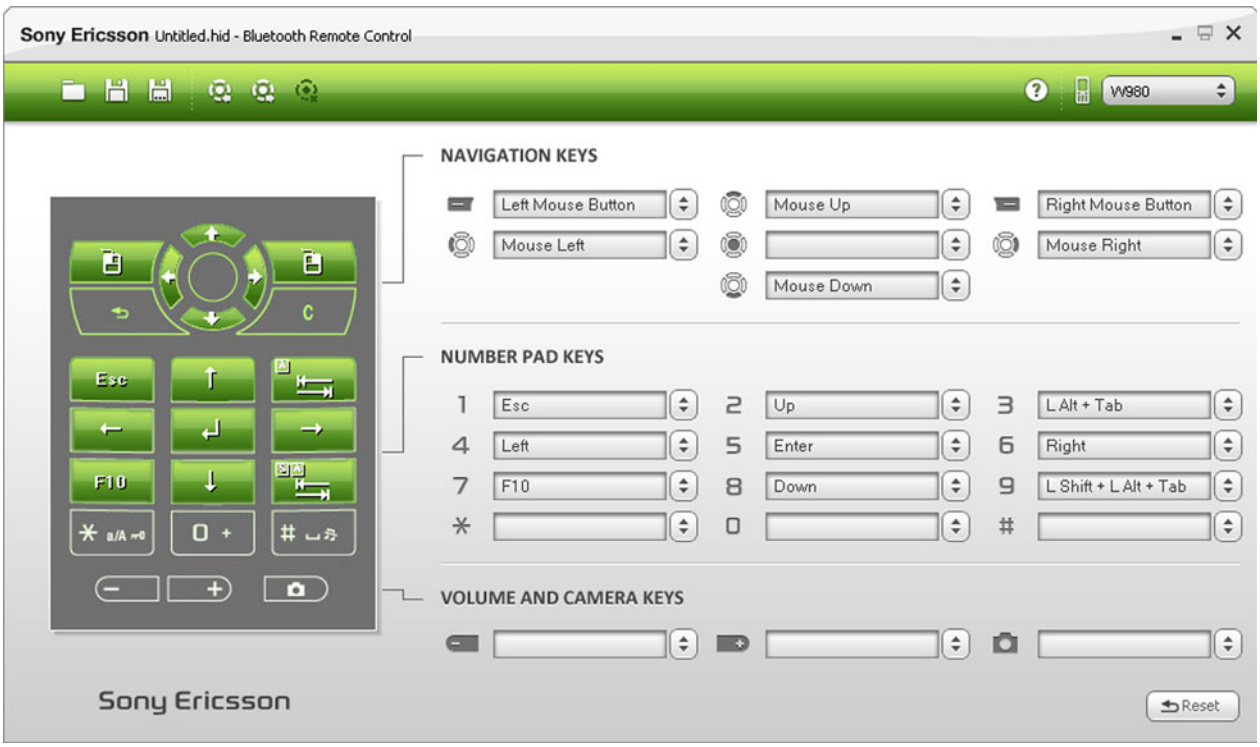
Selecting an HID configuration file in the phone menu starts the HID application. The screen and keypad are configured according to the settings in the selected file. When the HID application starts, the mobile phone first tries to connect to the last HID device it was connected to. If that connection is not available, the mobile phone prompts the user to select a device to connect to.

Initiating a connection from a computer

When a computer (or other HID device) initiates an HID connection to the mobile phone, the remote control menu in the phone pops up, and the user can select an HID configuration file.

Sony Ericsson Bluetooth Remote Control software

The Sony Ericsson *Bluetooth Remote Control* software is a personal computer based application allowing users to design Bluetooth remote control configurations for Sony Ericsson mobile phones. The user can create new configurations, edit existing configurations and save configuration files to be installed in the phone.



The Bluetooth Remote Control software is available for download at www.sonyericsson.com/developer.

The application is not a graphic editing tool, that is, it can not be used to create or edit the image to be shown on the phone display.

The image above shows the main window of the Bluetooth Remote Control application ver. 4.00 in Microsoft® Windows®, with the W980 phone selected for configuration editing and preview. When the application is run on Mac® OS its appearance is slightly different.

The icons to the left in the top panel are used to manage configuration and image files:

- Open a configuration file.
- Save the current settings in the configuration file.
- Save the current configuration with another file name (Save as...).
- Import a keypad image file.
- Export the current keypad image to a file.

- Remove the current keypad image and replace it with the standard image for the currently selected phone model.

- The list selectors are used to map keys on the phone keypad to keys on the computer keyboard or to mouse actions.

