# AR6MXCS- Series

## Quick Start Guide

Ver 0.1

This Quick Start Guide is for BCM AR6MXCS ARM motherboards based on Freescale i.MX6 Cortex A9 platform.

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# Contents

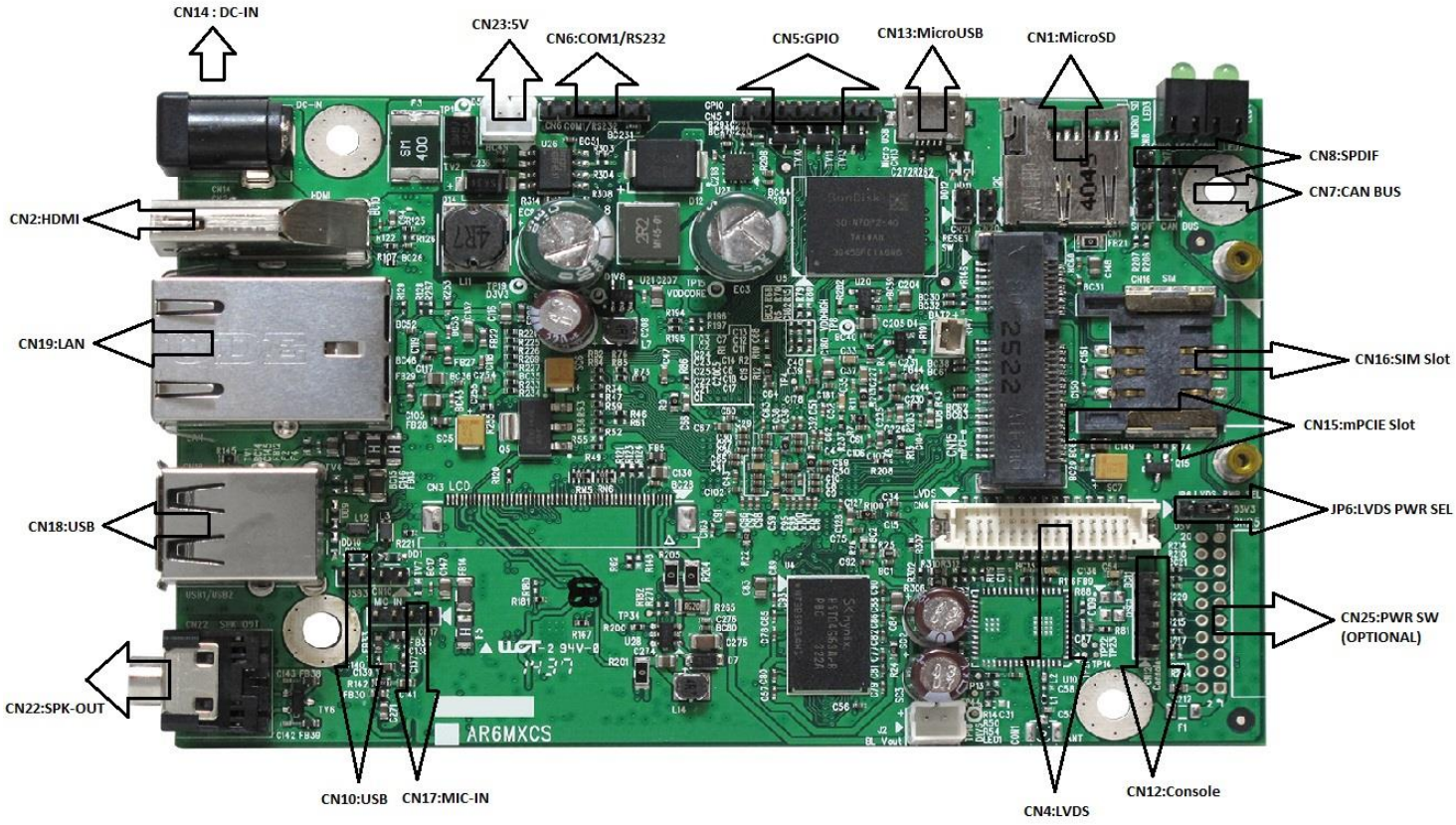
## 1. Overview

The AR6MXCS is a simplified version of our popular AR6MX platform. The AR6MXCS features a Single-Core i.MX6 processor from Freescale. The hardware specifications for the AR6MXCS board are the following:

