

G1000 Infrared Camera

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Embedded Systems

Final Project

G1000 Infrared Camera

- Device 1: Hitachi G1000 Pocket PC 2002 Sprint Mobile Phone
- Device 2: Audiovox PPC6600 Pocket PC 2003 Sprint Mobile Phone
- Goal: Use the built-in camera and infrared port of the Hitachi G1000 and have it controlled remotely by the Audiovox PPC6600

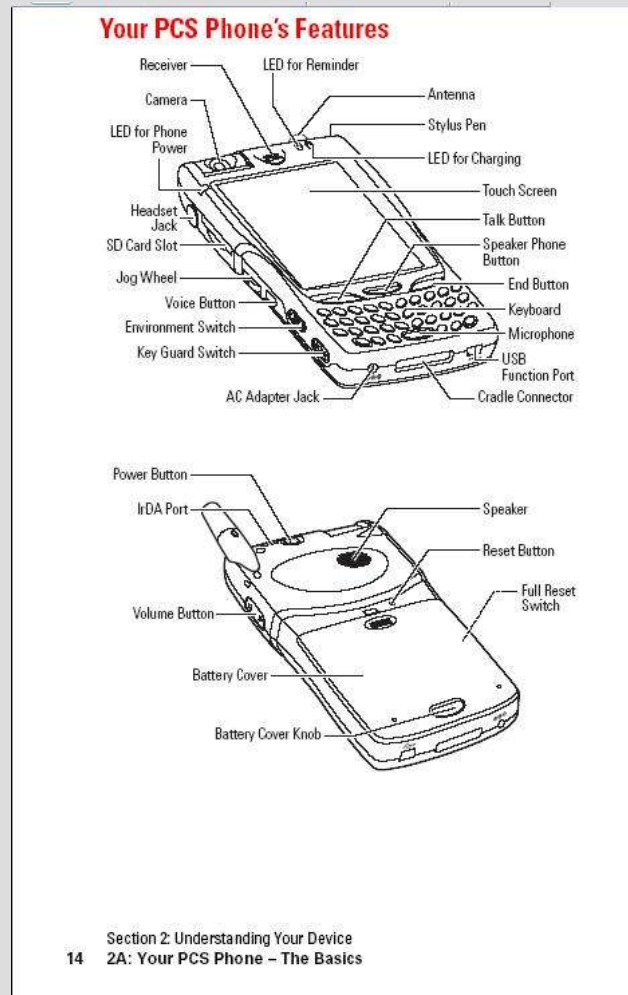
G1000 Infrared Camera



Pictured:

- Hitachi G1000
- Pocket PC 2002
- 400 Mhz Intel Xscale Processor
- 32 MB RAM
- SD/MMC Expansion Slot
- IrDA
- Swivel VGA Camera

G1000 Infrared Camera



- Hitachi G1000 Hardware Diagram
- Swivel camera is on front top left corner
- Infrared port is on back of unit in top center of unit

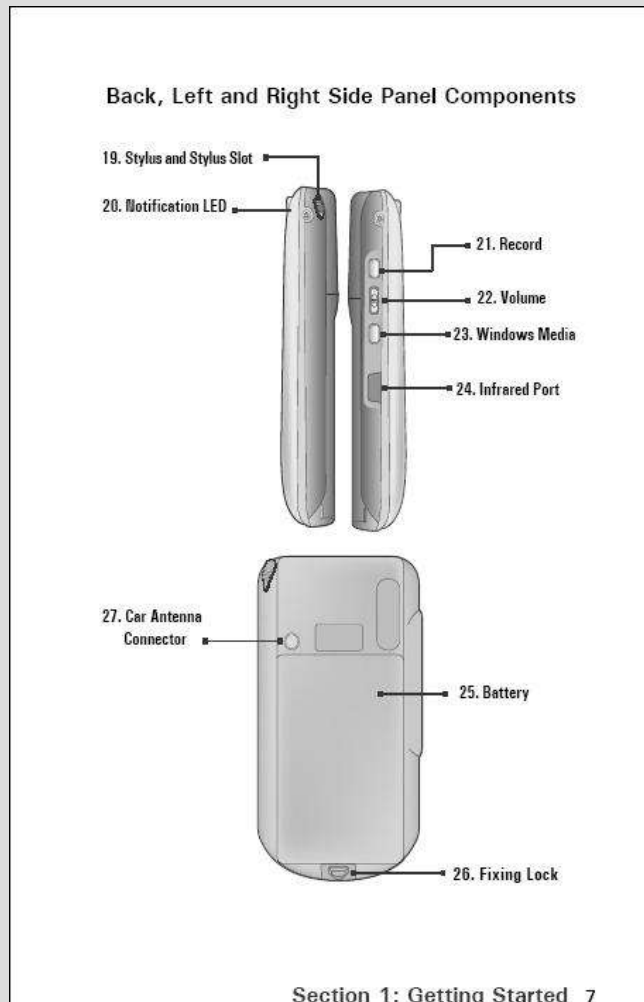
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Pictured:

