

Jhumar

User Interface Computer

Espotel's Jhumar is a versatile human-machine interface device with 4.3" touch screen and diverse connectivity options. In addition to robust hardware the Jhumar platform consist of a comprehensive software package built on Linux operating system.



Hardware Specifications

CPU	Freescale i.MX287 ARM926 @454MHz
Memory	1 GB NAND Flash 128 MB DDR2 SDRAM, expandable to 256 MB microSD Expansion slot supporting memory cards up to 16 GB
Display	4.3" TFT 480 x 272 with Resistive Touch Screen
Display Controller	WVGA (800 x 480)
Leds	RGB Led integrated into Power / Home Button Two indicator Leds on ethernet connector
Buttons	Illuminated Power / Home Button with programmable functionality Rocker-style Side Button with programmable functionality

Connectors

External	USB Device (Micro-B) USB Host (Type A) Serial (RJ12, Modular 6/6) Optional CAN (RJ12, Modular 6/6) Ethernet (RJ45, Modular 8/8) microSD memory card slot
Internal	USB Host (Type A) JTAG (Pin header 2x10) Extension Pin header (I/O, I ² C and logic level-serial) Debug connector (Pin header connector)

Interfaces

Ethernet	10/100 Mbps port (RJ45, Modular 8/8)
Wi-Fi	Optional Wi-Fi dongle can be connected to internal USB Host
Serial	RS-232 or RS-485
CAN	FlexCAN (CAN 2.0B)
USB	2 x USB 2.0 High Speed host 1 x USB 2.0 High Speed device
Radio	Bluetooth Low Energy ZigBee (Optional) Sub-GHz (868 MHz) radio with Cortex M0 Co-processor

Power Requirements

Input voltage	5 V _{DC} ± 5% (Micro-USB) OR 8 V _{DC} ...48 V _{DC} (RJ12, Modular 6/6)
Current consumption	~ 550 mA (Display backlight, no external load on USB)

Internal Battery

Type	Li-Ion 3.7V 1500 mAh
Typical Run Time with battery	3h...8h

Audio

Buzzer	Piezo Buzzer
Audio codec	SGTL5000 and speaker (Optional)

Environmental Requirements

Operating Temperature	-20 ... +70 °C (battery charging available 0...35 °C)
Storage Temperature	-30 ... +80 °C (-40...85 °C without display)
Ambient Relative Humidity	< 90 % non-condensing
Anti-vibration	TBC
Anti-shock	TBC

Physical Characters

Housing	Painted PC / ABS. Color RAL 7000 / Pantone 424
Weight	200 g
Dimensions	150 x 80 x 20 mm

Accessories

Charger :110 - 240Vac / 5V micro-USB
 microSD card
 Wi-Fi module: Edimax EW-7811Un
 Protective Rubber Cover