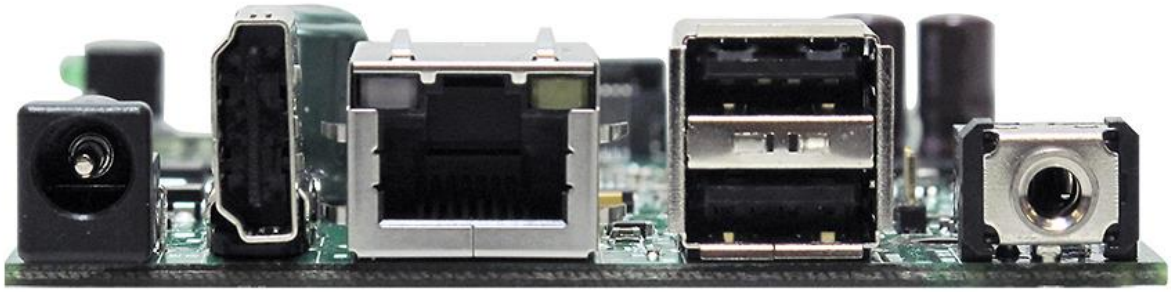
- Single-Core ARM® Cortex A9 processor at 1GHz
- 512MB of 32-bit DDR3 Memory @400Mhz
- LVDS Outputs for 1080p displays
- HDMI 1.4a
- 4GB eMMC (optional)
- On-Board mPCIE connector with both PCIe and USB interfaces
- RS-232 serial port header
- microSD 3.0/SDXC card slot
- Analog (headphone/mic) and Digital (HDMI) audio
- SPDIF header
- 10/100/1000 Ethernet
- 3x High speed USB ports (2xHost, 1xOTG)
- CAN port header
- I2C
- Real-Time Clock with battery backup
- SIM Card Holder
- General Purpose I/O for Device Control
- 5V DC-In power input

## 2. Mainboard illustration: Locations of IO ports & Jumper settings definition

**Board Top View：**




**Board Side View：**



## 3. Getting Started

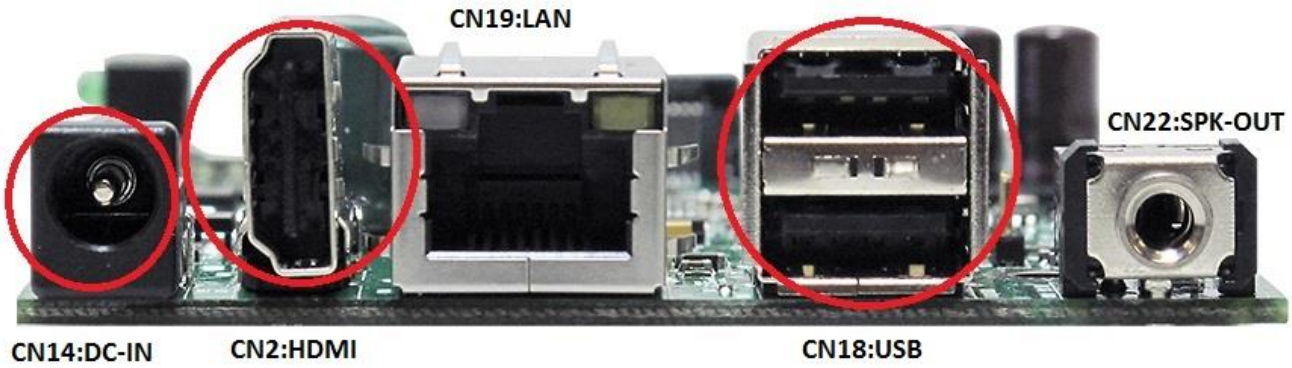
1.1 Connect a HDMI monitor to CN2 (HDMI).

