Model Information

Main Features

- ARM AM3352 Cortex-A8 @ 600MHz
- 256MB DDR3 / 256MB NAND
- 1 x microSD-Slot
- 2 x LAN (1 Gigabit, 1 Fast Ethernet)
- 1 x WLAN 802.11b/g/n (optional)
- 1 x USB 2.0 Host
- 1 x RS232/422/485
- Low Power, fanless, safe connectors
- ESD surge protection
- Operating Temperature −20°C - 65°C
- BSPs: Debian, OpenWrt, Buildroot, Yocto

Contact Online...

Baltos iR 2110

Quick Link: | Main Features | More Pictures | Overview | Software Specifications | System | Serial Ports | Wireless interface (option) | Power Requirements | Housing and Mounting | Environmental Data | Standards | MTBF (Mean Time Between Failures) | Warranty | Ordering Information | Options | Packaging |

More Pictures

Click on the thumbnails for the large picture ...

>Back to top

Overview

The OnRISC Baltos iR 2110 is a fanless and DIN-Rail mounting suitable industrial embedded PC with very compact dimensions. It is based on an ARM Cortex-A8 with NEON SIMD Coprocessor, with up to 1GHz CPU clock speed. Low power consumption (3W typical), an extended temperature range (−20°C to 65°C), a wide power supply (12 — 50V DC) and an impressive MTBF (13 Years at 45°C) are qualities that make it an ideal system for industrial automation. iR 2110 is fully ESD and surge protected, complying with IEC 61000-4-2 (8KV air and 4KV contact).

IoT-Cloud Support

Thanks to it's rich connectivity Baltos devices can be used as IoT Gateways connecting sensors/actuators and arbitrary cloud providers like Amazon's AWS IoT, Microsoft's Azure IoT Hub and others using MQTT protocol directly or via the cloud providers own APIs.
Besides Baltos series can also serve as a controller. Both roles can be easily programmed using either traditional programming languages or Node-RED*, a visual flow-based programming for the Internet of Things.

Easy-to-use starter kits

Baltos embedded systems run several Linux flavored distributions on an ARM core as an operating system. In addition, two pre-packaged bootable SD cards are provided: The Debian GNU/Linux and an upstream OpenWrt image; the latter includes an install-option to the internal flash memory. A VPN router firmware specialized in easy-to-use VPN networking is also available (VPNRouter).

Booting options and BSPs

Baltos iR 2110 can be booted from either NAND flash or microSD card. The NAND flash is a robust boot medium capable of withstanding power cuts and vibrations. microSD cards have the advantage of providing arbitrarily large storage amounts. Buildroot, Yocto and OpenWrt BSPs provide a small footprint and would fit well into the NAND storage, whereas Debian is best used on the microSD card.

Rich connectivity

WLAN802.11b/g/n is available as a common option; furthermore, two locations for SMA-antenna sockets are provided. The balanced variety of interfaces such as LAN, USB, RS232/422/485 serial ports and microSDHC enable Baltos iR 2110 to act like a powerful gateway between networks, various industrial devices and field busses.

Secure Remote Access

For the Baltos series there is a software option that uses the viaVPN Cloud system (www.viaVPN.com), which can be remotely accessed and monitored over the Internet. viaVPN provides secure and strongly encrypted access, without the need for any reconfiguration of existing firewalls. In case a customer's firmware/application is accessible via Ethernet or Wifi — as for example via a web interface or Telnet/SSH connection — viaVPN extends the access over internet by a protected VPN tunnel.

Software Specifications

Linux	Debian: Latest stable release available as ready-to-run SD card image or can be built/customized via vsdebootstrap project (Github) Buildroot: BSP with Kernel and bootloader patches and basic configuration (Github) Yocto: layer-baltos with Kernel and bootloder patches suitable for new projects or integration into already available projects (Github) Buildroot and Yocto are suitable for installation to NAND Flash
OpenWrt	Based on branch DD 'Designated Driver', comes ready-to-use on a microSD card. Installation into NAND Flash memory is supported. To self-create this software the setup procedure is on GitHub.
Remote Access (option)	The daemon to access the viaVPN system provides secure Remote Access over Internet. It supports a Debian-based Installation, and Buildroot as well. Connect via Internet viaVPN provides easy access to remotely installed systems. Software installation is quickly done with convenient tools to get access from everywhere. Security All communication uses a VPN-tunnel encrypted by SSL/TLS and AES-256. Firewall friendly, ready for 3G/4G use viaVPN Cloud Server access uses common web ports. Reconfiguration of firewalls is not required. This enables the use with mobile networks.

