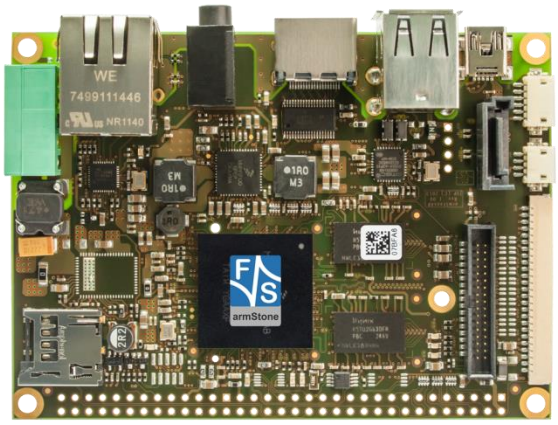
armStone™A9

Single Board Computer with NXP i.MX 6 Processor

Charateristics

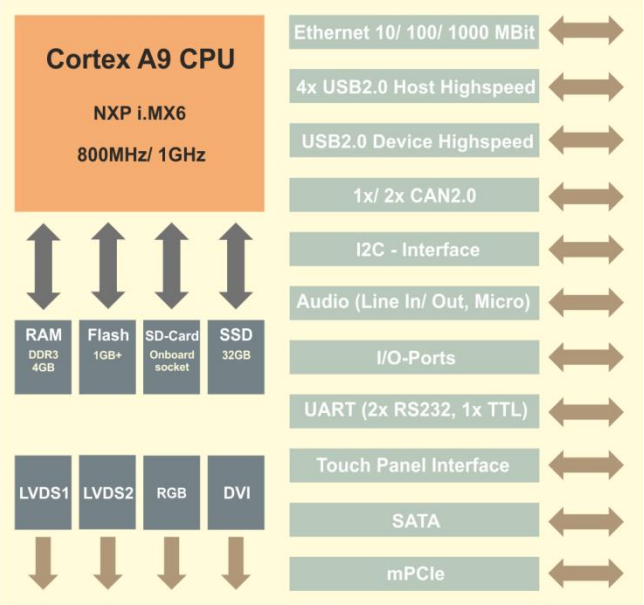
- Cortex®-A9 Quad-/ Dual-/ Single-Core with 1GHz
- up to 4GB RAM and 512MByte SLC Flash
- TFT via 2x LVDS (up to WUXGA) and 1x RGB (up to SVGA) and DVI (up to FullHD)
- 2D, 3D and 5 Window Layer
- NEON, FPU, OpenGL/ ES 2.x, 3D, MPEG4
- 1x Ethernet 10/ 100/ 1000MBit
- 1x USB 2.0 Device, 4x USB 2.0 Host
- 1x CAN 2.0, 1x I^2C, 1x SPI
- 3x Serial (2x RS232, 1x TTL 3,3V-Level)
- 1x micro-SD Card, 1x PCIe, 1x SATA
- Audio Line IN/ OUT/ MIC, Touch via I^2C
- Linux/ WEC 7/ 2013
- 5V/ 8-14V Low Power Design (about 4W typ., 8-14V opt.)



Description

The armStoneA9 is a compact and very powerful SBC. The PicoITX form factor is perfectly suited for the development of compact applications. The Cortex®-A9 CPU by NXP is available in Quad-/ Dual-/ and Single-Core version and ideal for multi-media applications. The CPU has functions such as 2D/ 3D acceleration, Window Layer, FPU, NEON, MPEG4, as well as OpenVG and it can be provided for more than 10 years. The module comes with a high capacity of RAM and Flash memory and numerous communication interfaces (CAN, PCIe, SATA, etc.). Furthermore it offers 2 LVDS interfaces up to WUXGA, a RGB interface up to SVGA and DVI up to FullHD simultaneously. Touch panels can be connected via an external controller board (I^2C). At a power supply of 5V (8-14V), the power consumption is only about 4W typ.

Block Diagram



On-Board Operating System

Windows Embedded Partner

The customized WEC 7/2013 (Bootloader, Kernel, interface drivers, Silverlight, Mediaplayer, IE) is an efficient real-time operating system. Together with Compact Framework 3.5 it is ideal for software development.

The F&S Linux BSP (4.1., uboot, BSP, Buildroot, QT, GStreamer) contains the customized kernel and all interface drivers, including Source. A Cross Compiler Toolchain is offered for the development of own software. Additionally, there is a pre-configured Ubuntu Root Filesystem.

Starterkit

The armStoneA9-SKIT is available with Linux or WEC 7. It consists of an armStoneA9 board, a set of cables, memory media and the access data for the download area. In the download area the current software and documentation can be downloaded and installed. A forum with 3000+ registered customers offers example programs and free support for customers. A Workshop and suiting display kits pave the way for an easy start of development.