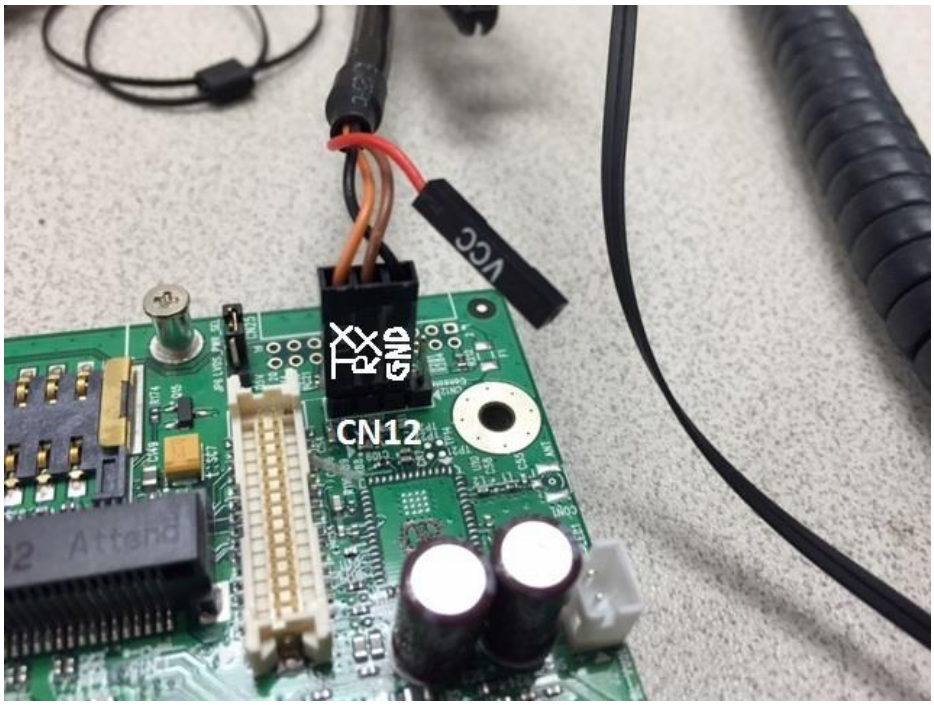
1.2 Connect a USB mouse/keyboard either to the rear I/O USB connectors (CN18), or through the onboard header CN10 (USB cable not included)

1.3 Connect the 5V power adapter to CN14

1.4 Plug in the power adapter to an outlet and the board will boot up

1.5 Connect TTL Console to CN12.
(PIN1 – Empty ; PIN2 – GND ; PIN3 – RX ; PIN4 - TX)



## 4. Jumper Settings and Pin Definition

**1. JP6**


Connector type：HDR 1X3 2.0mm

| Pin | Definition |
|---|---|
| 1 | D5V |
| 2 | L0_PWR |
| 3 | D3V3 |

**Default**

| Jumper selector | LVDS0 PWR SEL |
|---|---|
| 1 – 2 | 5V |
| 2 – 3 | 3.3V |

**2. CN1: Micro SD Card Socket**

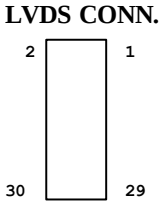
| Pin | Definition | Pin | Definition |
|---|---|---|---|
| 1 | DATA2 | 7 | DAT0 |
| 2 | CD/DATA3 | 8 | DAT1 |
| 3 | CMD | 9 | S |
| 4 | VDD | 10 | GND |
| 5 | CLK | 11 | S |
| 6 | VSS | 12 | GND |

**3. CN2：HDMI Conn**

Connector type：HDMI

| Pin | Definition | Pin | Definition |
|---|---|---|---|
| 1 | D2+ | 13 | CEC |
| 2 | D2_SHIELD | 14 | HEC |
| 3 | D2- | 15 | I2C_CLK |
| 4 | D1+ | 16 | I2C_DATA |
| 5 | D1_SHIELD | 17 | GND |
| 6 | D1- | 18 | +5V |
| 7 | D0+ | 19 | HOT_PLUG_DET |
| 8 | D0_SHIELD | 20 | SHELL1 |
| 9 | D0- | 21 | SHELL2 |
| 10 | CK+ | 22 | SHELL3 |
| 11 | CK_SHIELD | 23 | SHELL4 |
| 12 | CK- | | |

