SOLIDRUN LTD

HummingBoard series

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Quick User's Guide

Contents of package

- One HummingBoard board computer**.**
- One Warranty note.
- One User Manual

Models covered by this User Manual:
I1-310-D, I2-310-D, I2eX-310-D

Start by reading the safety notice below before making any adjustments such as connecting an RTC backup battery

Setting up the system

1. The HummingBoard boots from the microSD. If you purchased a pre-loaded microSD then skip to step #3.
2. When using your own micro SD device, we recommend a 4GB micro SD class4 or higher.
3. Power Adapter: you may choose your own power adapter, make sure to use a power adapter with the following specification:
    - Regulated 5V supply with 2A source capacity.
    - Micro USB plug type.
    - Use only limited power source (LPS) power adapter with adequate protections. Power adapter should meet local safety regulations.
5. To run applications or distributions on your HummingBoard, you must install them on the microSD card. Visit this link for more details: http://cubox-i.com/install-os-on-micro-sd-flash-card/
6. Once you have your HummingBoard, microSD and power adapter ready, insert the micro SD in the microSD slot with the microSD pins facing up.
7. Connect an Ethernet cable to your HummingBoard device if network connectivity is desired.
8. Connect the HummingBoard to a display screen via an HDMI cable.
9. Connect your power adapter to the Micro USB connector, and then connect the adapter to mains supply.

A red LED (see Indication LEDs in diagram below for LED location), indicating that the system is powered on. The system should be up and running in few moments, and your OS of choice should be displayed on the monitor:

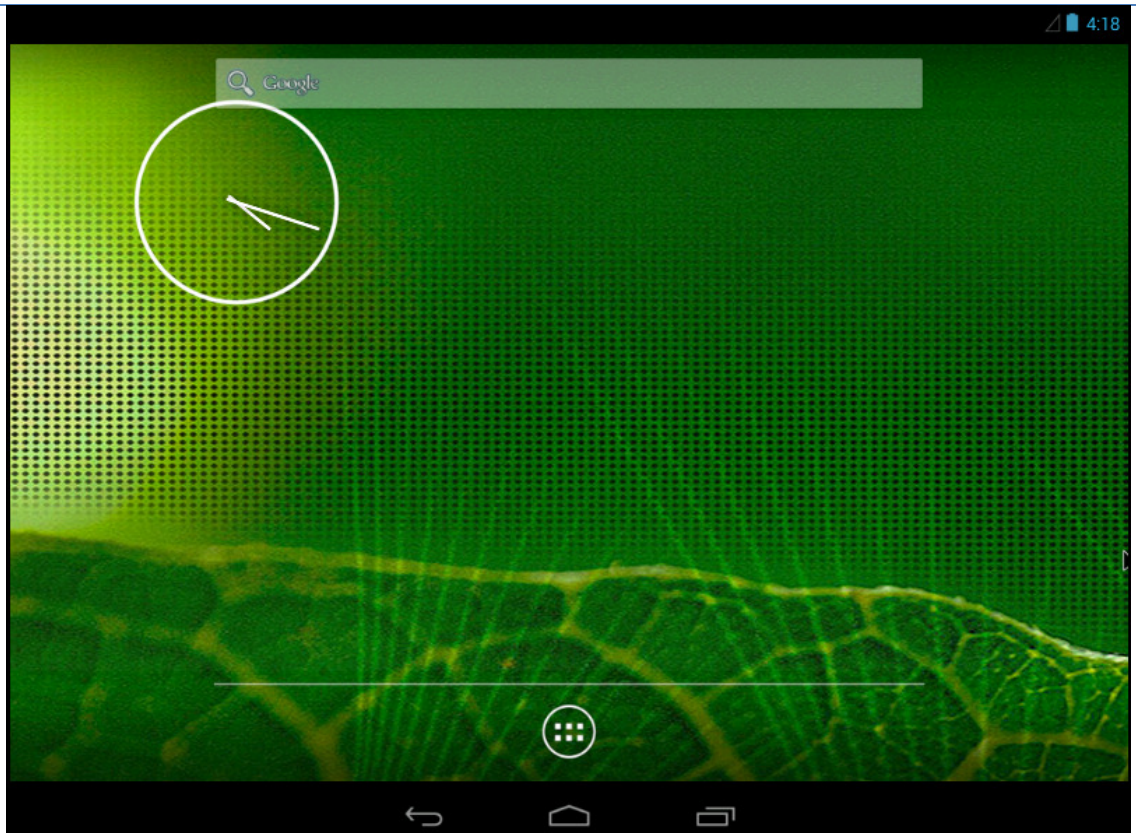

Figure 1 Example: Android Operating System

It is recommended to visit the “Getting Started” page in order to learn how to install different operating systems and/or upgrade to recent ones:

http://cubox-i.com/getting-started/

PRODUCT INFORMATION

1. **Overview**

HummingBoard family of products are low cost, highly energy efficient and small form-factor open source based board computer that can be used for different applications. The HummingBoard high performance, high quality yet low cost and rich connectivity options make it ideal for the embedded market. In addition, the open design nature of the HummingBoard carrier board makes it perfect for educational and learning projects as well as for DYI and Makers projects.

