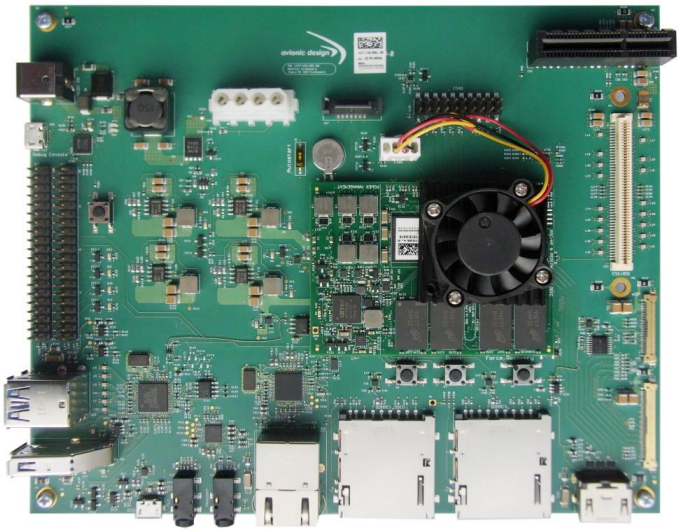

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User Guide

Meerkat K1 Eval Kit

Product information

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Product:	Meerkat K1 Eval Kit
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	Wragekamp 10
	22397 Hamburg
	Germany
In cooperation with:	NVIDIA®

Revision history

Document number	Date	Version	Remarks
1477-002-315	December 2016	00	Preliminary release

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The Meerkat products are subject to change. Please check www.avionic-design.de for updates.

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Table of contents

List of illustrations

Explanation of the symbols

•	Indicates a list of various items
▶	Indicates the result of a step
	Indicates additional information
	Indicates hyperlinked chapters and sections within the user guide

Abridged list of abbreviations

SOM	System on a Module, here: Meerkat K1 Processor Module
Eval Kit	Meerkat K1 Evaluation Kit
ECB	Meerkat K1 Evaluation Carrier Board
TBD	To be defined

1. Introduction

Meerkat - Let's innovate together!

Meerkat is a platform by Avionic Design that features NVIDIA's Tegra® technology. Meerkat defines the form factor, the pinout and the function set.

The Meerkat Evaluation Kit consists of two core components: the Meerkat Tegra® K1 Processor Module (SOM) and the Meerkat Tegra K1 Evaluation Carrier Board (ECB). The ECB is a evaluation reference platform and you can use it as a basis for development. It carries the Meerkat Tegra K1 Processor Module, which features the NVIDIA® Tegra® K1 processor. The ECB will help you evaluate a lot of functions that the Meerkat K1 Processor Module has to offer.

User guide

This user guide will enable you to use the ECB. It will introduce all the relevant functions of the Meerkat Eval Kit. and the required software for it.

This document will give you an overview of the ECB, its main components and the board connectors. It will show you how to start the ECB and how to use it properly in combination with the Meerkat K1 Processor Module.

This guide will show you how to use the pre-installed software or, if required, bootstrap the Eval Kit.

Note
Please read all the information in this user guide carefully! For more information on the Meerkat K1 Processor Module, please read the **Meerkat K1 User Manual**. You can find it at ftp://ftp.avionic-design.de/pub/meerkat/ If you have any questions about this user guide, please contact Avionic Design.

2. Technical properties

The lists below outline the main technical properties of the Meerkat K1 Eval Carrier.

General	
Size	150 mm x 185 mm
Supply voltage	12 V nominal
CPU name	NVIDIA® Tegra® K1
Cooling	Heatsink with Fan