**4. CN4: LVDS0**




Connector type：HIROSE DF13A-30DP-1.25

| Pin | Definition | Pin | Definition | Pin | Definition |
|---|---|---|---|---|---|
| 1 | LBL0_PWR | 11 | LV_S0_TX3_P | 21 | GND |
| 2 | LBL0_PWR | 12 | LVDS0_TX2_P | 22 | GND |
| 3 | GND | 13 | LVDS0_TX3_N | 23 | LVDS0_SDA |
| 4 | GND | 14 | LVDS0_TX2_N | 24 | LVDS0_TX0_P |
| 5 | BL0EN | 15 | CAP_TCH_INT0 | 25 | LVDS_SCL |

| | | | | | | |
|---|---|---|---|---|---|---|
| 6 | LVD_0_CLK_P | 16 | GND | 26 | LVDS0_TX0_N |
| 7 | LBL0_PWM | 17 | LV_S0_TH_SCL | 27 | GND |
| 8 | LVDS0_CLK_N | 18 | LVDS0_TX1_P | 28 | GND |
| 9 | GND | 19 | LVDS0_TH_SDA | 29 | LCD0_PWR |
| 10 | GND | 20 | LVDS0_TX1_N | 30 | LCD0_PWR |

**5. CN5：GPIO**

Connector type：HDR 1x8 2.0

| Pin | Definition |
|---|---|
| 1 | GPIO1 |
| 2 | GPIO2 |
| 3 | GPIO3 |
| 4 | GPIO4 |
| 5 | GPIO5 |
| 6 | GPIO6 |
| 7 | GPIO7 |
| 8 | GPIO8 |

**6. CN6：COM-1 RS232**

Connector type：1x6 2.00mm DIP

| Pin | Definition |
|---|---|
| 1 | SOUT |
| 2 | RTS |
| 3 | CTS |
| 4 | SIN |
| 5 | GND |
| 6 | D5V |

**7. CN7：CAN BUS**


Connector type：HDR 1x3 2.0

| Pin | Definition |
|---|---|
| 1 | CANH |
| 2 | GND |
| 3 | CANL |

**8. CN8：SPDIF**


Connector type：HDR 1x4 2.0

| Pin | Definition |
|---|---|
| 1 | D5V |
| 2 | SPDIF_TX_O |
| 3 | SPDIF_RX_O |
| 4 | GND |

**9. CN10：USB-3/USB-4**


Connector Type: Header 1x4 2.0

| Pin | Definition |
|---|---|
| 1 | USBV3 |
| 2 | USB3P- |
| 3 | USB3P+ |
| 4 | GND |

