

Wireless Embedded Server

Axotec
Hightech made applicable

for industrial applications

ALPHATMX-WS



Modular, compact, connective

Axotec
Hightech made applicable

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OVERVIEW

The AlphaX-WS embedded servers are 32-bit wireless appliances for professional applications. The devices are especially designed for system integrators and industrial users. The product line supplies a powerful, open and flexible computer platform for applications in distributed environments. The systems are based on a powerful Linux operating system and are free programmable and configurable. The hardware as well as the software components are designed in a modular manner and are therefore easy adaptable to specific application requirements.

APPLICATIONS

AlphaX embedded servers are developed especially for demanding applications in the industrial and professional commercial fields. Following are listed some examples for typical applications.

Mobile Embedded Server application examples	Industrial Embedded Server application examples
• Fleetmanagement • Automatic vehicle location (AVL) • Logistic • Security applications • Telemetry • Building site supervisory • Mobile data storage / datalogger	• Serial Device Server • Industrial control applications • Building automation • Remote Control • PLC diagnosis / service • POS applications • Medical applications

GSM/GPRS COMMUNICATION

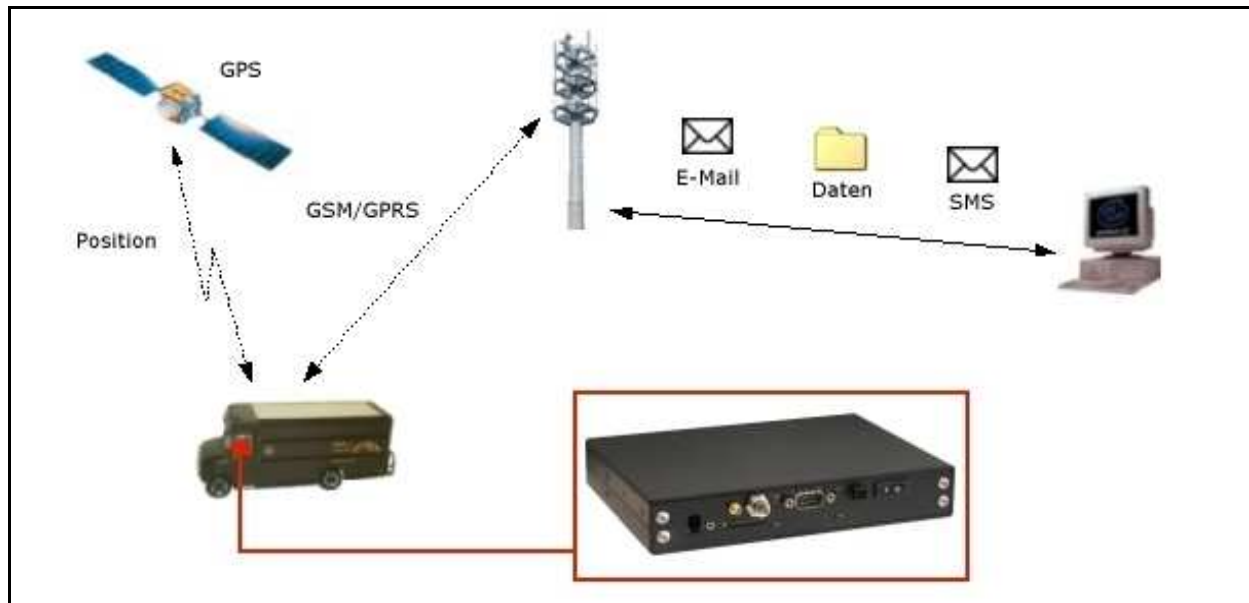
AlphaX-WS embedded servers are supporting an integrated GSM/GPRS module. Combined with the Linux operating system this makes available a full wireless IP functionality with all higher level protocols sitting on top of TCP/IP. The GPRS (general packet radio services) allows direct access to the internet as well as to private networks. GPRS enables a flat rate equivalent internet connection. Costs are arising only for transferred data volume. The permanent internet network connection makes it easy for the application program to e.g. transfer vehicle position and further acquired data in a continuous fixed time cycle.

GPS

AlphaX-WS embedded servers have an integrated GPS receiver. So the actual position of a mobile object like typically a vehicle can be continuously collected and be transferred to a back end computer. AlphaX-WS embedded servers have a GPS antenna connector jack so that the antenna can be optimally placed for optimal radio reception.

