

# A38X ClearFog

[a38x](#), [usom](#), [microsom](#), [carrierboard](#), [SR-uSOM](#), [clearfog](#)



## Description

Discover the endless potential of the powerful ARM based boards of ClearFog. The family includes the ClearFog Pro and ClearFog Base (coming soon). Harnessing the robust processing abilities of the ARMADA 38x SoC from Marvell, the ClearFog offers vast application potential as a flexible development board or a ready to deploy solution. Alongside the powerful ARMADA 38x SoC, the ClearFog includes a variety of I/O and connectivity technologies such as multiple mini-PCIe/mSATA sockets, audio/telephony module header, PoE expansion header, mikroBUS™ – a simple socket allowing you to integrate a wide range of MikroElektronika click boards™ modular extensions.

## Comparison Table

Description/Model	Clearfog Base	Clearfog Pro
<b>MicroSOM</b>	A388 SoM	A388 SoM
<b>Memory and Storage</b>	1GB (up to 2GB) M.2 (2242) <b>uSD, 8GB eMMC*</b> (Optional)	1GB (up to 2GB) M.2 <b>uSD, 8GB eMMC*</b> (Optional)
<b>Connectivity</b>	1 x mPCIe 1 x USB 3.0 port 2 x Port dedicated Ethernet 1 x SFP	2 x mSATA/mPCIe 1 x USB 3.0 port 1 x Port dedicated Ethernet 6 x Port switched Ethernet with jumbo frame (10KB) * * 1 x SFP
<b>I/O and Misc.</b>	mikroBUS <sup>(1)</sup> Indication LEDs User Push Buttons PoE expansion header RTC Battery FTDI (Console Only)	Analog Audio/TDM module support GPIO Header (MikroBus) Indication LEDs User Push Buttons PoE expansion header RTC Battery FTDI (Console Only) / Debug Header JTAG Header
<b>OS Support</b>	Linux Kernel 4.x, OpenWRT, Yocto	Linux Kernel 4.x, OpenWRT, Yocto

Description/Model	Clearfog Base	Clearfog Pro
<b>Power</b>	Wide range 9V-32V	Wide range 9V- 32V Advanced Power Control Fan Control
<b>Dimensions</b>	103mm x 75mm	225mm x 100mm
<b>Enclosure</b>	Optional Metal Enclosure	Optional Metal Enclosure

\* M.2 includes USB 3.0, SATA, GNSS, 3G modules support (in carrier Base only)

\*\* Only 5 ports are supported in the managed switch scenario.

MicroSom available in Commercial (0°C ~ 70°C ambient) and Industrial grade (-40°C ~ 85°C ambient).

ARMADA 38x SoC maximum die temperature must be below 115°C in both Commercial and Industrial grades.

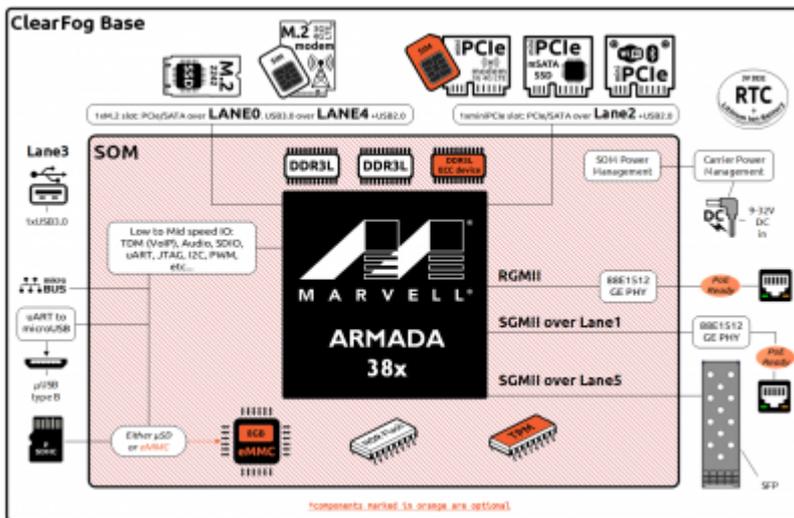
ARMADA 38x SoC processor maximum speed for industrial grade devices is 1.3GHz

Please note that if you select eMMC version the SDHC will not be accessible on the board.

