ADM-IM10

User's Manual

Vehicle Gateway



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Revision Date:	March 17, 2025
Part Number:	50M-44801-1000

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Leading **EDGE COMPUTING**

Preface

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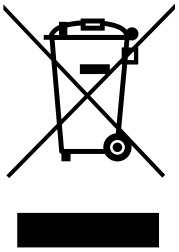
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Revision History

Revision	Description	Date	By
0.1	Preliminary release	2024-08-02	AL
0.2	Introduction, specifications, and connectors and jumpers, system configuration and installation guidelines updated	2025-02-07	AL
0.3	Introduction, specifications, mechanical layout, system configuration and installation guidelines updated	2025-03-11	AL
0.4	Introduction, mechanical layout, system configuration and installation guidelines	2025-03-14	AL
0.5	Introduction, specifications, block diagram updated	2025-03-17	AL

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1 Introduction

The ADLINK's ADM-IM10, an innovative Vehicle Gateway tailored for optimal fleet management solutions. This compact, palm-sized device measures 131mm x 110.5mm x 40mm and features a powerful i.MX 8M Plus SoC. With a versatile 9-36V power input and MCU ignition control, the ADM-IM10 enhances efficiency and reliability in vehicle operations. Equipped with integration capabilities for 1x WiFi6 and 1x LTE/5G M.2 modules, it caters to diverse communication needs. The ADM-IM10 meets E-Mark (12V/24V) compliance and ISO-7637-2 automotive certification, ensuring safety and reliability.

This advanced Telematics Vehicle Gateway facilitates real-time communication and vehicle data exchange between vehicles and control centers. By utilizing the ADM-IM10, fleet operators can optimize routes, monitor vehicle performance, ensure driver safety, and improve overall operational efficiency.

Latest revisions of the datasheet, user's manual, and board support packages can be downloaded from the product page.

1.1 Packing List

Before unpacking, check the shipping carton for any damage. If the shipping carton and/or contents are damaged, inform your dealer immediately. Retain the shipping carton and packing materials for inspection. Obtain authorization from the dealer before returning any product to ADLINK.

- 1x ADM-IM10 Gateway
- Fasteners:
  - 3x M3 screws, P-head, L4, Ni for M.2 (P/N: 33-03013-0040)
- Mounting bracket
- Connectors:
  - 1x terminal block for power, 1x3P, 3.5mm pitch, 8A rated
  - 2x terminal block for RS232, 1x5P, 2.5mm pitch, 6A rated

1.2 Optional Accessories

- MicroSD card
- Wireless kit
  - WiFi/BT/4G LTE/5G wireless kit (with internal SMA cable and external antenna)

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1.3 Features

Dimension	131mm (W) x 110.5mm (D) x 40mm (H)
CPU	NXP i.MX8M Plus Cortex A53 Quad Core 1.6GHz
Memory	4GB on-board LPDDR4
Storage	32 GB eMMC, 1x MicroSD slot for storage expansion, support up to 2TB SDXC
Display	1 x HDMI port (resolution up to 3840x2160@30Hz)
COM	2x RS232/422/485 COM ports 2x RS232 COM ports
USB	2 x USB 3.0 port
Ethernet	2x 10/100/1000 Mbps Ethernet ports, RJ45
SIM	1x µSIM slot for cellular connectivity
High Density Connector (DB26)	2x RS-232, 2x DI/DO, 1x Mic-in, 1x Line-out, 2x CAN Bus
M.2 B Key	1x M.2 B Key (for 4G LTE/5G Module or GNSS)
M.2 E Key	1x M.2 E Key (for Wi-Fi/ BT)

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2 Specifications

2.1 Core System

Processors	NXP i.MX 8M Plus quad Cortex-A53, up 1.6GHz
RAM	On-board LPDDR4 4GB
Main storage	32GB eMMC
Secondary storage	MicroSD
Software	Yocto, Debian; kernel version 5.15.52

2.2 I/O Interfaces

USB	2x USB 3.0 Type A
Ethernet	2x GbE
COM	2x RS232/422/485 ports
Display output	1x HDMI
WiFi/BT	1x M.2 2230 E-key for optional Wi-Fi/BT module
5G/4G	1x M.2 3042 B-key (USB 3.0) for optional 5G or 4G/LTE module/GNSS
Break-out cable	1x DB26F connector for CAN1/CAN2, mic-in, line-out, 2x RS232, DI/DO
Power supply	9-36VDC, max. power consumption of 13W