LINUX OPERATING SYSTEM

The operating system of the AlphaX-WS product line is a powerful embedded Linux. This Linux system is an outstanding stable and a fully open system. A further advantage is that there are arising no license costs. Linux supports a comprehensive software library and extensive protocol suite as well as powerful and professional software tools. The complete system is programmable in C/C++ and Java as well as also in other common programming languages. The comfortable and powerful development environment ensures a fast and efficient development of specific applications with resulting low development cost. All applications for the AlphaX-WS systems are programmed in the same way as they are for Standard Linux PC's. This means that there is no initial skill adaptation training required as usually necessary for proprietary development environments. The embedded Linux is supporting innately standard protocols like: ARP, DHCP, DNS, FTP, HTTP, ICMP, IP, POP3, SMTP, SNMP, NTP, TCP, Telnet, TFTP und UDP.



Fleetmanagement application

ETHERNET

All AlphaX-WS embedded server products can be connected to any 10/100 Mbit ethernet network and therefore are fully network enabled. Linux supports all network functionalities and protocols. Provision is also made for accessing WLAN networks.

PERIPHERAL INTERFACES

AlphaX-WS embedded server are equipped with four/five asynchronous RS232 interfaces. One of it can also be configured in RS422/485 mode. The serial interfaces can be expanded with additional four RS232/RS422/RS485 interfaces. Depending on the product version there are additional CAN and digital I/O interfaces available. This makes it easy to connect the device to switches, alarm signals or sensors. Digital outputs provides the ability to switch actuators, signals and other devices.

EXCHANGEABLE MASS STORAGE

Data can be stored on industry standard memory cards. The supported technologies are – model dependent - Compactflash / CF, Multimediacard / MMC and Secure Digital / SD cards. The available memory capacities are actually 8 GB for compactflash cards, 4 GB for SD cards and 2 GB for MMC cards. All memory cards can be used with standard filesystems as FAT or ext2 and can be read and written with standard card readers as well as on any other devices such as PDA or GSM phones supporting the appropriate card slots. The compactflash socket fully supports many I/O cards such as WLAN, serial interfaces and others.

MODULAR EXPANDABLE

The modular design of AlphaX-WS servers gives a high degree of flexibility. By means of the expansion slot, the AlphaX-WS servers can be equipped with virtually any industrial interface. Customerspecific requirements can thus be realized in a cost effective way.

ALPHATMX-WS-300

The AlphaX-WS-300 is powered by an ARM7 / 70MHz processor with 32MB system RAM and 16MB Flash memory. The operating system is a powerful Embedded Linux. AlphaX-WS-300 has integrated four asynchronous serial interfaces (two for internal use of GPS and GSM/GPRS). One of the RS232 can be operated as RS422/485 interface. Further available are an optodecoupled dual-CAN, one USB-device and an ethernet interface. The standard MMC card can be used for offline data storage purposes. A standard PS/2 keyboard connector is also available. AlphaX-WS-300 comes with an integrated GSM/GPRS as well as with a GPS module. The respective antenna connectors are located at the back of the unit.



AlphaX-WS-300

Technology

- ARM7 32-Bit Microprocessor / 70 MHz
- Integrated Flash Memory 16 MB (opt. 32 MB)
- Integrated DRAM Memory 32MB (opt. 64 MB)
- 1MB SRAM batterybuffered (opt.)
- Slot for MMC Card
Capacity up to 2 GB
- Simcard slot
- Display- and keyboard controller (internally)
- four RS232 interfaces, one of it optionally RS422/485
- Integrated GPS and GSM module (using two of the four RS232 interfaces)
- 10 Mbit ethernet adapter
connectable to any 10/100 Mbit Ethernet
- USB Device 1.1
- Digital I/O ports (opt.)
- DC input 8.5-40 volts
- Temperature sensor
- extreme low power consumption
- Dimensions: ca. 186 x 158 x 32mm

Connectivity

- RJ45 jack for 10BaseT ethernet
- DSUB9 for up to 4 x RS 232 and one RS422/485
- DSUB9 with 2 x CAN optodecoupled (opt.)
- PS/2 Keyboard interface
- Headset connector
- GSM antenna connector
- Handset connector
- GPS antenna connector
- USB client
- industrial proof DC input

Options

- external Display
- further industrial interfaces by means of the modular expansion slot

Operating system

- Embedded Linux developed and supported by Axotec
- Development system for comfortable application development
- User programs can be easily integrated into the system and e.g. automatically be started after bootup.

ALPHATMX-WS-500

The AlphaX-WS-500 is powered by an ARM920 / 180MHz processor with 32 MB system RAM and 8 MB Flash memory. The operating system is a powerful Embedded Linux. AlphaX-WS-500 has integrated five asynchronous serial RS232 interfaces (two for internal use of GPS and GSM/GPRS). One of the RS232 interfaces can be operated as RS422/485 interface. Further available are an USB host, an USB device and a 10/100 Mbit ethernet interface. The device supports a CompactFlash socket as well as a SD card socket. Besides memory cards up to 8 GB the CompactFlash socket can also be used with cards with I/O functionality such as WLAN cards. AlphaX-WS-500 comes with an integrated GSM/GPRS as well as with a GPS module. The respective antenna connectors are located at the back of the unit.



