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MICROCHIP

96Boards

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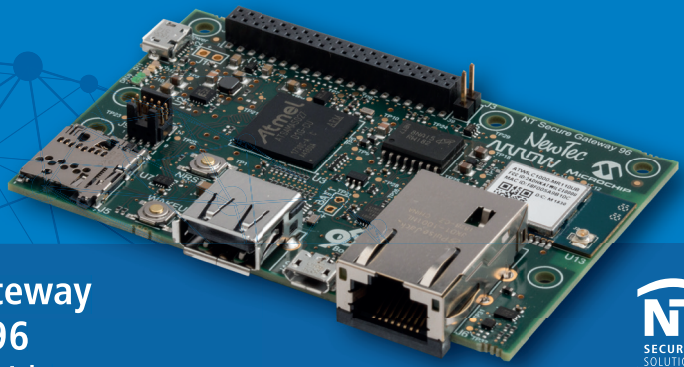


NTSecureGateway HelmsDeep96
Quick Start Guide

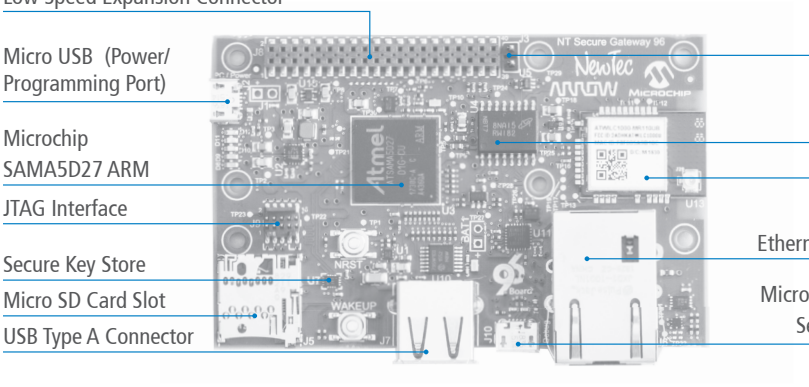
NT SECURITY SOLUTIONS

QUICK START GUIDE

Read user manual carefully before use!

Board Description

The NTSecureGateway Helm's Deep is based on the ATSAMA5D27 SoC and is designed in agreements of the 96 Board Community Startdart (IoT Edition Extended, 1.8V 40 Pin Connector).



Hardware Features

Component	Description
Form factor	Conform to 96Boards IoT Edition Extended (1.8V) 40 Pin Low Speed Expansion Connector
SoC	ATSAMA5D27, Cortex A5 Core (ARMv7-A Architecture), 500 MHz, 128 Mb RAM integrated (System in Package, Arm TrustZone
WLAN	Microchip ATWILC1000-MR110xB, IEEE 802.11 b/g/n
Ethernet	10BASE-T/100BASE-TX IEEE 802.3 compliant
USB 2.0 OTG	USB A Connector
Real Time Clock/Calendar	Microchip MCP795W1 Optional Batter-Backed
Crypto	CryptoAuthentication Device ATECC608
SD Card	One micro SD Card Slot
NOR Flash	Micron MT25QU01GBBB,128 Mb Clock frequency 166MHz (MAX) for all protocols in STR

Component	Description
LEDS	Power (Green), WIFI Active (Yellow), User Led (Blue), User Led (Orange), User Led (Green)
Buttons	Reset Button, Wake Up Button
JTAG	10-Pin micro header
Debug USB	Access to Serial Console
Programming Port	Atmel Bossa Programming Port
OS Support	Embedded Linux
Size	85 mm x 54 mm

Connectors Description

Pin No	Description
1	GND
2	GND
3	UART0_CTS
4	PWR_BTN_N
5	UART0_TxD
6	RST_BTN_N
7	UART0_RxD
8	SPI0_SCLK
9	UART0_RTS
10	SPI0_DIN
11	UART1_TxD(O)
12	SPI0_CS
13	UART1_RxD(O)
14	SPI0_DOUT
15	I2C0_SCL

Pin No	Description
16	PCM_FS
17	I2C0_SDA
18	PCM_CLK
19	I2C1_SCL
20	PCM_DO
21	I2C1_SDA
22	PCM_DI
23	GPIO-A
24	GPIO-B
25	GPIO-C
26	GPIO-D
27	GPIO-E
28	GPIO-F
29	GPIO-G
30	GPIO-H

Pin No	Description
31	GPIO-I
32	GPIO-J
33	GPIO-K
34	GPIO-L
35	1V8
36	NC
37	5V
38	NC
39	GND
40	GND

Starting the Board

1 Prerequisites

HelmsDeep96 (Board itself)
SD Card Reader
Power adapter

USB-to-Micro-USB Cable
Micro SD Card

WIFI Antenna (optional)
Ethernet cable (optional)

2 Preparation

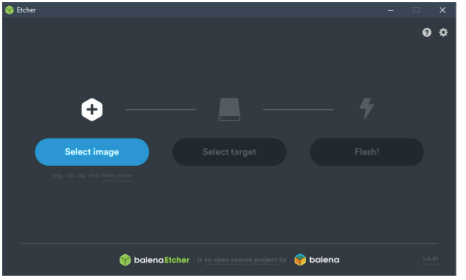
Step 1: Download Image: HD96.img
(https://github.com/ArrowElectronics/hd96)

Step 2: Download and install Etcher
Windows: (https://www.balena.io/etcher/)
Linux: Install Etcher (Ubuntu)