Note: In version 4.00 or later of the Bluetooth Remote Control software, when working on a configuration file with the standard image (included with the application) for the selected phone model, keys that have been assigned to actions are highlighted and a text or symbol representing the action is shown in the image. If there is room, also symbols for modifier keys (Ctrl, Alt, Shift, and so on) are shown in the top left corner of the key. In earlier versions of the software, assigned keys are highlighted, but texts and symbols on the keys are not changed.

When the configuration is saved, the standard image file is named <phone model>-btrc-std-background.jpg, for example, W980-btrc-std-background.jpg.

Note: A **custom** image to import for use in a configuration should **not** be named according to the convention in the above note. The reason is that the Bluetooth Remote Control application in this case will assume that it actually is a standard image when reopening the configuration file, and replace the custom image with a standard based image when resaving the configuration.

Note: A configuration created for one phone model can be installed in another model, provided that the mapped keys exist in both phones. It is also preferred that the image size match the display sizes of both phones.

HID configuration files

Apart from using the Sony Ericsson Bluetooth Remote Control software, developers may create and edit HID configuration files using standard text and graphics editors, as outlined below.

File structure

The HID configuration file used by the mobile phone is identified by the extension ".hid". It is actually a TAR (Tape Archive) file containing one image file and one keypad configuration file (XML file). The image is shown on the mobile phone screen when the HID configuration file is in use. The keypad configuration file defines what codes the mobile phone sends when a key is pressed.

Image formats

The image in the HID configuration file can be in any size and format supported by the image viewer of the phone, for example JPG, JPEG, GIF or WBMP.

The image can, for example, be used to display what functions are assigned to each key on the keypad of the mobile phone.

There is no HID specific restriction to the size of the image used in a HID configuration. It is recommended to make the image fit the screen size of the particular mobile phone.

Screen sizes:

- **128x160 pixels**: K320, K510, W300 and Z530
- **176x220 pixels**: K530, K550, K600, K610, K630, K700, K750, V640, V800, W550, W600, W610, W660, W700, W710, W800, W810, Z520, Z525, Z550, Z558, Z610, Z710 and Z800 series
- **240x320 pixels**: C510, C702, C901, C902, C903, C905, G502, G705, Jalou™, K660, K770, K790, K800, K810, K850, Naite™, S500, S700, T650, T700, T707, T715, W508, W580, W595, W705, W715, W760, W830, W850, W880, W890, W900, W902, W910, W980, W995, Z750, Z770 and Z780 series

Keypad configuration file

This section describes the XML elements and attributes supported in v1.0 of the Sony Ericsson HID device implementation.

The keypad configuration file is a text file with the extension ".kcf". The key mappings are defined using XML. The file has the following structure:

```
<SONY_ERICSSON_REMOTE_CONTROL_CONFIGURATION VERSION = "1.0" >
  <KEYMAP>
    <KEY_LSK>
      <ACTION>
        <MOUSE BUTTONS = "Left">
      </ACTION>
    </KEY_LSK>
    <KEY_DOWN>
      <ACTION>
        <MOUSE MOVEMENT = "Down">
      </ACTION>
    </KEY_DOWN>

...

    <KEY_1>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID "29">
      </ACTION>
    </KEY_1>
    <KEY_2>

...

  </KEYMAP>
</SONY_ERICSSON_REMOTE_CONTROL_CONFIGURATION>
```

<KEY_>

The following keys on the mobile phone keypad can be configured:

Value	Key
KEY_1	1
KEY_2	2
KEY_3	3
KEY_4	4

KEY_5	5
KEY_6	6
KEY_7	7
KEY_8	8
KEY_9	9
KEY_STAR	*
KEY_0	0
KEY_HASH	#
KEY_VOL_UP	+ (volume up)
KEY_VOL_DOWN	- (volume down)
KEY_CAM	Camera button
KEY_LSK	Left selection key
KEY_RSK	Right selection key
KEY_JOY	Pressing the navigation key **K850**: Middle selection key
KEY_LEFT	Pressing the navigation key left
KEY_RIGHT	Pressing the navigation key right
KEY_UP	Pressing the navigation key up
KEY_DOWN	Pressing the navigation key down

For each key, the action can be defined using any of the supported usage pages. In the current version, the following usage pages are supported:

- Generic desktop page for mouse functionality.
- Keyboard/Keypad page

See *Universal Serial Bus, HID Usage Tables v1.11* (http://www.usb.org/developers/devclass_docs/Hut1_11.pdf).