>Back to top

System

Hardware	• Sitara AM3352 ARM Cortex-A8 RISC CPU @ 600MHz • 256MB DDR3 • Real time clock with battery backup
Mass Storage	• 256MB NAND Flash memory (bootable) • SD 2.0 / SDHC microSD-card slot (bootable)
Network	• 1x 1000/100/10 Mbps Gigabit Ethernet • 1x 100/10 Mbps Fast Ethernet

Serial Peripherals	• 1x USB 2.0 Host • 1x RS232/422/485 high speed
LED	• 1x Power, 1x WLAN, 1x Application • LAN: 2x Link and Speed • COM: TxD and RxD
DIP Switch	4 x switches for user's application

>Back to top

Serial Ports

No. of Ports/Type	1 × RS232/422/485 selected by software Highspeed UART, 64 Byte FIFO (16C750)
Connector	DB-9 male
Protection	16kV ESD surge protection
Operating Modes	• RS232 • RS422 full duplex (120Ω on/off) • RS485 4 wire, full duplex (120Ω on/off) • RS485 2 wire, half duplex (120Ω on/off)
Configuration	Software sets operating mode and RS422/485 termination No High/Low biasing resistors needed
Signals	• RS232: TxD,RxD, RTS,CTS, DTR,DSR, DCD, RI, GND • RS422: Tx+/-, Rx+/-, GND • RS485 4 wire: Tx+/-, Rx+/-, GND • RS485 2 wire: Data+/-, GND
RS485 Data Direction control	Driver Automatic via RTS
Data bits	5, 6, 7, 8
Stop bits	1, 2
Parity	None, Even, Odd, Mark, Space
Flow Control	RTS/CTS, XON/XOFF
Baudrate	RS232: 200 bps to 921.6/1000 kbps RS422/485: 200 bps to 3.7Mbps Supports non-standard baudrates

>Back to top

Wireless interface (option)

Standards	2.4GHz Radio, supports IEEE Std. 802.11b/g/n
WLAN Modes	Access Point (AP) or Client (Station)
TX Power	802.11b: Typ. 15.5dBm ±1.5 dBm @ 1Mbps (DSSS) Typ. 15.5dBm ±1.5 dBm @ 11Mbps (OFDM) 802.11g: Typ. 15.6dBm ±1.5 dBm @ 6Mbps (CCK) Typ. 13.5dBm ±1.5 dBm @ 54Mbps (OFDM) 802.11n: Typ. 13.4dBm ±1.5 dBm @ 6.5Mbps (OFDM) Typ. 13.3dBm ±1.5 dBm @ 150 Mbps(OFDM)
RX Sensitivity	802.11b: -95.6dBm @ 1Mbps, -88dBm @ 11Mbps 802.11g: -91.3dBm @ 6Mbps, -74.2dBm @ 54 Mbps 802.11n: -88.8dBm @ 6.5Mbps (20 MHz), -72dBm @ 72.2Mbps (20 MHz)

Transmission Rate	802.11b: 11Mbps 802.11g: 6 to 54Mbps 802.11n: 6.5 to 150Mbps
Transmission Distance	Up to 100m in open areas
Wireless security	• WEP • WPA • WPA2 • WPA2-Enterprise (IEEE 802.1X/RADIUS)
Antenna Connector	RP (Reverse-Polarity) SMA

>Back to top

Power Requirements

Input Voltage	9 — 54V DC
Power Consumption	• 0.2A @ 12V minimal • 0.3A @ 12V typical, plus devices on USB
Connector	3-pin Terminal Block

>Back to top

Housing and Mounting

Case	0.8mm sheet metal
Weight	w/o box 250g; w/h box 500g
Dimensions	115×73×25 mm³ (W×L×H)
Packaged	150×107×48 mm³
Mounting	• DIN Rail (option) • Wall mount (option)

>Back to top

Environmental Data

Operating Temp	−20°C — 65°C
Storage Temp	−30°C - 85°C
Ambient Humidity	10-85% non-condensing

>Back to top

Standards

Declarations	CE, FCC
EMI	• EN 55022 Class B • EN 61000-3-2: Limits of harmonic current emissions • EN 61000-3-3: Limitation of voltage changes • 47 CFR FCC Part 15 Subpart B
EMS (EN 55024)	• EN 61000-4-3: Radiated RFI • EN 61000-4-4: Electrical Fast Transient • EN 61000-4-5: Surge • EN 61000-4-6: Induced RFI • EN 61000-4-8: Power Frequency Magnetic Field • EN 61000-4-11: Power supply dips
ESD	EN 61000-4-2 4kV contact 8kV air for • Serial Port • USB • Ethernet • DC Power connector

>Back to top

MTBF (Mean Time Between Failures)

MTBF	39.0 Years @ 25°C 13.0 Years @ 45°C
Standard	Telcordia (Bellcore) Standard; RelCalc. 5.0 BELL-7

>Back to top

Warranty

Warranty Period	2 years

>Back to top

Ordering Information

6833	OnRISC Baltos iR 2110
6840	OnRISC Baltos iR 2110 WLAN

>Back to top

Options

6031	Power adapter 110-230V AC to 12V @1A, DC, EU plug
6034	Power adapter 110-230V AC to 12V @1A, DC, US plug
6689	WLAN Kit internal internal module 802.11b/g/n, pigtail and antenna Purchase time option, not for later retrofitting
6692	DK-NCP DIN-Rail mounting kit
6693	WK-NCP Wallmount kit
6841	Daemon viaVPN, provides secure Remote Access system over Internet
6835	Starter Kit • 4GB SD card for DEBIAN/GNU Linux • Power adapter 12V @ 1A • Adapter cable for console port • Documentation and Development Software on CD
6844	Starter Kit • 4GB SD card for OpenWRT • Power adapter 12V @ 1A • Adapter cable for console port • Documentation and Development Software on CD

>Back to top

Packaging

Packing list	• OnRISC Baltos iR 2110 system • Terminal block for Power Supply • Reverse SMA Antenna (WLAN model only)

>Back to top

Baltos iR 2110

>Back

External WLAN

>Back

(2018 Jan 17)