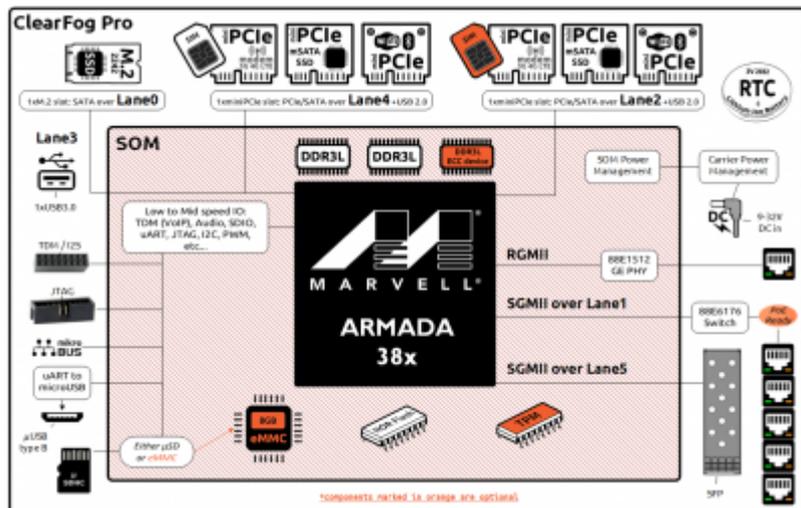
Due to the fact that uSD and eMMC features are exclusive (can not both work in the same product) and since the uSD version is much easier to develop with, we recommend to use the uSD version for evaluation and early development phase and the eMMC version for final product development and mass deployment.

## Block Diagrams

### Clearfog Base



### Clearfog Pro



### PoE

The Clearfog Pro Carrierboard is prepared for a power of ethernet modul. (PoE)

### Switching PCIe to MSATA

The mini-pcie slots on the top of the board can be configured to be either SATA or PCIe. This configuration does not auto-detect yet and needs to be hard coded in u-boot. I can add a u-boot env variable to switch between them.

You need to modify the #if 1 to #if 0 in the following two places -

[https://github.com/SolidRun/u-boot-armada38x/blob/u-boot-2013.01-15t1-clearfog/tools/marvell/bin\\_hdr/src\\_phy/a38x/mvHighSpeedTopologySpec-38x.c#L92](https://github.com/SolidRun/u-boot-armada38x/blob/u-boot-2013.01-15t1-clearfog/tools/marvell/bin_hdr/src_phy/a38x/mvHighSpeedTopologySpec-38x.c#L92)

and

[https://github.com/SolidRun/u-boot-armada38x/blob/u-boot-2013.01-15t1-clearfog/tools/marvell/bin\\_hdr/src\\_phy/a38x/mvHighSpeedTopologySpec-38x.c#L98](https://github.com/SolidRun/u-boot-armada38x/blob/u-boot-2013.01-15t1-clearfog/tools/marvell/bin_hdr/src_phy/a38x/mvHighSpeedTopologySpec-38x.c#L98)

This will modify the SERDES of the PEX (pcie) to become a SATA port

### Bootdevice (Dipswitch)

On both carrierboards - the bootdevice can be chosen by using the SW1 Dipswitch.



**White is the dip position. Black is the background.**

UART Booting does **not** work with above configuration! Instead, use **01001** where 1 means on, and 0 means off.

Additional Information: If the MicroSom got EMMC onboard - SD wont work.</note>

### **mikroBUS - incompatible clickboards**

While the Clearfog does implement the mikroBUS standard, there are still ClickBoards that do not work on the Clearfog! Before buying, please make sure that each pin used by the board supports the required function.

Sample: OLED C Click This board requires the AN pin which is meant as an **analogue input** on the clearfog, to be used as a **digital output** for controlling the display controller. However the Clearfog does currently (revision 2.1) not expose any output functionality on this specific pin. Mikroelektronika staff will gladly answer any compatibility questions you might have. So feel free to contact them!

Sometimes there is an easy solution to still use the given clickboard. This is a solution for OLED C: The INT pin on the mikrobus header is not used by clickboard, so one just needs to solder a little wire bridging INT with AN onto the clickboard. And make sure to adapt all code to the new pin!

### **Accessing GPIO Pins**

This is an example code for accessing the GPIOs on the Clearfog:

Example for gpio 22

```
cd /sys/class/gpio/
echo 22 > export
cd gpio22/
echo out > direction
echo 0 > value
```

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