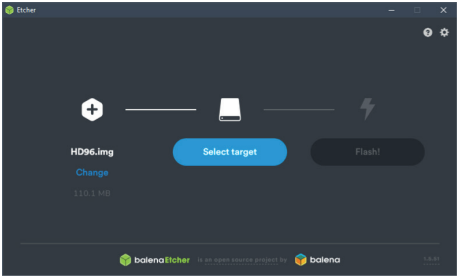
Step 3 Serial Interface Connection
(Optional)
Windows: PUTTY (https://putty.org/)
Linux: PUTTY

3 Flashing Image to SD-card Windows / Linux with Etcher

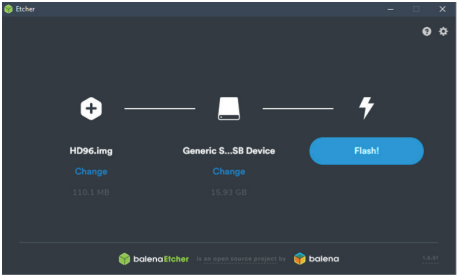
Step 1: Select Image (HD96.img)



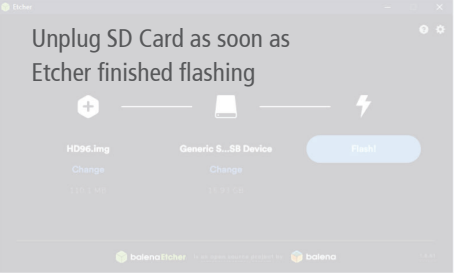
Step 2: Select SD Card



Step 3: Flash Image to SD Card



Step 4: Unplug SD Card



4 Power-on

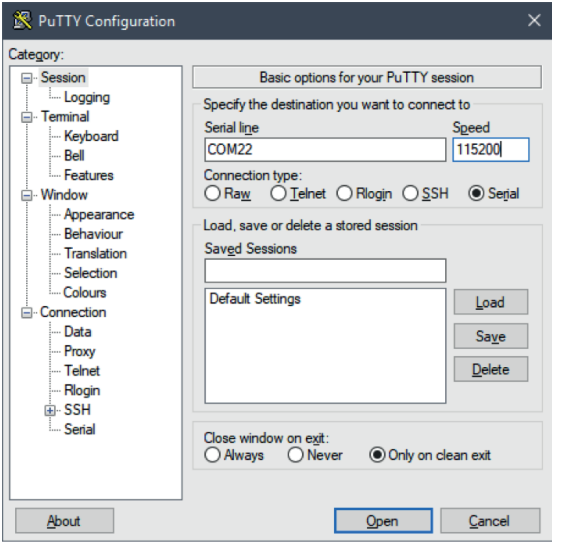
Step 1: Connect Ethernet Cable
Step 2: Insert SD card into SD card slot
Step 3: Connect USB to J2 PC/Power or to J10 Debug
Step 4: Connect to Device over SSH

Note: During boot the Device will try to establish a network connection, this may take a bit longer if no Ethernet cable is connected.

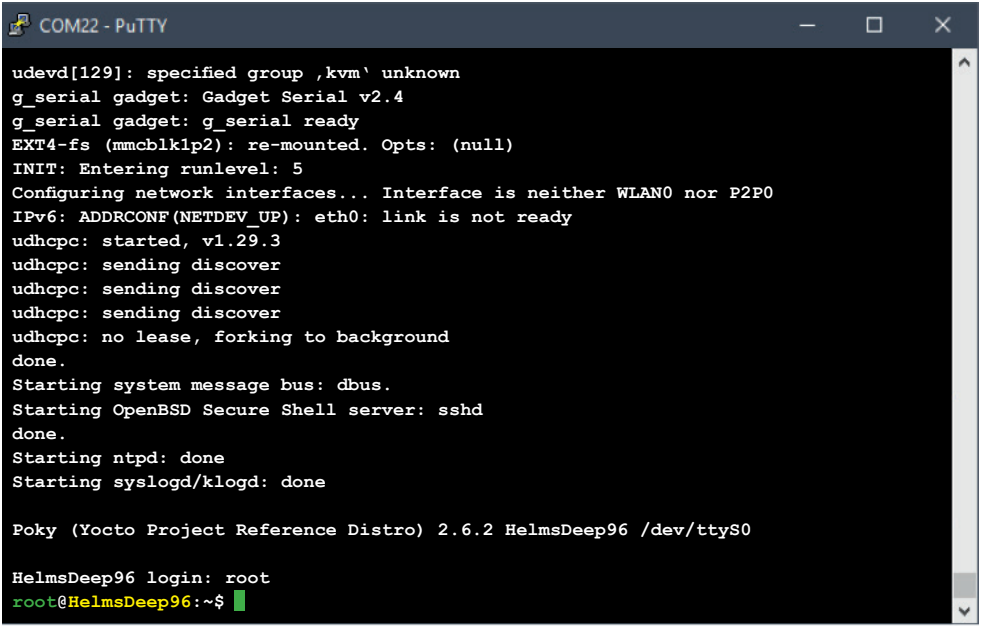
5 Connecting to Debug Interface

If you start the Device for the first time it may be useful to see the boot messages or get the device IP address to be able to SSH to the device. You can use the J10 Debug Interface and a serial monitor like putty to connect to the device.

- Connect USB Cable to J10 Debug
- Open putty
  - Choose Connection type Serial
  - Set COM Port
  - Set Speed to 115200



PuTTY – Serial Configuration



PuTTY – Serial Interface

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With passion.

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