

Linux-ready Cortex-A5 Industrial IoT Gateway

Matrix-713



Features

- Rugged Design, Wide-range Temperature operating
- ATMEL ATSAMA5D35 536MHz Cortex-A5 CPU
- Linux kernel 4.9.x with file system
- Support Node-Red , the browser-based flow editor
- 512MB LPDDR2 SDRAM
- 8GB eMMC Flash and 8MB DataFlash for system backup
- 1 x Micro-SD socket
- 1 x Gigabit Ethernet and 1 x 10/100Mbps Ethernet
- Rich I/Os: 4xisolated RS-485, 2xCAN, 2xUSB,2xDI, 2xDO
- Support GNSS (GPS&Glonass), Gyro, G-Sensor, e-Compass
- 2xminiPCIe slot & 2xmicro-SIM card socket reserved

Key Features

High Ability IoT Gateway

- Support versatile communication interface
- Support Plug & play networking protocol nnp & mDNS
- Location smart, support GNSS / 9-Axis Gyro,G-sensor, e-Compass

Information Smart

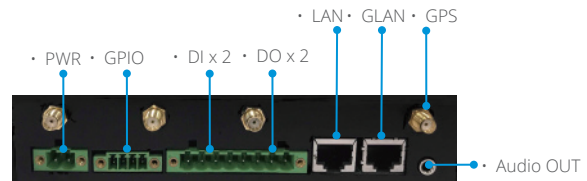
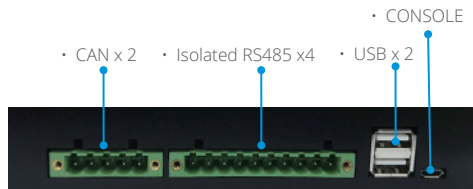
- Sensor / Data acquisition
- Database Management
- Rich I/Os fulfill different applications
- Support Node-Red visual writing tool for IoT

Flexibility

- Highly Integrated SoC, easy installation / maintenance
- Market proven open technology
- Completely application building blocks

Rugged Reliable Device

- Wide-range Temperature operating
- Low-Power consumption, Saving power / Money
- Dual SIM slots to support cross-zone communication / seamless integration



GNSS/IMU/Cellular Specifications

GNSS (Global Navigation Satellite System)

- 72-channel u-blox M8 e GNSS engine
- Support Dual Satellite: GPS & GLONASS
- -146dBm Tracking and Navigation Sensitivity
- Support AssistNow Online/Offline/Autonomous, OMA SUPL & 3GPP Compliant
- Max nav. update rate: Single channel/up to 18MHz, 2 Concurrent GNSS /up to 10MHz
- Accuracy (Position):2.5m CEP
- 1 x Active Antenna

IMU (Inertial Measurement Unit)

- 1 x 3-Axis digital output Gyroscope
- Gyroscope has a programmable full-scale range of ± 250 , ± 500 , ± 1000 , and ± 2000 degrees/sec and very low rate noise at 0.01dps/Hz. G yroscope operating current: 3.2mA
- 1 x 3-Axis Accelerometer (G-Sensor) $\pm 2/\pm 4/\pm 8/\pm 16$ g user-programmable accelerometer full-scale range 16-bit data output
- 1 x 3-Axis Magnetometer (E-Compass) Build-in A to D converter for magnetometer data out 16 bit data each 3-Axis magnetic component (Sensitivity 0.15uT/LSB-typ.)

Cellular Module Parameters

For Europe/Asia /LATAM

- LTE(4G) support B1(2100)/B3(1800)/ B7(2600)/ B8(900)/ B20(800DD)/ B38(TDD2600)/B40(TDD2300), data rate at 50Mbps(UL)/100Mbps(DL)
- UMTS(3G) support B1(2100)/B8(900), Data rate at 5.76Mbps(UL)/ 42Mbps(DL)
- 2G support 900/1800MHz
- Certification: CE

For North America

- LTE(4G) support B2(1900)/B4(1700 AWS)/B5(850)/B17(700bc), data rate at 50Mbps(UL)/100Mbps(DL)
- HSPA(3G) support B2(1900)/B5(850), Data rate at 5.76Mbps(UL)/ 42Mbps(DL)
- Carrier License: AT&T , Certification: FCC

For China

- LTE(4G) support B1(2100)/B3(1800)/B8(900)/B38(TDD2600)/B39 (TDD1900)/B40(TDD2300)/B41(TDD2500), data rate at 50Mbps(UL) /100Mbps(DL)
- HSPA(3G) support B1(2100)/B8(900), Data rate at 5.76Mbps(UL)/ 42Mbps(DL)
- 2G support 900/1800MHz,
- Certification: CCC