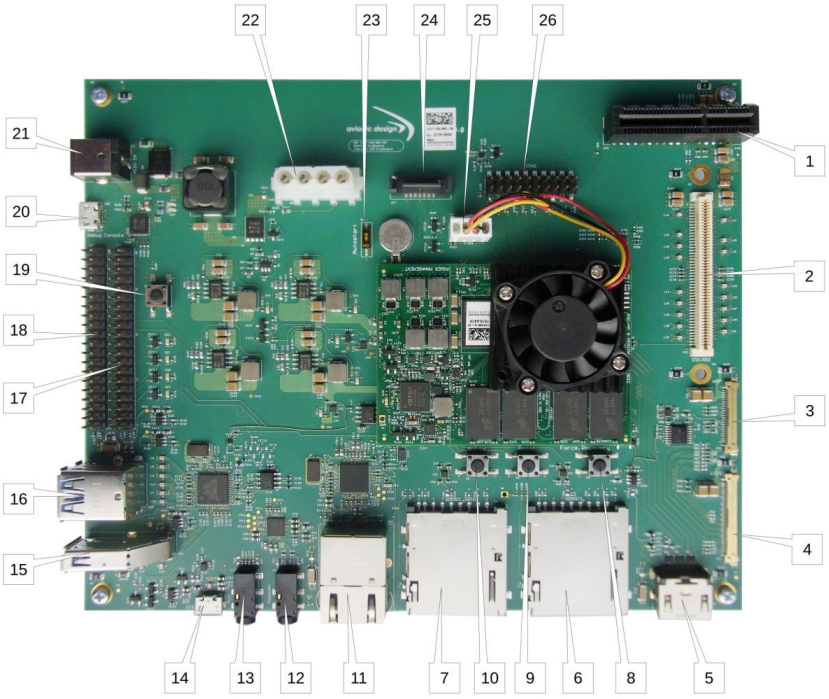
Interfaces	Amount	Notes
SATA	1x	Including Power connector
HDMI Out	1x	-
USB 3.0	3x	-
USB 2.0 client	1x	configurable as host
RS232	1x	Debug, USB2.0
DSI	1x	Display, 4 Lanes
PCIe x4	1x	-
CSI	3x	4x, 4x, 1x
DSI	2x	4x, 4x
LVDS	1x	
eDP	1x	
SD card	2x	
Gigabit Ethernet	1x	
Audio In	1x	
Audio Out	1x	
JTAG	1x	

3. Overview of the Eval Carrier

The following chapter will give you an overview of the Meerkat K1 Eval Carrier and it will explain its main components.

3.1 Structure of the Eval Carrier

Figure 1: Top view of the Eval Carrier



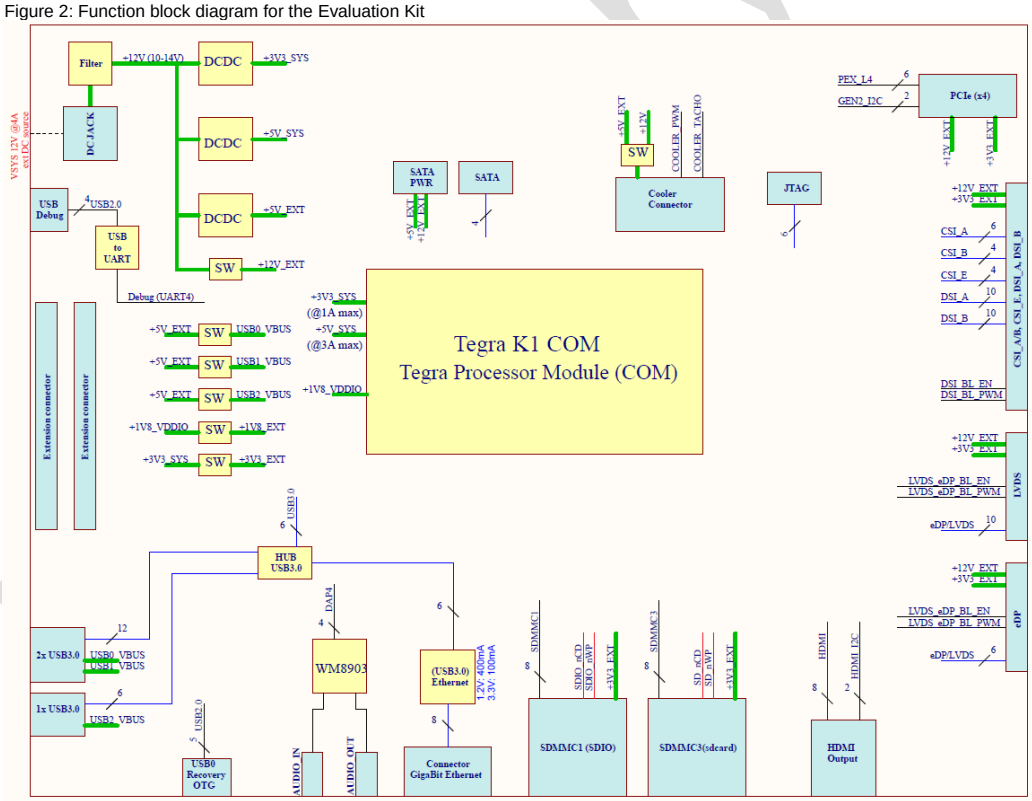
The explanation of **Figure 1**:

Number	Component	Connector
1	PCIe X4	X10
2	CSI Ports, DSI Ports	X22
3	eDP Port	X15
4	LVDS Port	X14
5	HDMI (Type A)	X13
6	SD Card Slot 2	X8
7	SD Card Slot 1	X9
8	Recovery Button	S5
9	Reset Button	S4
10	Power Button	S3
11	Gigabit Ethernet Port	X16
12	Headset Jack	X11
13	Microphone Jack	X12
14	Recovery / Bootstrap USB (Micro B)	X19
15	USB 3 Port 1	X21
16	USB 3 Port 2+3	X20
17	General Purpose ,Pins	X24
18	General Purpose Pins	X23
19	General Purpose Button	S2
20	Debug UART via USB (Micro B)	X25
21	DC power jack (12 V)	X1
22	SATA Power	X18
23	Configuration Pin Autostart	S1
24	SATA	X17
25	Fan Connector	X26
26	JTAG	X27

3.2 Function block diagram

In this chapter you will find an overview of the function block diagram for the Meerkat K1 Evaluation Kit. You can find a larger version of this **Schematic** under the following Link: ftp://ftp.avionic-design.de/pub/meerkat/

Figure 2: Function block diagram for the Evaluation Kit



3.3 Main components of the Eval Kit

The Meerkat K1 Evaluation Kit consists of the following main components:

- **Meerkat K1 Processor Module:**

  NVIDIA® Tegra™ K13 SoC (see **Meerkat K1 User Manual at:** ftp://ftp.avionic-design.de/pub/meerkat/)

- **Meerkat K1 Evaluation Carrier Board:**

  The Meerkat K1 Processor Module needs to be plugged into the carrier board connectors.

3.4 Pinouts of the connectors on the Eval Carrier

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In this chapter you will find a list of the pinouts of the connectors of the Meerkat K1 Evaluation Carrier Board.

Connector	Component	Pinout	Pinout
X10	PCI Express (Molex Card Edge Connector: 87715-9106)	Pin A1: GND	Pin B1: +12V_EXT
		Pin A2: +12V_EXT	Pin B2: +12V_EXT
		Pin A3: +12V_EXT	Pin B3: N.C.
		Pin A4: GND	Pin B4: GND
		Pin A5: N.C.	Pin B5: GEN2_I2C_SCL
		Pin A6: N.C.	Pin B6: GEN2_I2C_SDA
		Pin A7: N.C.	Pin B7: GND
		Pin A8: N.C.	Pin B8: +3,3V_EXT
		Pin A9: +3,3V_EXT	Pin B9: PCIE_TRST
		Pin A10: +3,3V_EXT	Pin B10: +3,3V_EXT
		Pin A11: PEX_L0_NRST	Pin B11: PEX_NWake
		Pin A12: GND	Pin B12: PEX_L0_NCLKREQ
		Pin A13: PEX1_CLK_P	Pin B13: GND
		Pin A14: PEX1_CLK_N	Pin B14: L1_TX_P
		Pin A15: GND	Pin B15: L1_TX_N
		Pin A16: L1_RX_P	Pin B16: GND
		Pin A17: L1_RX_N	Pin B17: NPRSNT2
		Pin A18: GND	Pin B18: GND
		Pin A19: N.C.	Pin B19: L2_TX_P
		Pin A20: GND	Pin B20: L2_TX_N
		Pin A21: L2_RX_P	Pin B21: GND
		Pin A22: L2_RX_N	Pin B22: GND
		Pin A23: GND	Pin B23: L3_TX_P
		Pin A24: GND	Pin B24: L3_TX_N
		Pin A25: L3_RX_P	Pin B25: GND
		Pin A26: L3_RX_N	Pin B26: GND
		Pin A27: GND	Pin B27: L4_TX_P
		Pin A28: GND	Pin B28: L4_TX_N
		Pin A29: L4_RX_P	Pin B29: GND
		Pin A30: L4_RX_N	Pin B30: N.C.
		Pin A31: GND	Pin B31: NPRSNT2
		Pin A32: N.C.	Pin B32: GND

Connector	Component	Pinout
X1	Power Jack (8-17V Input)	Pin 1: Power
		Pin 2: GND

Connector	Component	Pinout
X11	Headphone Out (3,5mm Audio Jack)	Pin 1: GND
		Pin 2: Plug Detect
		Pin 3: N.C.
		Pin 4: HP_Out_Right
		Pin 5: HP_Out_Left

Connector	Component	Pinout
X12	Microphone In (3,5mm Audio Jack)	Pin 1: GND
		Pin 2: N.C.
		Pin 3: N.C.
		Pin 4: Mic_In_Right
		Pin 5: Mic_In_Left

Connector	Component	Pinout
X19	Recovery / Bootstrap USB (Micro B USB)	Pin 1: VBUS
		Pin 2: D-
		Pin 3: D+
		Pin 4: ID
		Pin 5: GND