- Audiovox PPC6600
- Pocket PC 2003
- 400 Mhz Intel Xscale Processor
- 128 MB RAM
- Bluetooth
- SD/SDIO Slot
- IrDA
- Built-in camera

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- Audiovox PPC6600 Hardware Diagram
- Infrared port is on left side of unit and in the middle from top to bottom

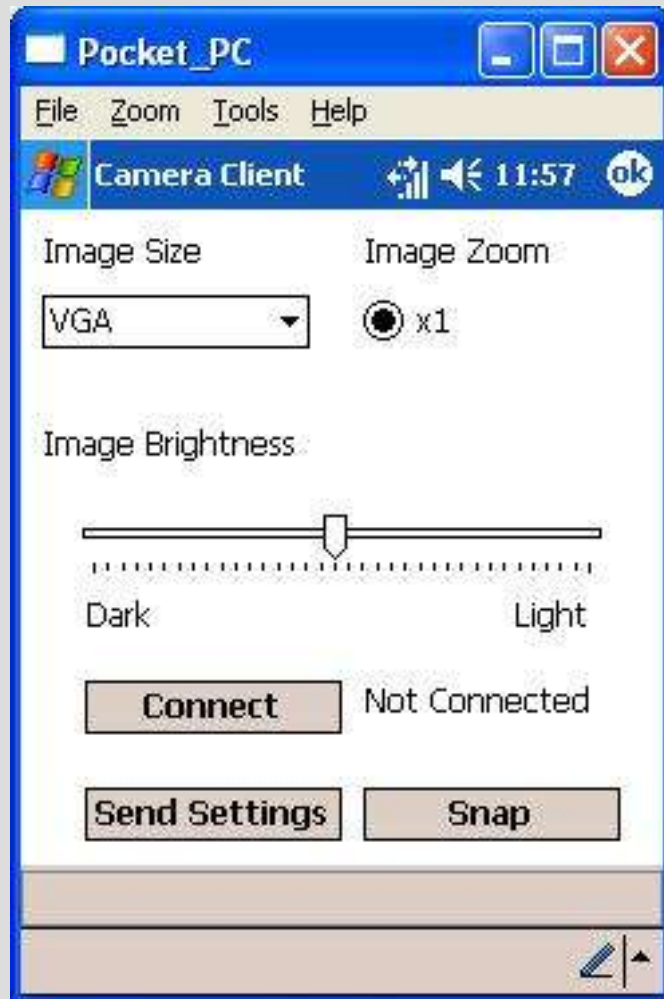
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CameraHost Program

- Runs on Hitachi G1000
- Accesses camera hardware through API
- Blue box is where camera preview is located

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CameraClient Program

- Runs on any Pocket PC device with IrDA
- Sends settings and picture command to G1000 over Infrared
- Image size, zoom, and brightness are allowed to be modified

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CameraHost

- (1) Preview Shown
- (2) Accept Connection button pressed
- (6) Accept Connection button pressed again
- (8) Picture taken and saved to file

CameraClient

- (3) Desired settings are set
- (4) Connect button pressed
- (5) Send Settings button pressed
- (6) Connect button pressed
- (7) Snap pressed

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Project Lessons Learned

- Pocket PC Development can take much longer than expected when device needs to be reset often
- Camera API has severe limitations
 - Settings need to be changed before picture is taken
 - Camera must be terminated manually before exiting
 - Pictures cannot be taken, nor can camera be terminated when preview window is showing

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Overall Lessons Learned

- Visual Studio .NET 2003
- Pocket PC Development
- .NET Compact Framework
- *.NET Compact Framework Programming with C# by Paul Yao, David Durant*
- Managed vs. Unmanaged code
- Accessing Unmanaged code through Platform Invoke (P/Invoke)