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Connector Assignment

J1 – Feature Connector

1	VCC3.3 (J5 pin 26)	12	XGPIO8/SPI_CLK	23	XGPIO15/ROW5	34	VCFL_ON	45	LINEOUT_R	56	RTS0 (RS232)
2	VCC5	13	TX1/GPIO0	24	XGPIO16/ROW6	35	ADC_IN3	46	GND	57	TX0 (RS232)
3	XGPIO0/COL0	14	XGPIO9/SPI_CSn	25	XGPIO17/ROW7	36	RXD2 (RS232)	47	GND	58	CTS0 (RS232)
4	XGPIO1/COL1	15	RX1/GPIO1	26	XGPIO18	37	GND	48	LINEIN_L	59	nc
5	XGPIO2/COL2	16	I2CLK/SPI_MOSI	27	GND	38	TXD2 (RS232)	49	LINEOUT_L	60	nc
6	XGPIO3/COL3	17	I2DAT/SPI_MISO	28	PWMOUT0	39	VCC3.3	50	GND	61	GND
7	XGPIO4/COL4	18	XGPIO10/ROW0	29	ADC_IN0	40	VCC5	51	RESETBTN	62	VCC5 (COM keypin)
8	XGPIO5/COL5	19	XGPIO11/ROW1	30	PWMOUT1	41	MIC1 (Audio pin 1)	52	VCC3.3	63	CANRX/CANL
9	XGPIO6/COL6	20	XGPIO12/ROW2	31	ADC_IN1	42	GND	53	nc (COM pin1)	64	CANTX/CANH
10	XGPIO7/COL7	21	XGPIO13/ROW3	32	PWMOUT2	43	nc	54	nc	65	BOOTSEL
11	GND	22	XGPIO14/ROW4	33	ADC_IN2	44	LINEIN_R	55	RX0 (RS232)	66	VCC3.3

Add-Ons

TFT & Cap. Touch
7“ WVGA Display with LVDS interface and fitting connection cable (25pol connector), furthermore, the display has a capacitive touch panel

Displaykit LVDS
7“ WVGA Display with LVDS interface and fitting connection cable (25pol connector)

Displaykit RGB
7“ WVGA Display with RGB interface and resistive Touchpanel, fitting connection cable, display adapter and touch cable

Safe Filesystem (F3S)
It offers transaction safety on file level and therefore guarantees the consistency of the data, even in case of a blackout or other interferences while writing.

UpDate Software
This program package allows a safe and easy update of the application program and the operating system via USB Stick or SD Card. Blackouts and other interferences during the update are considered.

armStone Extension
Routes interfaces of the 66pin feature connector to standard connectors.

Technical Data

Power Supply:	$+5V_{DC}$/ ± 5%
Power Consumption:	4W typ.
Digital I/ O:	max. 66 I/ O ports
Touch Panel:	4-wire, analogue resistive capacitive Touch via I^2C (SINTF-ADP-CTOUCH)
Interfaces:	1x Ethernet 3x Serial (1x with RTS/ CTS/ 2x RS232/ 1x TTL Level) 4x USB 2.0 Host 1x USB 2.0 Device 1x I^2C 1x SPI 1x CAN 2.0 1x micro-SD Card 1x Audio (IN/ OUT/ MIC) 1x miniPCIe 1x SATA
TFT LCD Interface:	TFT up to WUXGA via LVDS RGB up to SVGA
Screen:	DVI up to FullHD
RAM:	1GB (up to 4GB)
Program Memory:	128MB (up to 512MB)
Processor:	NXP i.MX 6 Cortex®-A9 (Quad-/ Dual-/ Single-Core) 800MHz/ 1GHz
Temperature Range:	0°C - +70°C (opt. -20°C - +85°C I-Temp. Version)
Size:	100mm x 72mm x 15mm (l x b x h)
Weight:	about 40g

Standard Versions/ Order Notations

aStoneA9-V1-LIN
Quad-Core, 1GB RAM, 128MB Flash, Audio, Ethernet, CAN, PCIe, SATA,LVDS/ RGB/ DVI, 0°C-+70°C, Linux

aStoneA9-V1-W13/ WEC7
Quad-Core, 1GB RAM, 128MB Flash, Audio, Ethernet, CAN, PCIe, SATA,LVDS/ RGB/ DVI, 0°C-+70°C, WEC 2013/ WEC 7

aStoneA9-V2I-W13
Solo, 512MB RAM, 128MB Flash, Audio, Ethernet, CAN, PCIe, LVDS/ RGB/ DVI, -20°C-+85°C, WEC 2013

aStoneA9-V2I-LIN
Solo, 512MB RAM, 128MB Flash, Audio, Ethernet, CAN, PCIe, LVDS/ RGB/ DVI, -20°C-+85°C, Linux

aStoneA9-V3I-W13
DualLite, 1GB RAM, 128MB Flash, Audio, Ethernet, CAN, PCIe, LVDS/ RGB/ DVI, -20°C-+85°C, WEC 2013

aStoneA9-V3I-LIN
DualLite, 1GB RAM, 128MB Flash, Audio, Ethernet, CAN, PCIe, LVDS/ RGB/ DVI, -20°C-+85°C, Linux

Minimum Order Quantity for Special Versions: 300 pieces

Standard Versions/ Order Notations

aStoneA9-SKIT-WCE
aStoneA9-V1-WEC7, connection cable, 7” WVGA TFT with resistive touch panel and adapter, access data to documentation and software

aStoneA9-SKIT-LIN
aStoneA9-V1-LIN, connection cable, 7” WVGA TFT with resistive touch panel and adapter, access data to documentation and software

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