2.3 Mechanical and Environmental

Cooling method	Fanless air cooling
Operating temperature	-40°C to 85°C: No wireless modules are operating 0°C to 70°C: All modules are operating (depends on module)
Storage temp	-40°C to 85°C
Vibration	MIL-STD-810H: METHOD 514.8, Category 4, Figure 514.8C-2, IEC 60068-2-64
Shock	MIL-STD-810H: METHOD 516.8, Procedure I
Outline dimension (mm)	131 (L) x 110.5 (W) x 40 (H)
Mounting	DIN rail/wall

2.4 Certification

Automotive	ISO 7637-2, E-Mark
EMC	CE / FCC / RCM

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2.5 Functional Block Diagram

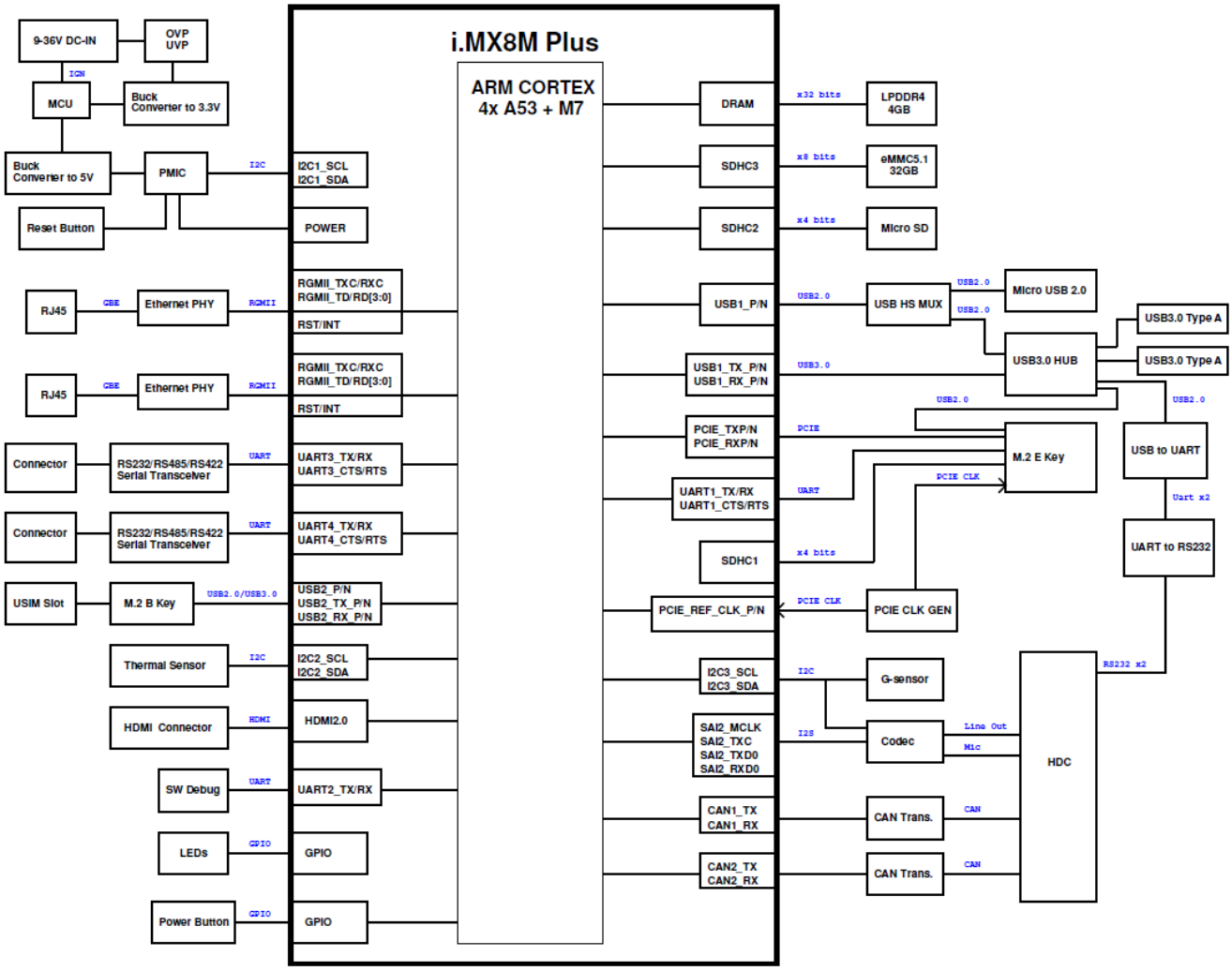


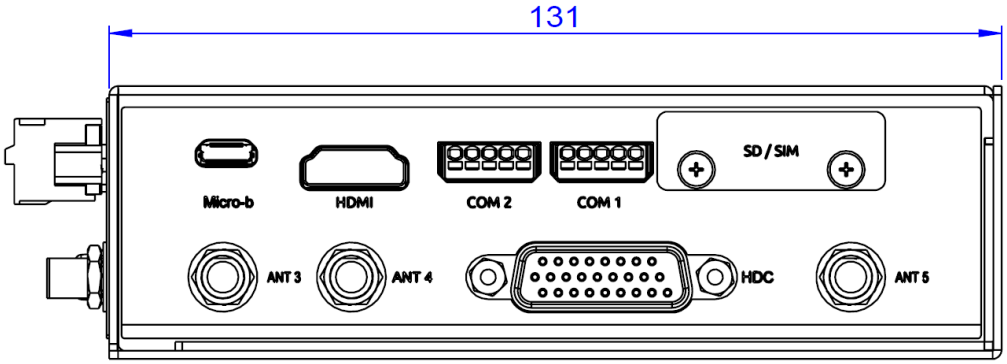
Figure 1: Functional block diagram

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3 Mechanical Layout

3.1 Front Panel I/O Ports



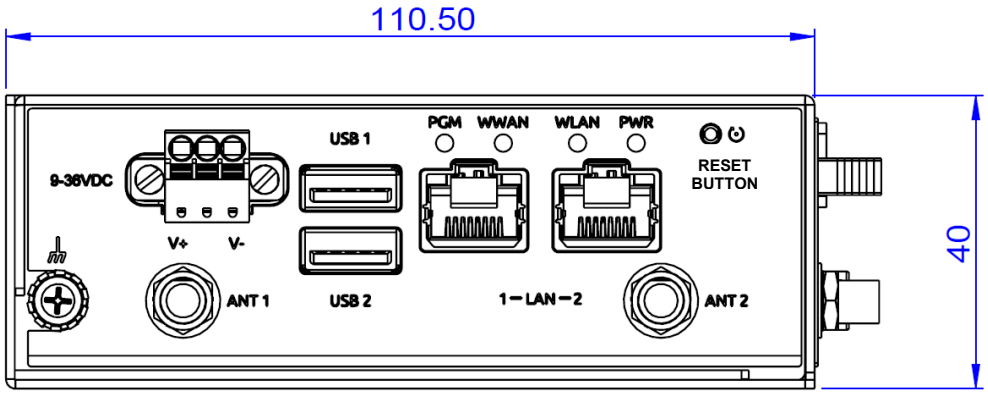
