

Model Information



■ Features

- Sitara AM3352 Cortex-A8 @ 600MHz
- 256MB DDR3
- 256MB NAND Flash (for boot)
- 1 x SD-Slot
- 5 x LAN (1 Gigabit, 4 Fast Ethernet)
- 3 x USB 2.0 (2 Host, 1 OTG)
- 2 x RS232/422/485
- 1 x CAN Bus
- 8 x Digital-I/O (4 Input, 4 Output)
- 1 x I²C
- 1 x mPCIe-slot for 3G/4G-Modem, GPS and other
- 1 x SIM card slot
- 1 x WLAN 802.11b/g/n (optional)
- 2 x antenna sockets (optional)
- 1 x Console serial Port
- **New Option:** Secure Remote Access by [viaVPN](#)
- Low Power, fanless, no cables
- Operating Temperature -20°C - 65°C
- Debian GNU/Linux Kernel 3.18
- OpenWrt available, version DD
- DIN RAIL mountable
- Starter kit available

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Baltos iR 5221

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■ Overview

OnRISC Baltos iR 5221 is a fanless industrial embedded PC in compact dimensions, designed for DIN Rail mounting. It is based on an ARM Cortex-A8 with NEON SIMD Coprocessor, up to 1GHz CPU clock speed. Low power consumption, wide temperature range -20°C to 65°C and flexible power supply (12-50V DC) make it an ideal system for industrial automation.

The embedded computer runs Linux on ARM operating system Kernel 3.18, pre-installed on the internal NAND Flash memory. Or it comes as Debian GNU/Linux, booted from an SD card in the front side slot. Another SD-card provides OpenWrt DD, including an install-option to the Flash memory. Even a Router Firmware specialized in easy-to-use VPN networking is available.

For boot of customers application from NAND Flash a system configuration with buildroot is supported. With Debian's repository database it is easy to install and update the free software on the Baltos. VS provides information for configuration and sample installations of Linux for Baltos.

The system allows extension with GPS and GSM/3G/4G communication, so installation on mobile bases is possible. WLAN is available as usual, two locations for antenna sockets are provided. Models with further extended temperature range exist, allowing for remote installations.

The great variety of interfaces like LAN, CAN Bus, serial ports, USB, I²C, Digital I/O plus more options makes it easy to connect various industrial devices and field buses to the Baltos.

For Baltos there is an option to use [the viaVPN system](#) for Remote Access and Monitoring over Internet. [viaVPN](#) provides secure and strong encrypted access, without any re-configuration of firewalls. Customers firmware/application must be accessible via Ethernet or WLAN, for example via a web interface or by a Telnet/SSH connection. Then **viaVPN** extends the access over Internet, protected by a VPN tunnel.

■ System

Hardware	<ul style="list-style-type: none">• Sitara AM3352 ARM Cortex-A8 RISC CPU @ 600MHz• 256MB DDR3• Real time clock with battery backup
Mass Storage	<ul style="list-style-type: none">• 256MB NAND Flash memory (bootable)• SD 2.0 / SDHC SD-card slot (bootable)
Network	<ul style="list-style-type: none">• 1x 1000/100/10 Mbps Gigabit Ethernet• 4x 100/10 Mbps on integrated Fast Ethernet Switch
Expansion Slots	<ul style="list-style-type: none">• 1x miniPCIe via USB 2.0 (for GPS, GSM/3G/4G card)• SIM card for GSM/3G/4G modems in miniPCIe slot• Also for second CAN Bus, third serial port or WLAN
Serial Peripherals	<ul style="list-style-type: none">• 2x USB 2.0 as Host• 1x USB 2.0 OTG• 2x RS232/422/485 high speed• 1x Console Port RS232• 1x I²C
CAN Bus	<ul style="list-style-type: none">• 1x CAN High Speed, 20kbps up to 1Mbps• Signals: CAN_H, CAN_L, CAN_GND• VScom CAN API, CANFestival, CANopen, LinCAN
Digital Input/Output	<ul style="list-style-type: none">• 4x TTL Output signals (64mA sink / 32mA source)• 4x TTL Input signals• IRQ for input signals• Terminal block connector
LED	<ul style="list-style-type: none">• 1x Power, 1x 3G, 1x WLAN, 1x Application• LAN: 5x Link and Speed