Connector	Component	Pinout
X25	DEBUG UART USB (Micro B USB)	Pin 1: VBUS
		Pin 2: D-
		Pin 3: D+
		Pin 4: ID
		Pin 5: GND

Connector	Component	Pinout	Pinout
X22	CSI and DSI Ports (Tyco Electronics: 5177983-4)	Pin 1: +12V ext	Pin 2: +12V ext
		Pin 3: +12V ext	Pin 4: +12V ext
		Pin 5: GND	Pin 6: GND
		Pin 7: CSI E CLK N	Pin 8: GND
		Pin 9: CSI E CLK P	Pin 10: GND
		Pin 11: GND	Pin 12: CSI E D0 N
		Pin 13: GND	Pin 14: CSI E D0 P
		Pin 15: CAM1 PWDN	Pin 16: GND
		Pin 17: CAM1 MCLK	Pin 18: DSI_CSI_GPIO0
		Pin 19: GND	Pin 20: DSI_CSI_GPIO1
		Pin 21: CSI_A_CLK_N	Pin 22: GND
		Pin 23: CSI_A_CLK_P	Pin 24: GND
		Pin 25: GND	Pin 26: CSI_A_D0_N
		Pin 27: GND	Pin 28: CSI_A_D0_P
		Pin 29: CSI_A_D1_N	Pin 30: GND
		Pin 31: CSI_A_D1_P	Pin 32: GND
		Pin 33: GND	Pin 34: CSI_B_D0_N
		Pin 35: GND	Pin 36: CSI_B_D0_N
		Pin 37: CSI_B_D1_N	Pin 38: GND
		Pin 39: CSI_B_D1_P	Pin 40: GND
		Pin 41: GND	Pin 42: FLASH_EN
		Pin 43: CAM_I2C_SCL	Pin 44: GEN2_I2C_SCL_3V3
		Pin 45: CAM_I2C_SDA	Pin 46: GEN2_I2C_SDA_3V3
		Pin 47: CAM2_MCLK	Pin 48: CAM_NRST
		Pin 49: +1V8_EXT	Pin 50: +1V8_EXT
		Pin 51: +3V3_EXT	Pin 52: +3V3_EXT
		Pin 53: +3V3_EXT	Pin 54: +3V3_EXT
		Pin 55: CAM2_PWDN	Pin 56: GND
		Pin 57: GND	Pin 58: DSI_B_CLK_N
		Pin 59: GND	Pin 60: DSI_B_CLK_P
		Pin 61: DSI_B_D0_N	Pin 62: GND
		Pin 63: DSI_B_D0_P	Pin 64: GND
		Pin 65: GND	Pin 66: DSI_B_D1_N
		Pin 67: GND	Pin 68: DSI_B_D1_P
		Pin 69: DSI_B_D2_N	Pin 70: GND
		Pin 71: DSI_B_D2_P	Pin 72: GND
		Pin 73: GND	Pin 74: DSI_B_D3_N
		Pin 75: GND	Pin 76: DSI_B_D3_P
		Pin 77:	Pin 78: GND

		DSI_A_CLK_L_N	
		Pin 79: DSI_A_CLK_L_P	Pin 80: GND
		Pin 81: GND	Pin 82: DSI_A_D0_N
		Pin 83: GND	Pin 84: DSI_A_D0_P
		Pin 85: DSI_A_D1_L_N	Pin 86: GND
		Pin 87: DSI_A_D1_L_P	Pin 88: GND
		Pin 89: GND	Pin 90: DSI_A_D2_N
		Pin 91: GND	Pin 92: DSI_A_D2_P
		Pin 93: DSI_A_D3_L_N	Pin 94: GND
		Pin 95: DSI_A_D3_L_P	Pin 96: GND
		Pin 97: GND	Pin 98: DSI_CSI_GPIO2
		Pin 99: DSI_EN	Pin 100: DSI_PWM

Connector	Component	Pinout
X13	**HDMI (Type A)**	Pin 1: TDMS D2+
		Pin 2: TDMS D2 SHIELD
		Pin 3: TDMS D2-
		Pin 4: TDMS D1+
		Pin 5: TDMS D1 SHIELD
		Pin 6: TDMS D1-
		Pin 7: TDMS D0+
		Pin 8: TDMS D0 SHIELD
		Pin 9: TDMS D0-
		Pin 10: CLK+
		Pin 11: CLK SHIELD
		Pin 12: CLK-
		Pin 13: CEC
		Pin 14: HEC DATA-
		Pin 15: I2C SCL
		Pin 16: I2C SDA
		Pin 17: HEC DATA-
		Pin 18: +5 V

