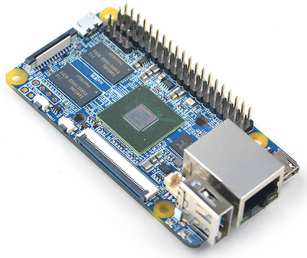
FriendlyELEC NanoPi Fire3 - Octa-Core Samsung S5P6818 Cortex-A53, 400M Hz - 1.4G Hz



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Introduction

Overview Front Back

- The NanoPi Fire3 is a high performance ARM Board developed by FriendlyElec for Hobbyists, Makers and Hackers for IOT projects. It features Samsung's Cortex-A53 Octa Core S5P6818@1.4GHz SoC and 1GB 32bit DDR3 RAM. It has a Gbps Ethernet port. It boots Android and Debian from a TF card. It integrates an HDMI and LCD interface. Its adoption of the Raspberry Pi's GPIO pin header makes it compatible with both Raspberry Pi's external GPIO modules and Arduino's shield boards. Its PCB dimension is 75 x 40 mm.

Hardware Spec

- CPU: S5P6818, 1.4GHz
- RAM: 1GBMB DDR3
- Connectivity: Gbps Ethernet port
- PMU Power Management: Implemented by a Cortex-M0 MCU, support software power-off, and RTC alarm power-on functions
- USB 2.0 Type A x 1
- Debug Serial Port/UART0 x 1
- microSD Slot x 1
- microUSB x 1: for data transmission and power input
- LCD Interface: 0.5 mm pitch SMT FPC seat, for full-color LCD (RGB: 8-8-8)
- HDMI: HDMI 1.4A, microHDMI(Type-D), 1080P60
- DVP Camera Interface: 0.5mm spacing FPC socket. It includes ITU-R BT 601/656 8-bit, I2C and IO
- GPIO: 2.54mm spacing 40pin, compatible with Raspberry Pi's GPIO. It includes UART, SPI, I2C, PWM, IO etc
- Button: Power Button x 1, Reset Button x 1

- LED: LED for Power Indication x 1, System LED x 1
- RTC: RTC Battery Seat
- PCB Dimension: 75 x 40mm
- Power: DC 5V/2A
- Temperature measuring range: -20? to 80?
- OS: Android, Debian and FriendlyCore(Linux Kernel 4.4 + Qt5.9 + OpenGL2.0)

compact

Software Features

FriendlyCore (Based on UbuntuCore16.04 with Qt5.9 and OpenGL ES1.1/2.0)

- Linux Kernel 4.4
- npi-config: npi-config: system configuration utility for setting passwords, language, timezone, hostname, SSH and auto-login
- networkmanager: manage network
- system log output from serial port
- welcome window with basic system information and status
- auto-login with user account "pi" with access to npi-config
- LibMali & OpenGL2.0 driver supported
- Qt5.9 TLS with OpenGL hardware acceleration
- HD video playing with hardware decoding
- GStreamer 1.0 with VPU hardware acceleration
- RPI.GPIO Support: work in progress, not ready yet
- WiringPi Support: work in progress, not ready yet

Diagram, Layout and Dimension

Layout

NanoPi Fire3 Layout

- **GPIO Pin Spec**

Pin#	Name	Pin#	Name
1	SYS_3.3V	2	VDD_5V
3	I2C0_SDA	4	VDD_5V
5	I2C0_SCL	6	DGND
7	GPIOD8/PPM	8	UART3_TXD/GPIOD21
9	DGND	10	UART3_RXD/GPIOD17
11	UART4_TX/GPIOB29	12	GPIOD1/PWM0
13	GPIOB30	14	DGND
15	GPIOB31	16	GPIOC14/PWM2
17	SYS_3.3V	18	GPIOB27
19	SPI0_MOSI/GPIOC31	20	DGND
21	SPI0_MISO/GPIOD0	22	UART4_RX/GPIOB28
23	SPI0_CLK/GPIOC29	24	SPI0_CS/GPIOC30
25	DGND	26	GPIOB26
27	I2C1_SDA	28	I2C1_SCL
29	GPIOC8	30	DGND

31	GPIOC7	32	GPIOC28
33	GPIOC13/PWM1	34	DGND
35	SPI2_MISO/GPIOC11	36	SPI2_CS/GPIOC10
37	AliveGPIO3	38	SPI2_MOSI/GPIOC12
39	DGND	40	SPI2_CLK/GPIOC9

- **Debug Port(UART0)**

Pin#	Name
1	DGND
2	VDD_5V
3	UART_TXD0
4	UART_RXD0

- **DVP Camera Interface Pin Spec**

Pin#	Name
1, 2	SYS_3.3V
7,9,13,15,24	DGND
3	I2C0_SCL
4	I2C0_SDA
5	GPIOB14
6	GPIOB16
8	GPIOC13/PWM1
10	NC
11	VSYNC
12	HREF
14	PCLK
16-23	Data bit7-0

- **RGB LCD Interface Pin Spec**

Pin#	Name	Description
1, 2	VDD_5V	5V output, LCD power
11,20,29, 37,38,39,40, 45	DGND	ground
3-10	Blue LSB to MSB	RGB Blue
12-19	Green LSB to MSB	RGB Green
21-28	Red LSB to MSB	RGB Red
30	GPIOB25	available for users
31	GPIOC15	occupied by FriendlyARM one wire technology to recognize LCD models and control backlight and implement resistive touch, not applicable for users
32	XnRSTOUT Form CPU	low when system is reset
33	VDEN	signal the external LCD that data

		is valid on the data bus
34	VSYNC	vertical synchronization
35	HSYNC	horizontal synchronization
36	LCDCLK	LCD clock, Pixel frequency
41	I2C2_SCL	I2C2 clock signal, for capacitive touch's data transmission
42	I2C2_SDA	I2C2 data signal, for capacitive touch's data transmission
43	GPIOC16	interrupt pin for capacitive touch, used with I2C2
44	NC	not connected