2. **Interfaces**

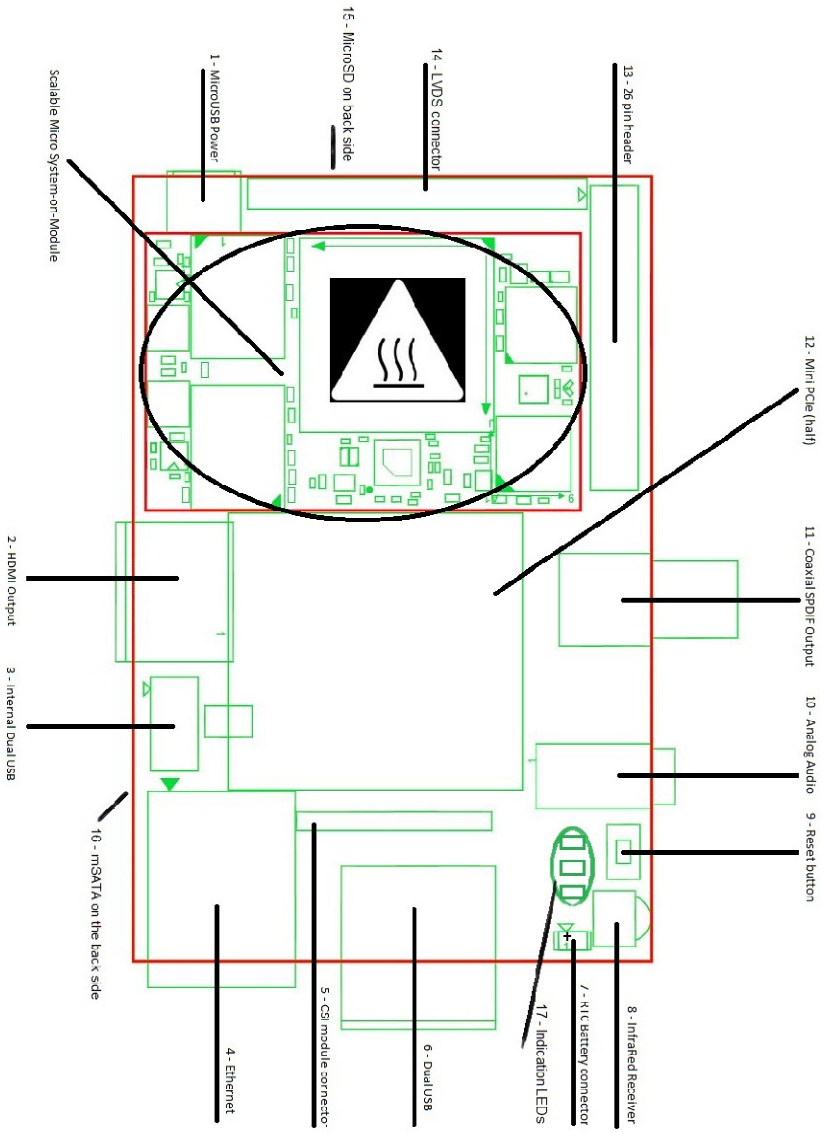

Figure 2 HummingBoard key features

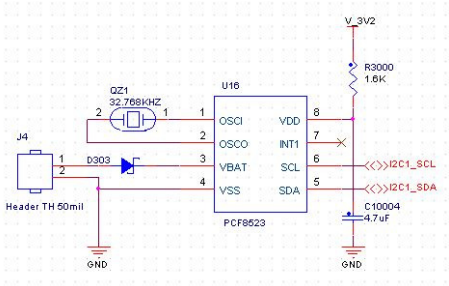

Figure3 RTC Generation Circuit using NXP's PCF8523

Id	Interface	Description	I1-310-D,	I2eX-310-D

			I2-310-D	
1	Micro USB	MicroUSB type connector for powering the HummingBoard and its accessories. User must connect a 5V limited power supply. See below safety notices for further safety instructions.	Use 5V/2A	Use 5V/2A
2	HDMI	Full HD HDMI output. Connect to your TV set.	Supported	Supported
3	Dual Internal USB	Two powered internal USB ports. Do not overload with more than 0.25A current consumption.	**Not supported**	Supported
4	Ethernet	Connect to your Ethernet switch or router for local wired networking (LAN).	Fast Ethernet	Gigabit Ethernet
5	CSI Module	CSI connector for camera modules	Supported	Supported
6	Dual USB	Two powered USB port. Connect your USB device such as Keyboard, Mouse, HD, etc… Do not overload with more than 0.5A current consumption.	Supported	Supported
7	RTC Backup battery connector		**Not supported**	Supported (See safety section below)
8	Infra RED Rx	Infra Red receiver for remote control support. Running application must support this functionality.	**Not supported**	Supported
9	Reset Button	This is a hardware reset button.	Supported	Supported
10	Analog Audio		Mono output PWM tune generator	Stereo output and MIC input
11	SPDIF Output	SPDIF Coaxial Output.	Supported	Supported
12	Mini PCIe	Half length (short) mini PCIe module connector for expansion.	**Not supported**	Supported
13	GPIO Header	26 pin GPIO Header for input and output of digital signals from expansion boards and wire-ups.	Supported	Supported
14	LVDS Connector	LVDS connector with support of flat LCD panels and touch screen input method support.	**Not supported**	Supported
15	MicroSD	MicroSD MUST be installed with proper operating system and application for proper operation of the device.	Supported	Supported
16	mSATA	Supports SSD Drive on a module with a SATA high speed interface and mSATA mechanical form factor.	**Not supported**	Supported
17	Indication LEDs		Supported	Supported

3. System Specifications Hardware:

Below is a table summarizing HummingBoard features for all models.

Model	I1-310-D	I2-310-D	I2eX-310-D
Commercial name	HummingBoard-i1	HummingBoard-i2	HummingBoard-i2eX
Chipset	i.MX6 Solo	i.MX6 Dual Lite	i.MX6 Dual

Core Count	1 @ 1 GHz	2 @ 1 GHz	2 @ 1 GHz
Memory Size	512MByte DDR3	1GByte DDR3	1GByte DDR3
Memory Config	32 bit @ 800Mbps	64 bit @ 800Mbps	64 bit @ 1066Mbps
3D GPU	GC880	GC880	GC2000
3D GPU Type	OpenGL|ES 1.1/2.0	OpenGL|ES 1.1/2.0	OpenGL|ES 1.1/2.0,OpenCL 1.1E