AlphaX-WS-500

Technology

- ARM9 32-Bit Microprozessor 200 MIPS
- Integrated Flash Memory 8MB (bis 16 MB)
- Integrated SDRAM Memory 32MB (bis 128 MB)
- 512 kB SRAM batterybuffered (opt.)
- Slot for Compactflash card
- for I/O cards and memory cards with capacity up to 8 GB
- Slot for MMC/SD Card up to 4 GB capacity (opt.)
- Simcard slot
- Integrated GPS and GSM module
- USB Host / Client 2.0 Fullspeed
- 10/100 Mbit Ethernet
- Digital I/O ports
- extreme low power consumption
- DC input 8.5-40 volts
- Dimensions: ca. 186 x 158 x 32mm

Connectors

- RJ45 for 10/100BaseT Ethernet
- up to 3 DSUB9 with standard RS 232 layout

- GSM antenna jack
- Handset jack
- Headset connector
- GPS antenna jack
- USB host standard socket
- USB client standard socket
- Industrial proof DC-input connector

Optional

- Keyboard
- LCD display controller expansion
- additional interfaces such as CAN, RS 232/422/485
- customerspecific interface expansion

Operating system

- Embedded Linux developed and supported by Axotec
- Developmentssystem for comfortable application development
- User programs can be easily integrated into the system and e.g. automatically be started after bootup.

GPS TECHNICAL DATA**GENERAL**

- Temperature operating: -25°C to +85°C
- Temperature storage: -55°C to +105°C
- TSIP and NMEA 0183 Protocol

VIBRATION

- 0.008 g²/Hz 5 Hz to 20 Hz
- 0.05 g²/Hz 20 Hz to 100 Hz
- -3 dB/octave 100 Hz to 900 Hz

INTERFACE CHARACTERISTICS

- TTL-level pulse: Once per second with raising edge of the pulse synchronous with the UTC
- Protocols: TSIP @ 9600 Baud, 8 Bits
NMEA 0183 v3.0, adjustable baudrate, 8 Bits
- NMEA Messages: GGA, VTG, GLL, ZDA, GSA, GSV and RMC

**KEY FEATURES**

- L1 (1575.42 MHz) frequency C/A Code, 8-channel, continuous tracking receiver, 32 correlators

PRECISION

- Horizontal: <6 meters (50%) <9 meters (90%)
- Vertical: <11 meters (50%) <18 meters (90%)
- Velocity: 0.06 m/sek

LOGGING

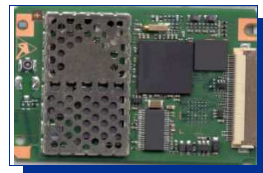
- PPS: ±95 nanos
- Reacquisition: <2 sek. (90%)
- Hot Start: <14 sek (50%) <18 sek (90%)
- Warm Start: <38 sek (50%) <45 sek (90%)
- Cold Start: <90 sek (50%) <170 sek (90%)

GSM/GPRS TECHNICAL DATA**LOW POWER**

- In SLEEP Mode 3mA

FREQUENCY BANDS

- Dual Band EGSM 900 and GSM 1800
- Optional triband for Asia or Northamerica available
- Conformity to GSM Phase 2/2+

**TRANSMIT POWER**

- Class 4 (2W) with EGSM 900 Class 1 (1W) with GSM 1800

TEMPERATURE

- Normal operation: -20 C to +55 C
- Restricted operation: -25 C to +70 C
- Auto switch-off: > +75 C and < -25 C

DATATRANSFER

- Transferrate: 2.400, 4.800, 9.600, 14.400bps
non-transparent, USSD

GPRS

- GPRS transfer: Class 8
- optional Class 10 available

FAX

- Group 3: Class 1, Class 2
- Audio Interface: Two analog audio interfaces

CODEC

- Triple rate codec: Half Rate (ETS 06.20)
Full Rate (ETS 06.10)
Enhanced Full Rate
(ETS 06.50 / 06.60 / 06.80)

COMMUNICATION

- Asynchronous serial interface for AT command transmission
- Supports RTS/CTS hardware handshake and software XON/XOFF flow control.
- Multiplex ability according to GSM 07.10 Multiplexer protocol
- Baudrate from 300bps up to 230.400 bps
- Autobauding : 1.200, 2.400, 4.800, 9.600, 19.200, 38.400, 57.600, 115.200 und 230.400 bps

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