- **RTC**

  3.35uA@3V

- **USB 2.0 Host**

  with 1A over current protection

  Note

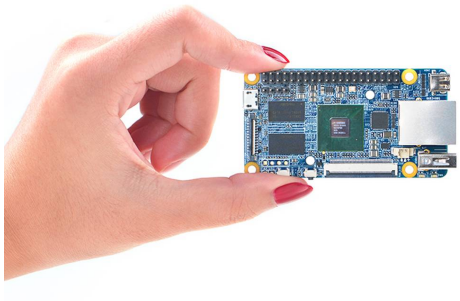
  1. SYS_3.3V: 3.3V power output
  2. VDD_5V: 5V power input/output. When the external device's power is greater than the MicroUSB's the external device is charging the board otherwise the board powers the external device. The input range is 4.7V ~ 5.5V
  3. For more details please refer to the schematic.NanoPi Fire3 1709 Schematic.pdf

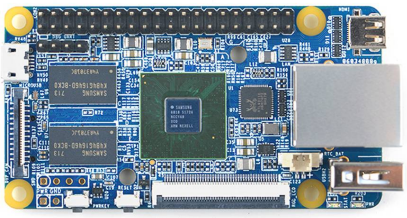
Board Dimension

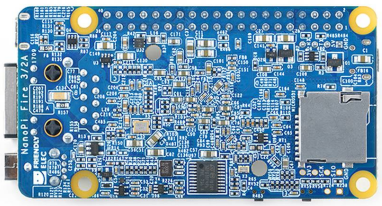
For more details please refer to the dxf drawimg document.NanoPi Fire3 1709 dxf??

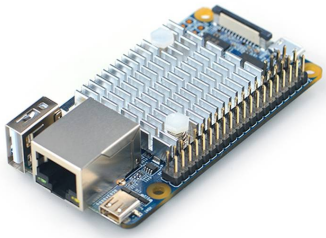
Related Resources

WIKI: http://wiki.friendlyarm.com/wiki/index.php/NanoPi_Fire3









Zubehör

Art.-Nr.	Name
124149	Kühlkörper Alu (zwei Stück) mit Thermalkleber für Banana Pi, FriendlyElec, Lemaker
124147	ALLNET Ersatznetzteil - 5V / 2A USB Typ A Buchse, Khadas, Friendly, banana pi etc.
112980	\Flash SecureDigitalCard 16GB *SanDisk* microSDHC - UHS-I - Extreme Pro
121357	/Flash SecureDigitalCard 64GB *Sandisk* microSDXC - Class 10 - Ultra
124479	Flash SecureDigitalCard (SD) 8GB *EMTEC* microSDHC Class10 UHS-I 85mb/s
124768	Flash SecureDigitalCard (SD) 32GB *Kingston* microSDHC - Class 4
125869	\Flash SecureDigitalCard 64GB *Sandisk* microSDXC - UHS-I Extreme

Art.-Nr.	Name
127950	\Flash SecureDigitalCard 128GB *Samsung* microSDXC - UHS-I
77600	Patchkabel USB2.0, 5m, A(St)/B(St), Synergy 21,
93728	\Patchkabel USB2.0, 3m, A(St)/B(St), Synergy 21,
114458	Patchkabel USB2.0, 1m, A(St)/MicroB(St), textil/lila, Synergy 21,
114459	Patchkabel USB2.0, 1m, A(St)/MicroB(St), textil/orange, Synergy 21,
114460	Patchkabel USB2.0, 1m, A(St)/MicroB(St), textil/pink, Synergy 21,
114461	Patchkabel USB2.0, 1m, A(St)/MicroB(St), textil/rot, Synergy 21,
114462	Patchkabel USB2.0, 1m, A(St)/MicroB(St), textil/schwarz, Synergy 21,
114464	Patchkabel USB2.0, 2m, A(St)/MicroB(St), textil/blau, Synergy 21,
114466	Patchkabel USB2.0, 2m, A(St)/MicroB(St), textil/grün, Synergy 21,
114467	Patchkabel USB2.0, 2m, A(St)/MicroB(St), textil/lila, Synergy 21,
134873	FriendlyELEC LCD1602 Keypad - I2C interface, User Keys
134874	FriendlyELEC FA-CAM202 2M-Pixel USB Camera for NanoPi2, Plug and Play
134875	FriendlyELEC UART GPS NEO-7M Module ,Matrix GPS Module
134876	FriendlyELEC USB2LCD-01
134878	FriendlyELEC NanoPi 2 Fire zbh. 3D Gehäuse Jacket
134879	FriendlyELEC 7" inch capacitive touch LCD(S701)
134880	FriendlyELEC X710 LCD with Capacitive Touch
134881	//FriendlyELEC 4.3 inch resistive touch LCD(P43)
134884	FriendlyELEC CAM500A High Definition Camera
134885	FriendlyELEC NanoPi2 Fire, NanoPi M1/M2 zbh. Aluminium Kühlkörper mit 3M Klebepad
134888	//FriendlyELEC Matrix Starter Kit, Open Source Kit for NanoPi2 and Raspberry Pi
149549	ALLNET Antenne 2,4 GHz 2dBi Stummel Mini Omni indoor R-SMA schwarz
162778	ALLNET Adapter MicroSD - MicroSD Verlängerung Kabel