Linux-ready Cortex-A5 Industrial IoT Gateway

Matrix-713

■ H/W Specifications

CPU / Memory

- CPU: ATMEAL ATSAM5D35 536MHz w/MMU
- SDRAM: 512MB, LPDDR2
- Flash: 8GB, eMMC
- DataFlash: 8MB, for system backup

Network Interface

- Type: 1 x Gigabit and 1 x 10/100Mbps Ethernet
- Protection: 1.5KV magnetic isolation
- Connector Type: RJ45

TTY (Serial) Ports

- 4 x Isolated RS-485 (1500Vrms isolation)
- Port 4 support RS422 / RS-485 (selectable)
- Direction Control: Auto, by hardware
- Connector: Terminal block
- RS485 Signal: Data+, Data-
- LED Indicator: YES

CAN Bus Ports

- 2 x CAN bus 2.0 A/B compliant ports
- Speed: Up to 1Mbps

Console / Debug Ports

- 1 x microUSB console port
- Serial console port (inside the box)

USB 2.0 Host Interface

- 2 x USB Host Port

Audio Out

- 1 x Line-out R/L port, optional Earphone R/L
- Connector: Earphone-Jack
- Support MP3 and WAV format

Digital Input

- 2 x Digital Input channels
- Isolation Protection: 2500Vrms (Photo-Coupler)
- Logical High: 5~24VDC
- Logical Low: 0~1.5VDC

Relay Output

- 2 x Digital Output Channels (Solid state Relay)
- Solid State Relay, Normal Open (NO) Type
- Contact Rating: 80VDC@1.5A
- LED Indicator: YES

Power Requirement

- Power Input: +9~+60VDC (terminal block)
- Typical Consumption : 12VDC@230mA

Dual Power Source

- Support external Battery bank
- Via Micro-USB port (5Vdc@1A)

SD Slot

- 1 x Micro-SD socket
- SD 2.0 compliant, supports SDHC
- Storage capacity: Support Up to 128G

Expansion

- 2 x miniPCIe Full-size socket
- 2 x micro-SIM card socket , USB interface reserved
- 3 x SMA-type Antenna hole reserved

General

- Watchdog: Yes
- Real-Time Clock (RTC): Yes, backup by super capacitor
- Buzzer: Yes
- Power Input: +9~+48VDC (terminal block)
- Typical Consumption: 12VDC@600mA
- Indicator: PWR, READY, LAN, UART, CAN, Status(user define)
- Dimensions (W x L x H): 160 x 118 x 35mm (6.3 x 4.64 x 1.37in)
- Operating Temperature: 0~70°C (32~158°F)
- Regulation: CE Class A, FCC Class A
- Installation: Wall mounting, DIN-rail mounting (with optional kit)

■ S/W Specifications

Operation System

- Linux kernel 4.9.x
- Supports bootup from eMMC or SD card
- Boot Loader : Barebox
- File System : EXT4/ETX3/ETX2, VFAT/FAT, NFS

Software Development

- Toolchain: gcc 6.2.x+ glibc 2.24
- Supports in-place C/C++ code compilation

Package Management

- Package repository: Artila self-maintained repository
- Command: Using standard apt-get command

Popular Packages

- Web server: Apache/Nginx/Lighttpd
- Database: MySQL/SQLite3/PostgreSQL
- Script Language: PHP/Python/Perl/NodeJS
- Text editor: vim/nano/sed
- Administration: Webmin

■ Ordering Information

Matrix-713

- Linux-ready Cortex-A5 536MHz Industrial IoT Gateway with 512MB SDRAM, 8GB eMMC Flash, with GPS/Gyro/G-sensor/E-compass

Matrix-713-EA (for Europe, ASIA, LATAM)

- Linux-ready Cortex-A5 536MHz Industrial IoT Gateway with 512MB SDRAM, 8GB eMMC Flash, with GPS/GLONASS, with 4G/LTE miniPCIe Module with antenna

Matrix-713-NA (for North America)

- Linux-ready Cortex-A5 536MHz Industrial IoT Gateway with 512MB SDRAM, 8GB eMMC Flash, with GPS/GLONASS, with 4G/LTE miniPCIe Module with antenna

Matrix-713-C (for China)

- Linux-ready Cortex-A5 536MHz Industrial IoT Gateway with 512MB SDRAM, 8GB eMMC Flash, with GPS/GLONASS, with 4G/LTE miniPCIe Module with antenna

M-W172

- 2.4G Wifi (802.11b/g/n) miniPCIe module with Antenna

DK-35A (36-DK35A-000)

- DIN RAIL Mounting Kit

PWR-12V-1A (31-62100-000)

- 12VDC@1A power adapter with 110 ~ 240VAC power-in