HW Video Dec/Enc	Multi Format	Multi Format	Multi Format
HDMI 1080p	1.4, 3D support	1.4, 3D support	1.4, 3D support
Ethernet	10/100 Mbps	10/100 Mbps	10/100/1000 Mbps (*)
USB 2.0 Host	2 x Hosts	2 x Hosts	2 x Hosts
Micro SD Interface	V	V	V
mSATA II 3Gbps	X	X	V
RTC With Backup Battery	X	X	RTC Backup Battery Connector Only
Coaxial S/PDIFAudio Out	V	V	V
InfraRed for Remote Control	X	X	Receiver

Software:

- Android
- Yocto
- Ubuntu
- XBMC
- freeBSD
- Debian
- GeexBox
- And much more …

4. Operating environment

Operating temperature: 0°C to 40°C
Relative humidity: 5% to 90%

COMPLIANCE AND SAFETY INFORMATION

1. For USA - Federal Communication Commission Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection. This equipment generates, uses, and can emit radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

2. For EU - CE compliance

This device complies with the EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EC.

Note: Shielded Ethernet cable must be used in order to comply with emission limits.

3. Safety notice

a) This device is to be used with Certified Power adaptor with output rated at 5VDC, 2A. Power adapter must meet Limited power source (LPS) requirements.
b) Power adapter must meet local safety standards and requirements based on product intended use.
c) Power adapter must meet Operating environment conditions as specified in section 4 above.
d) This device does not ship with a battery. Safety testing was made without an RTC backup battery.
e) Careful testing and measurement of component temperature must be made when enclosing the HummingBoard models with add-ons such as RTC battery, PCIe add-on, mSATA add-on or USB devices connected to internal USB ports. **RTC Backup Batteries have critical safety parameters such as temperature range and current rating that must NOT be exceeded**. RTC circuit is included in figure 3 for reference.
f) When installing RTC Backup battery, check for: Compatibility with NXP's PCF8523 specifications. Positive pin of battery is connected to pin 1 of the RTC Backup Battery connector (see figure 2). Battery's worst case temperature and withdraw current meet battery specification.
g) Caution, Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the local regulations.
h) Some surfaces of the device might reach high temperature when the device is under heavy work load.

4. Disposal

Follow local regulations regarding disposal of the product. Dispose of your product in accordance with local regulations. In some areas, the disposal of these items in household or business trash may be prohibited. Help us protect the environment - recycle!

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