Connector	Description
Micro-B	Micro USB Connector (reserved)
HDMI	Display output
COM 2/1	RS232/422/485 4-wire
SD / SIM	microSD and µSIM slot
HDC	DB26 connector: break-out cable for CAN1/2, MICIN, LINEOUT, RS232 COM3/4, DI/DO
ANT 1/2/3/4/5	Antenna connector (optional Wi-Fi/BT/4G/5G/GNSS)

Figure 2: Front panel I/O ports

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3.2 Side Panel I/O Ports

All dimension measurements are in mm (millimeters).



Connector	Description
9-36VDC	DC power input
USB 1/2	USB 3.0 Type-A
PWR WLAN WWAN PGM	Power LED: Green Wi-Fi LED: Green 5G/4G LED: Green User-defined LED: Green
LAN 1/2	Gigabit Ethernet (RJ45)
Reset Button	Soft reset

Figure 3: Side panel I/O ports

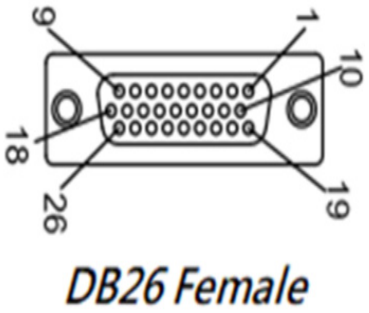
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4 Connectors and Jumpers