<ACTION>

Within the <ACTION> element, the action to be taken when the key is pressed is defined. In v1.0, only one action per key press can be performed.

When defining an action based on the keyboard page, the <KEYBOARD> element must be included.

When defining an action based on the Generic Desktop page, the <MOUSE> element must be included.

<KEYBOARD>

When defining the <KEYBOARD> element, **both** of the following attributes must be included:

- MODIFIERS
- USAGEID

MODIFIERS

The “MODIFIERS” attribute value is the decimal representation of a bit mask where each of the 8 bits, defined in the table below, can be set independently:

Bit	Value	Modifier Key
0	01	Left Ctrl
1	02	Left Shift
2	04	Left Alt
3	08	Left GUI
4	16	Right Ctrl
5	32	Right Shift
6	64	Right Alt
7	128	Right GUI

For example, Ctrl+Alt corresponds to the value 05 (01 + 04)

USAGEID

The “USAGEID” attribute values are defined for each usage page in the *Universal Serial Bus, HID Usage Tables v1.11* (http://www.usb.org/developers/devclass_docs/Hut1_11.pdf) document.

Example:

```
<KEY_1>
   <ACTION>
      <KEYBOARD MODIFIERS = "00" USAGEID "29">
   </ACTION>
</KEY_1>
```

<MOUSE>

When defining the <MOUSE> element, **one and only one** of the following attributes must be included:

- BUTTONS
- MOVEMENT

BUTTONS

Mouse button	Value
Left mouse button	`Left`
Right mouse button	`Right`

Example:

```
<KEY_LSK>
   <ACTION>
      <MOUSE BUTTONS = "Left">
   </ACTION>
```

```
</KEY_LSK>
```

MOVEMENT

Movement	Value
Move mouse cursor to the left	`Left`
Move mouse cursor to the right	`Right`
Move mouse cursor up	`Up`
Move mouse cursor down	`Down`
Move mouse cursor up and left	`UpLeft`
Move mouse cursor up and right	`UpRight`
Move mouse cursor down and left	`DownLeft`
Move mouse cursor down and right	`DownRight`

Example:

```
<KEY_DOWN>
   <ACTION>
      <MOUSE MOVEMENT = "Down">
   </ACTION>
</KEY_DOWN>
```

Configuration file transfer

HID configuration files can be transferred to a mobile phone using several methods just like any other file type. Files can be:

- Received through an OBEX PUT operation from a computer or another mobile phone via Bluetooth according to OPP or FTP, via Infrared or via cable.
- Downloaded Over The Air with the built in browser client or using an OBEX GET operation via Bluetooth according to FTP.
- Received as an email attachment or in an MMS message.

Configuration files can be transferred from the mobile phone to a computer or another mobile phone using an OBEX PUT operation via Bluetooth according to OPP or FTP, via Infrared or as an email attachment.

When using the Bluetooth File Transfer Protocol client on a remote device, the HID configuration files are found in the “Other” folder of the phone’s File Transfer Protocol server.

Configuration file MIME type

The MIME type of configuration files when received Over The Air or via MMS is *application/vnd.sonyericsson.rc-conf.*

Modifying configuration files

When transferred to a computer, a HID configuration file can be modified using available software. The preferred alternative may be to use the Sony Ericsson Bluetooth Remote Control software, but the process described below is also an option.

To open a TAR file, special archiver software is needed. Most zipping/unzipping utility programs can be used for unpacking. However, not all such utilities support archiving in the TAR format.

A user can modify the keypad configuration file or create a new one using a standard text editor, for example, Microsoft WordPad or Microsoft Notepad. After creating a keypad configuration file, the user has to ensure that the file extension is ".kcf" before adding it to the TAR file.

Image files may be edited or created using tools such as Microsoft Paint, or Microsoft Photo Editor.

After creating or modifying a TAR file, the user has to ensure that the file extension is ".hid" before transferring it to the mobile phone.

Mouse functionality

If the navigation key (joystick) and the two selection keys are not explicitly defined in the keypad configuration file, the mobile phone will by default assign mouse functionality to them according to the following:

- The navigation key is used to move the cursor. Pressing the navigation key corresponds to clicking the left mouse button.
- The left selection key corresponds to the left mouse button, including double-clicking. The right selection key corresponds to the right mouse button.
- Dragging and dropping is supported. A long press on the left selection key makes the "left mouse button pressed but not released". Selected object(s) can now be dragged by moving the navigation key in the desired direction. The dragged object is dropped by another press on the left selection key ("left mouse button released").

Examples of HID configuration files

This section contains some examples of HID configurations files for remote control of applications in Microsoft Windows.