Connector	Component	Pinout
X16	Ethernet RJ45	Pin 1: ETH_D1_P
		Pin 2: ETH_D1_N
		Pin 3: ETH_D2_P
		Pin 4: ETH_D3_P
		Pin 5: ETH_D3_N
		Pin 6: ETH_D1_N
		Pin 7: ETH_D4_P
		Pin 8: ETH_D3_N

Connector	Component	Pinout
X17	Standard SATA (Molex: 47306-5005)	Pin 1: GND
		Pin 2: A+
		Pin 3: A-
		Pin 4: GND
		Pin 5: B-
		Pin 6: B+
		Pin 7: GND

Connector	Component	Pinout
X18	SATA power (Tyco Electronics: 770997-1)	Pin 1: Vcc (8-17V)
		Pin 2: GND
		Pin 3: GND
		Pin 4: +5 V

Connector	Component	Pinout
X27	JTAG Connector (FCI: 54202-T0810ALF)	Pin 1: 1,8V EXT
		Pin 2: 1,8V EXT
		Pin 3: JTAG_NTRST_EXT
		Pin 4: GND
		Pin 5: JTAG_TDI
		Pin 6: GND
		Pin 7: JTAG_TMS
		Pin 8: GND
		Pin 9: JTAG_TCK
		Pin 10: GND
		Pin 11: JTAG_RTCK
		Pin 12: GND
		Pin 13: JTAG_TDO
		Pin 14: GND
		Pin 15: JTAG_NSRST
		Pin 16: GND
		Pin 17: JTAG_PD0
		Pin 19: GND
		Pin 20: JTAG_PD1
		Pin 21: GND

Connector	Component	Pinout	Pinout
X14	LVDS Output (IPEX 20455-040E)	Pin 1: N.C.	Pin 2: +3V3_eDP_LVDS
		Pin 3: +3V3_eDP_LVDS	Pin 4: +3V3_EXT
		Pin 5: N.C.	Pin 6: GEN2_I2C_SCL
		Pin 7: GEN2_I2C_SDA	Pin 8: LVDS0_N
		Pin 9: LVDS0_P	Pin 10: GND
		Pin 11: LVDS1_N	Pin 12: LVDS1_P
		Pin 13: GND	Pin 14: LVDS2_N
		Pin 15: LVDS2_P	Pin 16: GND
		Pin 17: LVDS_CLK_N	Pin 18: LVDS_CLK_P
		Pin 19: GND	Pin 20: LVDS3_N
		Pin 21: LVDS3_P	Pin 22: GND
		Pin 23: N.C.	Pin 24: N.C.
		Pin 25: GND	Pin 26: N.C.
		Pin 27: N.C.	Pin 28: GND
		Pin 29: N.C.	Pin 30: N.C.
		Pin 31: GND	Pin 32: GND
		Pin 33: GND	Pin 34: N.C.
		Pin 35: LVDS_PWM	Pin 36: LVDS_BL_EN
		Pin 37: N.C.	Pin 38: +12V_EXT_BL
		Pin 39: +12V_EXT_BL	Pin 40: +12V_EXT_BL
		Pin M1: GND	Pin M2: GND
		Pin M3: GND	Pin M4: GND

Connector	Component	Pinout	Pinout
X15	eDP Output (TE Connectivity: 5-2069716-2)	Pin 1: N.C.	Pin 2: GND
		Pin 3: EDP_LANE1_N	Pin 4: EDP_LANE1_P
		Pin 5: GND	Pin 6: EDP_LANE0_N
		Pin 7: EDP_LANE0_P	Pin 8: GND
		Pin 9: EDP_AUX_P	Pin 10: EDP_AUX_N
		Pin 11: GND	Pin 12: +3V3_eDP
		Pin 13: +3V3_eDP	Pin 14: N.C.
		Pin 15: GND	Pin 16: GND
		Pin 17: EDP_HPD_3V3	Pin 18: GND
		Pin 19: GND	Pin 20: GND
		Pin 21: GND	Pin 22: EDP_BL_EN
		Pin 23. EDP_BL_PWM	Pin 24: N.C.
		Pin 25: N.C.	Pin 26: +12V_EXT_BL
		Pin 27: +12V_EXT_BL	Pin 28: +12V_EXT_BL
		Pin 29: +12V_EXT_BL	Pin 30: N.C.
		Pin M1: GND	Pin M2: GND
		Pin M3: GND	Pin M4: GND