Hardware Customization Options

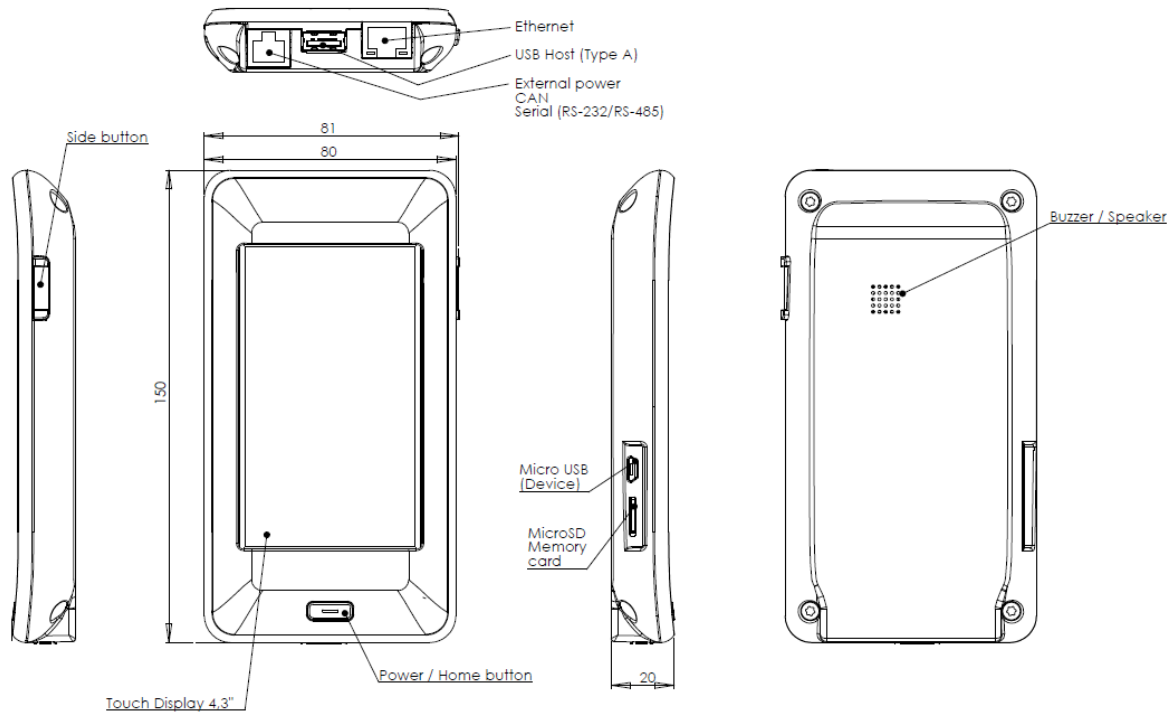
Mechanics	Paint Color Printed Custom Logo on Top Cover Molded Custom Logo on Base Cover
Assembly options	SDRAM Extension up to 256 MB Audio Codec and Speaker External RTC with Backup Battery 3-axis Gyroscope 3-axis Accelerometer Temperature Sensor CAN ZigBee radio Sub-GHz radio with Cortex M0 Co-processor

Advanced customization options are available upon request.

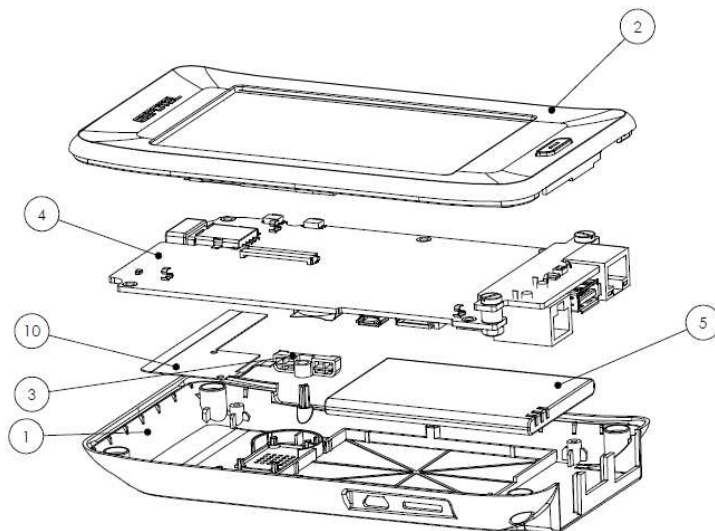
Software Specification

Operating System	Linux 3.6.x
Boot loader	U-Boot
File System	UBI FS on NAND Flash Ext3 / VFAT on microSD
Typical Boot Time	5-8 s for GUI
Graphics Library	QT 4.8.x
Other libraries	SQLite, Udev, Busybox, D-Bus, etc.
Connectivity	SSH Client/Server, Web server
Development tools	Mentor Sourcery Codebench Lite Toolchain GCC 4.4, Python 2.7 Ready to use Ubuntu virtual machine for development BuiltRoot environment for easy configuration management Espotel J-Works and QML View for rapid UI development
Quality Assurance Tools	SW Unit testing tools with coverage metrics Code analysis tools Build server for continuous integration and nightly builds

Dimensions and Connector Locations



Exploded View



1. Base
2. Cover
3. Side button
4. Main board
5. Battery
6. Speaker (Alternative to piezo)
7. Piezo (Alternative to speaker)
8. Pcb fixing screws (PT- screw 2,2x5)
9. Cover fixing screw (PT- screw 3x6)
10. BT-Antenna