Desktop

Functions

- Navigation as with the “up”, “down”, “right” and “left” arrow keys.
- Selection as with the “Enter” key.
- “Escape” key.
- “Alt-TAB” enables toggling between the last two used applications on the task bar.
- “Shift-Alt-TAB” enables cyclic movement between all applications on the task bar.
- “Windows” key opens the Start menu in Windows.
- ”F10” key enables access to the leftmost menu of the application in focus.
- “Page up” and “Page down” keys on the volume +/- keys.
- Launch applications with “Ctrl+Alt+2” or “Ctrl+Alt+1” set in the Shortcut key field of a shortcut on the Windows desktop.

Image displayed on the phone screen

K700 example

Keypad configuration (K700 example)

```
<SONY_ERICSSON_REMOTE_CONTROL_CONFIGURATION VERSION="1.0">
<KEYMAP>
    <KEY_1>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "29" />  <!-- 1= ESCAPE  -->
      </ACTION>
    </KEY_1>
    <KEY_2>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "52" />  <!-- 2= UP ARROW  -->
      </ACTION>
    </KEY_2>
    <KEY_3>
      <ACTION>
        <KEYBOARD MODIFIERS = "04" USAGEID = "2B" />  <!-- 3= ALT+TAB  -->
      </ACTION>
    </KEY_3>
    <KEY_4>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "50" />  <!-- 4= LEFT ARROW  -->
      </ACTION>
```

```
    </KEY_4>
    <KEY_5>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "28" />  <!-- 5= RETURN  -->
      </ACTION>
    </KEY_5>
    <KEY_6>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "4F" />  <!-- 6= RIGHT ARROW  -->
      </ACTION>
    </KEY_6>
    <KEY_7>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "43" />  <!-- 7= F10  -->
      </ACTION>
    </KEY_7>
    <KEY_8>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "51" />  <!-- 8= DOWN ARROW  -->
      </ACTION>
    </KEY_8>
    <KEY_9>
      <ACTION>
       <KEYBOARD MODIFIERS = "06" USAGEID = "2B" />  <!-- 9= ALT+SHIFT+TAB  -->
      </ACTION>
    </KEY_9>
    <KEY_0>
      <ACTION>
        <KEYBOARD MODIFIERS = "05" USAGEID = "1F" />  <!-- 0= CTRL+ALT+2   -->
      </ACTION>
    </KEY_0>
    <KEY_STAR>
      <ACTION>
        <KEYBOARD MODIFIERS = "05" USAGEID = "1E" />  <!-- *= CTRL+ALT+1  -->
      </ACTION>
    </KEY_STAR>
    <KEY_HASH>
      <ACTION>
        <KEYBOARD MODIFIERS = "08" USAGEID = "00" />  <!-- #= LEFT GUI  -->
      </ACTION>
    </KEY_HASH>
    <KEY_VOL_UP>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "4B" />  <!-- +=  PAGE UP -->
      </ACTION>
    </KEY_VOL_UP>
    <KEY_VOL_DOWN>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "4E" />  <!-- -=  PAGE DOWN  -->
      </ACTION>
    </KEY_VOL_DOWN>
</KEYMAP>
</SONY_ERICSSON_REMOTE_CONTROL_CONFIGURATION>
```

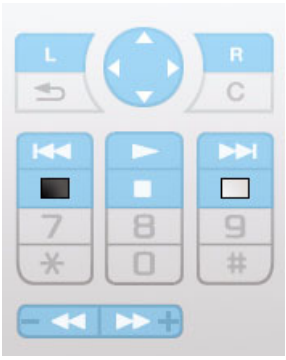
Presentation

Functions

- Start slide show mode.
- Leave slide show mode.
- Move to next slide (volume up key).
- Move to previous slide (volume down key).
- Black screen.
- White screen.