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■ Serial Ports

Features	<ul style="list-style-type: none">• 2x RS232/422/485• Highspeed UART, 64 Byte FIFO (16C750)• RS232: up to 921.6/1000 kbps• RS422/485: up to 3.7 Mbps
Available Modes	Configured by DIP-Switch or Software <ul style="list-style-type: none">• RS232• RS422 full duplex• RS485 4-wire, full duplex• RS485 2-wire, half duplex, without echo
Signals	<ul style="list-style-type: none">• RS232: TxD,RxD, RTS,CTS, DTR,DSR, DCD, RI, GND• RS422: Tx+/-, Rx+/-, GND• RS485 2-wire: Data+/-, GND• RS485 4-wire: Tx+/-, Rx+/-, GND
RS485 Data Direction Control	Driver Automatic via RTS

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■ Power and Environment

Power	<ul style="list-style-type: none">• Input 12 - 50V DC• 0.2A @ 12V minimal• 0.8A @ 12V typical• 3-pin Terminal block connector• Auxiliary Output 5V @max. 0.5A on Digital-I/O connector
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Temperature	<ul style="list-style-type: none"> • Operating –20°C - 65°C • Storage: –30°C - 85°C • Humidity: 10-85% non-condensing
MTBF	n.a.
Approvals	<ul style="list-style-type: none"> • EMC: FCC Class A, CE Class A • Environment: RoHS
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■ Mechanical	
Dimensions	154×104×50 mm ³ (W×L×H)
Weight	0.55kg
Construction Material	0.8mm Metalsheet black
Mounting	<ul style="list-style-type: none"> • DIN Rail • Wall mount
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■ Standards	
Declarations	CE, FCC
EMI	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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	<p>EN 61000-4-2 4kV contact 8kV air for</p> <ul style="list-style-type: none"> • Serial Ports • USB • Ethernet • DC Power connector • Digital-I/O
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■ Software Specifications	
Linux	<p>Debian: Latest stable release available as ready-to-run SD card image or can be built/customized via vsdebootstrap project (Github)</p> <p>Buildroot: BSP with Kernel and bootloader patches and basic configuration (Github)</p> <p>Yocto: layer-baltos with Kernel and bootloder patches suitable for new projects or integration into already available projects (Github)</p> <p>Buildroot and Yocto are suitable for installation to NAND Flash</p>
OpenWrt	Based on branch DD 'Designated Driver', comes ready-to-use on an SD card. Installation into NAND Flash memory is supported. To self-create this software the setup procedure is on GitHub .

The demon to access the [system viaVPN](#) 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 all locations

Security

All communication uses a VPN-tunnel encrypted by SSL and AES-256.

Firewall friendly, also for 3G/4G use

Access to the viaVPN Cloud Servers is done like https protocol in a browser. Re-configuration of firewalls is not required. This enables use with mobile networks.

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■ Ordering Information

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■ Options

6689 WLAN Kit internal
internal module 802.11b/g/n, pigtail and antenna
Purchase time option, **not for later retrofitting**

6690 WLAN Kit external
USB stick 802.11b/g/n, antenna

6031 Power supply adapter 12V DC, 1A

6841 Demon [viaVPN](#), provides secure Remote Access system over Internet

Request Boot SD with Debian GNU/Linux installed (4/8GB)

6842 Boot SD with OpenWrt installed (4/8GB).
Supports installation into NAND Flash memory

3304 GSM/UMTS mPCIe card for 3G modem

3306 GSM/UMTS/LTE mPCIe card for 3G/4G modem

Request GPS mPCIe card for use of active antenna

[432](#) USB-CAN Plus mPCIe
PCI Express Mini Card for second CAN Bus port

[600](#) USB-COM Plus mPCIe
PCI Express Mini Card for a third serial port

6835 Starter Kit

- 4GB SD card for DEBIAN/GNU Linux
- Power adapter 12V @ 1A
- Adapter cable for console port
- Documentation and Development Software on DVD

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■ Packaging

Packing list

- OnRISC Baltos iR 5221 system
- Printed Quick Installation Guide
- Terminal blocks for Power Supply, Digital-I/O, CAN Bus
- DIN Rail Clamp
- Wall mounting plates

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