Connector	Component	Pinout	Pinout
X23	Extension Header I (2,54mm Pin Header)	Pin 1: +1V8_EXT	Pin 2: +1V8_EXT
		Pin 3: UART1_RX	Pin 4: SPI2D_nCS
		Pin 5: UART1_TX	Pin 6: SPI2D_SCK
		Pin 7: GPIO_PP1	Pin 8: SPI2D_MOSI
		Pin 9: GPIO_PX6	Pin 10: SPI2D_MISO
		Pin 11: GPIO_PX7	Pin 12: GND
		Pin 13: GPIO_PR4	Pin 14: GPIO_PR5
		Pin 15: GND	Pin 16: GPIO_PR7
		Pin 17: GPIO_PI5	Pin 18: GPIO_PN2
		Pin 19: SPI1A_IRQ	Pin 20: GPIO_PK0
		Pin 21: SPI1A_nCS	Pin 22: GND
		Pin 23. SPI1A_SCK	Pin 24: GPIO_PK4
		Pin 25: SPI1A_MOSI	Pin 26: GEN2_I2C_SDA
		Pin 27: SPI1A_MISO	Pin 28: GEN2_I2C_SCL
		Pin 29: GND	Pin 30: SPI4_CS1
		Pin 31: PMU_GPIOA	Pin 32: PMU_GPIOB
		Pin 33: GND	Pin 34: SPI4_nCS
		Pin 35: HSIC1_DATA	Pin 36: SPI4_SCK
		Pin 37: HSIC_STROBE	Pin 38: SPI4_MOSI
		Pin 39: GND	Pin 40: SPI4_MISO

Connector	Component	Pinout	Pinout
X24	Extension Header II (2,54mm Pin Header)	Pin 1: +1V8_EXT	Pin 2: +1V8_EXT
		Pin 3: DAP4_SCLK	Pin 4: GPIO_
		Pin 5: DAP4_FS	Pin 6: GPIO_
		Pin 7: DAP4_DIN	Pin 8: GPIO_
		Pin 9: DAP4_DOUT	Pin 10: GPIO_
		Pin 11: DAP4_MCLK	Pin 12: GPIO_
		Pin 13: GND	Pin 14: GPIO_
		Pin 15: GPIO_PH6	Pin 16: GPIO_
		Pin 17: GPIO_PJ0	Pin 18: GND
		Pin 19: GPIO_PO3	Pin 20: GEN1_I2C_SDA
		Pin 21: GPIO_PO4	Pin 22: GEN1_I2C_SCL
		Pin 23. GND	Pin 24: GND
		Pin 25: UART3_RX	Pin 26: UART2_RX
		Pin 27: UART3_TX	Pin 28: UART2_TX
		Pin 29: UART3_nRTS	Pin 30: UART2_nRTS
		Pin 31: UART3_nCTS	Pin 32: UART2_nCTS
		Pin 33: GND	Pin 34: GPIO_PH1
		Pin 35: USB2_P	Pin 36: SPDIF_OUT
		Pin 37: USB2_N	Pin 38: SPDIF_IN
		Pin 39: +5_EXT	Pin 40: USB_VBUS_EN2

Connector	Component	Pinout
X26	Fan (Molex 470531000)	Pin 1: GND
		Pin 2: +12V
		Pin 3: FAN TACH
		Pin 4: FAN PWM Switched

Connector	Component	Pinout
X20	USB 3	Pin 1: USB0 VCC
		Pin 2: USB0 D-
		Pin 3: USB0 D+
		Pin 4: USB0 GND
		Pin 5: USB0 SSRX-
		Pin 6: USB0 SSRX+
		Pin 7: USB0 GND
		Pin 8: USB0 SSTX-
		Pin 9: USB0 SSTX+
		Pin 10: USB1 VCC
		Pin 11: USB1 D-
		Pin 12: USB1 D+
		Pin 13: USB1 GND
		Pin 14: USB1 SSRX-
		Pin 15: USB1 SSRX+
		Pin 16: USB1 GND
		Pin 17: USB1 SSTX-
		Pin 18: USB1 SSTX+

Connector	Component	Pinout
X21	USB 3	Pin 1: USB2 VCC
		Pin 2: USB2 D-
		Pin 3: USB2 D+
		Pin 4: USB2 GND
		Pin 5: USB2 SSRX-
		Pin 6: USB2 SSRX+
		Pin 7: USB2 GND
		Pin 8: USB2 SSTX-
		Pin 9: USB2 SSTX+

4. First steps

This chapter will show you how to start the Meerkat K1 Eval Kit and enable you to work with it.

4.1 Unpack the Meerkat K1 Eval Kit

The Eval Kit and its components are individually packaged to deliver them safely (see **Figure 3**).

Figure 3: Packaged Eval Kit and its components

Explanation:
1. Info flyer
2. Small parts
3. Eval Kit

1. Carefully unpack each component.
2. Compare the delivered components with the list.

Please contact Avionic Design, if a component is missing.