Image displayed on the phone screen

K700 example



Keypad configuration

```
<SONY_ERICSSON_REMOTE_CONTROL_CONFIGURATION VERSION="1.0">
  <KEYMAP>
    <KEY_1>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "4A" />  <!-- Go to first slide in
presentation -->
      </ACTION>
    </KEY_1>
    <KEY_2>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "3E" /> <!-- Start a slide show
-->
      </ACTION>
    </KEY_2>
    <KEY_3>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "4D" />  <!-- Go to last slide in
presentation -->
      </ACTION>
    </KEY_3>
    <KEY_4>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "05" />  <!-- Display a black
screen, or return to the slide show from a black screen -->
      </ACTION>
```

```
    </KEY_4>
    <KEY_5>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "29" />  <!-- End a slide show -->
      </ACTION>
    </KEY_5>
    <KEY_6>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "1A" />  <!-- Display a white
screen, or return to the slide show from a white screen -->
      </ACTION>
    </KEY_6>
    <KEY_VOL_UP>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "4E" />  <!-- Perform the next
animation or advance to the next slide -->
      </ACTION>
    </KEY_VOL_UP>
    <KEY_VOL_DOWN>
      <ACTION>
       <KEYBOARD MODIFIERS = "00" USAGEID = "4B" />  <!-- Perform the previous
animation or return to the previous slide -->
      </ACTION>
    </KEY_VOL_DOWN>
  </KEYMAP>
</SONY_ERICSSON_REMOTE_CONTROL_CONFIGURATION>
```

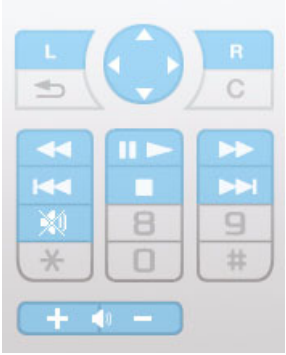
Media player

Functions

- “Play” starts playing the selected song/video.
- “Stop” stops playing the song/video.
- “Next” goes to next item and “Previous” goes to previous item.
- Rewind/fast forward (does not work in WMP).
- Increase or decrease volume using the volume +/- keys.

Image displayed on the phone screen

K700 example



Keypad configuration

```
<SONY_ERICSSON_REMOTE_CONTROL_CONFIGURATION VERSION = "1.0">
  <KEYMAP>
    <KEY_1>
      <ACTION>
        <KEYBOARD MODIFIERS = "01" USAGEID = "13"/> <!-- PLAY -->
      </ACTION>
    </KEY_1>
    <KEY_2>
      <ACTION>
        <KEYBOARD MODIFIERS = "01" USAGEID = "16"/> <!-- STOP -->
      </ACTION>
    </KEY_2>
    <KEY_3>
      <ACTION>
        <KEYBOARD MODIFIERS = "01" USAGEID = "05"/> <!-- PREV -->
      </ACTION>
    </KEY_3>
    <KEY_4>
      <ACTION>
        <KEYBOARD MODIFIERS = "01" USAGEID = "09"/> <!-- NEXT -->
      </ACTION>
    </KEY_4>
    <KEY_5>
      <ACTION>
        <KEYBOARD MODIFIERS = "03" USAGEID = "05"/> <!-- REWIND -->
      </ACTION>
```

```
    </KEY_5>
    <KEY_6>
      <ACTION>
        <KEYBOARD MODIFIERS = "03" USAGEID = "09"/> <!-- FAST FORWARD -->
      </ACTION>
    </KEY_6>
    <KEY_7>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "41"/> <!-- FAST FORWARD -->
      </ACTION>
    </KEY_7>
    <KEY_VOL_UP>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "43"/> <!-- VOL UP -->
      </ACTION>
    </KEY_VOL_UP>
    <KEY_VOL_DOWN>
      <ACTION>
        <KEYBOARD MODIFIERS = "00" USAGEID = "42"/> <!-- VOL DOWN -->
      </ACTION>
    </KEY_VOL_DOWN>
  </KEYMAP>
</SONY_ERICSSON_REMOTE_CONTROL_CONFIGURATION>
```

References

- The *Bluetooth Specification, Human Interface Device (HID) Profile v1.0* (https://www.bluetooth.org)
- *Universal Serial Bus, HID Usage Tables v1.11* (http://www.usb.org/developers/devclass_docs/Hut1_11.pdf)

Compliance statements

HID profile

The mobile phone complies with all the mandatory requirements applicable to the HID device role in the Bluetooth HID profile according to the *Bluetooth Specification, Human Interface Device (HID) Profile v1.0* (https://www.bluetooth.org). In addition to these, it supports the following options:

- Pointing HID and Keyboard HID roles
- Establish HID connection
- Terminate HID connection
- HID to Host & Host to HID data transfer
- Data reports to Host and Device
- Set report and Get report commands
- Role switch accepting
- Sniff mode (initiating and accepting)

HID usage tables

The mobile phone supports the following Usage Pages according to the *Universal Serial Bus, HID Usage Tables v1.11* (http://www.usb.org/developers/devclass_docs/Hut1_11.pdf):

- Generic desktop page (0X01), for mouse functions (chapter 4 of the HID usage tables).
- Keyboard/Keypad (0X07) (chapter 8 of the HID usage tables).