**10. CN13: Micro USB**

Connector type : 207A-ABAD-R

| Pin | Definition |
|---|---|
| 2 | D- |
| 3 | D+ |
| 4 | ID |
| 5 | GND |

**11. CN12：Console**


Connector type：Header 1X4 2.54

| Pin | Definition |
|---|---|
| 1 | D3V3 |
| 2 | GND |
| 3 | CON_TXD |

**12. CN17：MIC IN**


Connector type：1x4 2.0mm

| Pin | Definition |
|---|---|
| 1 | MIC_DET |
| 2 | MICBIAS_J |
| 3 | MIC_J |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 4 | CON_RXD | | | 4 | AD_AGND |
| **13.** | **CN18：USB-1/USB-2’** | | | **14.** | **CN19：LAN Conn’** | | |
| | | Connector type：USAF-8D-HNR0SPJ | | | | Connector type：RTA-164AAK1A | |
| | | **Pin** | **Definition** | | | **Pin** | **Definition** |
| | | 1 | USBV1 | | | 1 | GE_MDI0+ |
| | | 2 | USB1P- | | | 2 | GE_MDI0- |
| | | 3 | USB1P+ | | | 3 | GE_MDI1+ |
| | | 4 | GND | | | 4 | GE_MDI1- |
| | | 5 | USBV2 | | | 5 | GND |
| | | 6 | USB2P- | | | 6 | GND |
| | | 7 | USB2P+ | | | 7 | GE_MDI2+ |
| | | 8 | GND | | | 8 | GE_MDI2- |
| | | | | | | 9 | GE_MDI3+ |
| | | | | | | 10 | GE_MDI3- |
| | | | | | | 11 | LED2 |
| | | | | | | 12 | D3V3 |
| | | | | | | 13 | D3V3 |
| | | | | | | 14 | LED1 |
| | | | | | | 15 | GND |
| | | | | | | 16 | GND |
| **15.** | **CN16：SIM Card Slot** | | | **16.** | **CN20：I2C3** | | |
| | | Connector type：SIM_Socket | | | | Connector type：Header 1x2 2.0 | |
| | | **Pin** | **Definition** | | | **Pin** | **Definition** |
| | | C1 | SIM_VCC | | | 1 | I2C3_SCL_HDR |
| | | C2 | SIM_RST | | | 2 | I2C3_SDA_HDR |
| | | C3 | SIM_CLK | | | | |
| | | C5 | SIM_GND | | | | |
| | | C6 | SIM_VPP | | | | |
| | | C7 | SIM_IO | | | | |
| **17.** | **CN21: RESET SW** | | | **18.** | **CN22：SPK OUT** | | |
| | | Connector Type: Header 1x2 2.0 | | | | Connector type：3.5mm Phone Jack Green | |
| | | **Pin** | **Definition** | | | **Pin** | **Definition** |
| | | 1 | SW_RST | | | 1 | AD_AGND |
| | | 2 | GND | | | 2 | LOUT_R |
| | | | | | | 3 | L-DET |
| | | | | | | 4 | AD_AGND |
| | | | | | | 5 | LOUT_L |
| **19.** | **CN23：D5V** | | | | | | |

Connector Type: Header 1x2 2.0

| Pin | Definition |
|---|---|
| 1 | D5V |
| 2 | GND |

**20. CN15：mPCI-e Port 1**

Connector type：PCI-e_MINI_CARD

| Pin | Definition | Pin | Definition | Pin | Definition | Pin | Definition |
|---|---|---|---|---|---|---|---|
| 1 | WAKE# | 16 | UIN_VPP | 31 | PET_N0 | 46 | LED_WPAN# |
| 2 | +3.3V_1 | 17 | UIN_GND | 32 | SMB_DATA | 47 | RSVD10 |
| 3 | RSVD1 | 18 | GND8 | 33 | PET_P0 | 48 | +1.5V_3 |
| 4 | GND7 | 19 | UIN_IN | 34 | GND10 | 49 | RSVD11 |
| 5 | RSVD2 | 20 | RSVD18 | 35 | GND6 | 50 | GND12 |
| 6 | +1.5V_1 | 21 | GND3 | 36 | USB_D- | 51 | RSVD12 |
| 7 | CLKREQ# | 22 | PERST# | 37 | RSVD5 | 52 | +3.3V_2 |
| 8 | UIM_PWR | 23 | PER_N0 | 38 | USB_D+ | 53 | GNDM1 |
| 9 | GND1 | 24 | +3.3V_AUX | 39 | RSVD6 | 54 | GNDM2 |
| 10 | UIN_DATA | 25 | PER_P0 | 40 | GND11 | | |
| 11 | REFCLK- | 26 | GND9 | 41 | RSVD7 | | |
| 12 | UIN_CLK | 27 | GND4 | 42 | LED_WWAN# | 57 | NUT |
| 13 | REFCLK+ | 28 | +1.5V_2 | 43 | RSVD8 | 58 | NUT |
| 14 | UIN_RST | 29 | GND5 | 44 | LED_WLAN# | 59 | GND |
| 15 | GND2 | 30 | SMB_CLK | 45 | RSVD9 | 60 | GND |

**21. CN25：PWR SW ON (Optional)**


Connector type：HDR 2x10 2.0mm DIP

| Pin | Definition | Pin | Definition | Pin | Definition | Pin | Definition |
|---|---|---|---|---|---|---|---|
| 1 | OTG_5V | 6 | PWR_D5V | 11 | GPIO_LED1+ | 16 | WPS |
| 2 | IR_TX+ | 7 | GND | 12 | GPIO_LED2# | 17 | GND |
| 3 | E_N | 8 | PWR_EN | 13 | GPIO_LED1# | 18 | GND |
| 4 | IR_TX- | 9 | GND | 14 | GND | 19 | IR_RX# |
| 5 | E_P | 10 | GPIO_LED2+ | 15 | IR_RX+ | 20 | GND |