4.2 Turn on the Eval Kit

This chapter describes how to connect all the peripherals with the Eval Kit and how to turn on the Eval Kit.

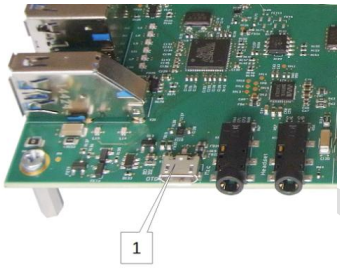
1. Before you turn on the Eval Kit, connect all the peripherals with the Eval Kit

   - 1x HDMI cable (Type A)
   - 2x USB Cable Micro B for Debug and USB Recovery
   - 1x Ethernet cable

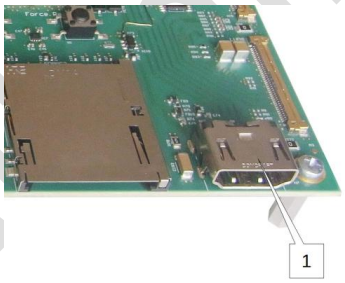
   Optional items:
   - 1x computer with a terminal emulator
   - 1x keyboard with a USB Type A plug
   - 1x mouse with a USB Type A plug
   - 1x HD monitor with HDMI port (Type A)

2.1 Put the USB plugs of the mouse, keyboard the USB Ports. (see **Figure 6**):
2.2 Put one plug of the Ethernet cable to a network (with a DHCP server already set-up) and put the other plug into the Ethernet Port of the Eval Kit.

Figure 4: Get access to the Eval Kit through these ports



Explanation:
1. USB Recovery



Explanation:
1. HDMI port

2.3 Put one plug of the HDMI cable into an HD monitor and put the other plug into the HDMI port of the Eval Kit (see **Figure 4**). Alternatively you can connect the Eval Kit to a DSI display.

2.4 Put one plug of the USB Debug cable into one USB port of the computer and put the other plug into the Debug USB Micro B port of the Eval Kit (see **Figure 5**).

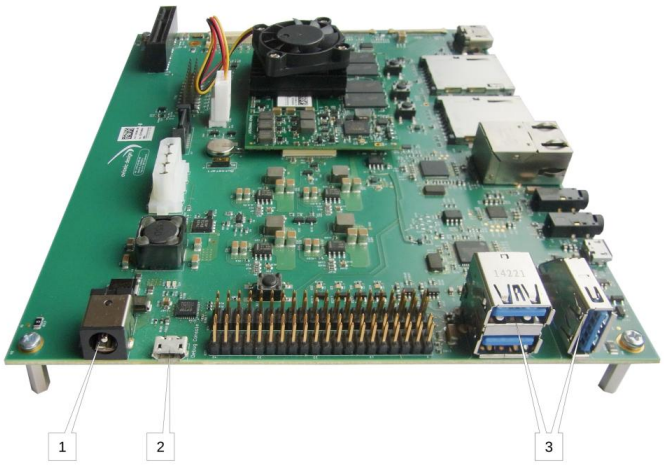
3. After you connected the peripherals with the Eval Kit, prepare these items to turn on the Eval Kit:
   - 1x 12 V power supply (DC power supply (12V, 3 A). Jack Type PJ-063AH. (Inner contact +)

3.1 Put the plug of the 12 V power supply into a power outlet and put the power connector into the DC power jack of the Eval Kit (see **Figure 5**): ⊖—⊂—⊕

3.2 If your power outlet does not match the plug of the power supply, attach a plug adapter to the plug.

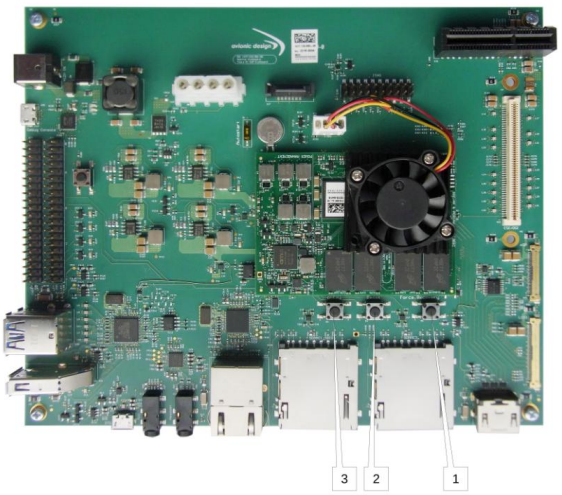
▶ The Eval Kit has a power supply but the Eval Kit is not turned on.

Figure 5: Get access to the Eval Kit through these ports



Explanation:	
1.	DC power jack
2.	Debug USB Micro B
3.	3x USB

Figure 6: Turn on the Eval Kit with these components



Explanation:
1. Recovery button
2. Reset button
3. Power button

4. Push the power / reset button (see **Figure 6**) for approx. 1 second.
   ▶ The Eval KIt is on.

Caution
The NVIDIA® Tegra™ K1 SoC as well as other components are running hot, when the Meerkat products are turned on. To prevent burns, please do not touch the NIVIDA® Tegra™ K SoC and other components.

When the Eval Kit is on, you can get access to the Eval Kit in two different ways:

- You can get access to the shell of the Eval Kit through the Debug USB port (see **Chapter 4.3.1**)
- You can get remote access to the shell of the Eval Kit through SSH/ the Ethernet port (see **Chapter 4.3.2**)

4.3 Get access to the shell of the Eval Kit

After you turned the Eval Kit on, you can get access to the shell of the Eval Kit through either:
- the Debug USB port (see **Chapter 4.3.1**)

or
- SSH/Ethernet (see **Chapter 4.3.2)**

4.3.1 Get access through the Debug USB port

1. Make sure that you connected the Eval Kit and a computer with a USB cable and that the Eval Kit is turned on (see **Chapter 4.2**).

2. Open the terminal emulator on the computer.

Note
Examples for terminal emulators are Minicom™ for Linux OS or Tera Term™ for Windows OS.

3. Set up your terminal emulator with the following parameters:
   - Baud rate: 115200
   - Data length: 8
   - Parity: none
   - Stop bit: 1
   - Flow control: none

▶ When you press the power button (see **Figure 5**), the boot-up process will start.
▶ You should see various kernel messages during the boot-up process.
▶ When the boot-up process is complete, you will see a login prompt.

4. Log in with the following parameters:
   - Username: root
   - Password: password

   ▶ The Linux shell opens after the login.
   ▶ A hashtag (#) prefixes each line and shows that you have root permissions.

Note
Be careful, when you have root access! You can permanently damage the system and make it inoperable!

4.3.2 Get access through SSH/Ethernet

1. Make sure that you connected the Eval Kit with the Ethernet cable to your local Ethernet network (see **Chapter 4.2)**.

2. To connect to the Eval Kit via SSH, you need to determine the IP address of the system.

2.1 Read the instructions in **Chapter 4.3.1** to get access to the Linux shell of the Eval Kit.

2.2 Write the command `ifconfig` into the Linux shell
▶ You will receive the IP address of the Eval Kit.

Note
The actual IP address depends on the settings of the DHCP server.

2.3 To connect to the Eval Kit via SSH using the IP address, write the command:

```
$ ssh root@<ip address>
```

5. Boot concept

This chapter will outline the boot concept of the Meerkat K1 Processor Module.

The eMMC of the Meerkat K1 Processor Module contains a pre-installed GNU/Linux operating system.

5.1 Boot loader

The eMMC is preflashed with a boot-loader called U-Boot™. It is a universal boot-loader and it supports various computer architectures. It loads the kernel.

5.2 Bootstrap the system

The bootstrapping process puts the system into a defined bootable condition. The pre-installed operating system on the SOM is GNU/Linux system based on buildroot. You can bootstrap the SOM and rebuild your own system based on Linux.

This involves two steps:

1. Building and flashing the bootloader.
2. Building and flashing the kernel and root filesystem.

5.2.1 Activate recovery mode

Before you activate the recovery mode of the Eval Kit, make sure you have all the necessary items:

Your delivery does not include this necessary item:

- 1x computer with a Linux OS
- 1x USB Micro-B to USB Type A cable

1. Put the USB Micro-B plug into the recovery USB port (see **Figure 1**) and put the USB Type A plug into a USB port on your computer.
2. The Module must be powered on
3. Push and hold the recovery button (see **Figure 5**)
4. Push the reset button to reset on the Eval Kit.
5. Release the recovery button.
   ▶ The recovery mode is activated.

5.2.2 Flash the bootloader

Here for you need to be in recovery mode. The procedure to Flash Uboot onto the target is described in the “software” section of the Meerkat User Manual which can be found under the following link

ftp://ftp.avionic-design.de/pub/meerkat/

5.2.3 Rebuilding and customization the kernel and root filesystem

The source code for the preflashed operation system is published on git hub. It can be found under the following link:

https://github.com/avionic-design/buildroot-external-ad/

There can be found a README which includes detailed instructions how to build the kernel and root file system and allows die customization like adding and removing software packages.

Contact

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