4.1 DB26F Connector

The breakout cables for CAN1/CAN2, mic-in, line-out, COM3/COM4, DI/DO

Pin	Signal	Pin	Signal
1	GND_AUDIO	14	HDC_DO0
2	LOUTR_B	15	HDC_DO1
3	LOUTL_B	16	HDC_DI0
4	GND_AUDIO	17	HDC_DI1
5	MICIN1P	18	GND
6	MICIN1N	19	HDC_TXA
7	GND	20	HDC_RXA
8	CAN1_H	21	HDC_RTSA
9	CAN1_L	22	HDC_CTSA
10	GND	23	HDC_TXB
11	CAN2_H	24	HDC_RXB
12	CAN2_L	25	HDC_RTSB
13	GND	26	HDC_CTSB

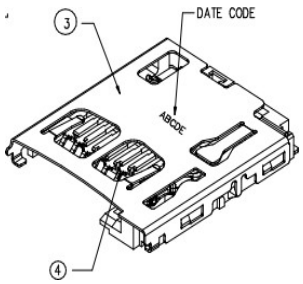


DB26 Female

4.2 MicroSD Slot

Supports up to 2TB SDXC.

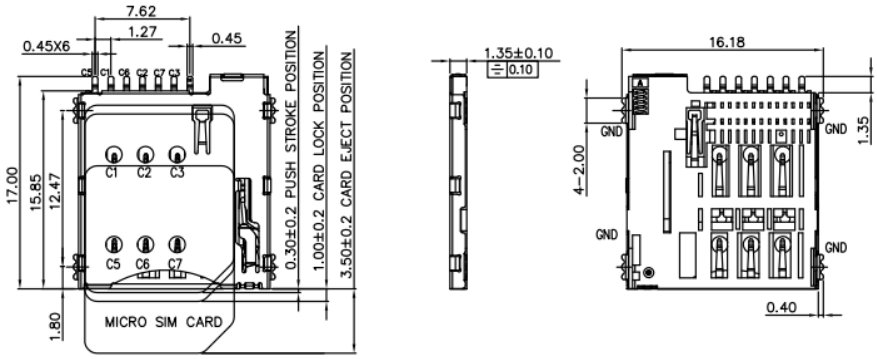
Pin	Signal
1	DATA2
2	CD/DATA3
3	CMD
4	Vpp
5	CLK
6	Vss
7	DATA0
8	DATA1



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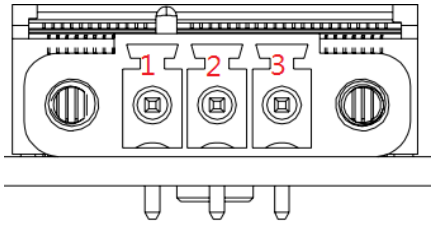
4.3 µSIM Slot

Pin	Signal
1	SIM_VCC
2	SIM_RST
3	SIM_CLK
4	GND
5	SIM_VPP
6	SIM_IO
7	DATA0



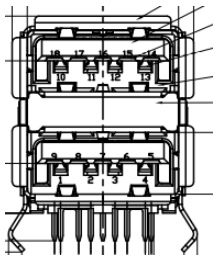
4.4 DC Power Terminal Block

Pin	Signal
1	GND
2	CHGND_DCIN
3	ADAPTER_IN



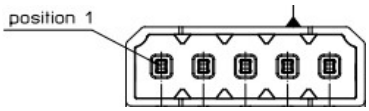
4.5 USB 3.0 Ports

Pin	Signal	Pin	Signal
1	VBUS	11	VBUS
2	DN	12	DN
3	DP	13	DP
4	GND	14	GND
5	SSRX-	15	SSRX-
6	SSRX+	16	SSRX+
7	GND	17	GND
8	SSTX-	18	SSTX-



4.6 Male Serial Terminal Block Connector Ports (RS232/422/285)

Pin	RS232	RS422	RS485
1	CTS	TXD-	DATA-
2	RX	TXD+	DATA+
3	TX	RXD+	
4	RTS	RXD-	
5	GND	GND	

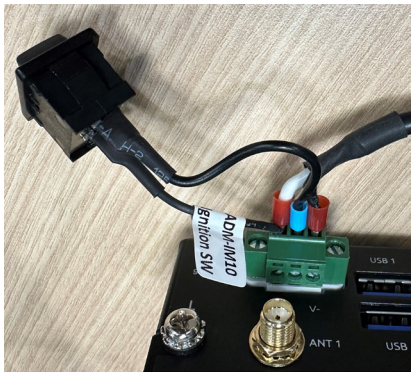


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5 System Configuration and Installation Guidelines

5.1 Vehicle Ignition Switch

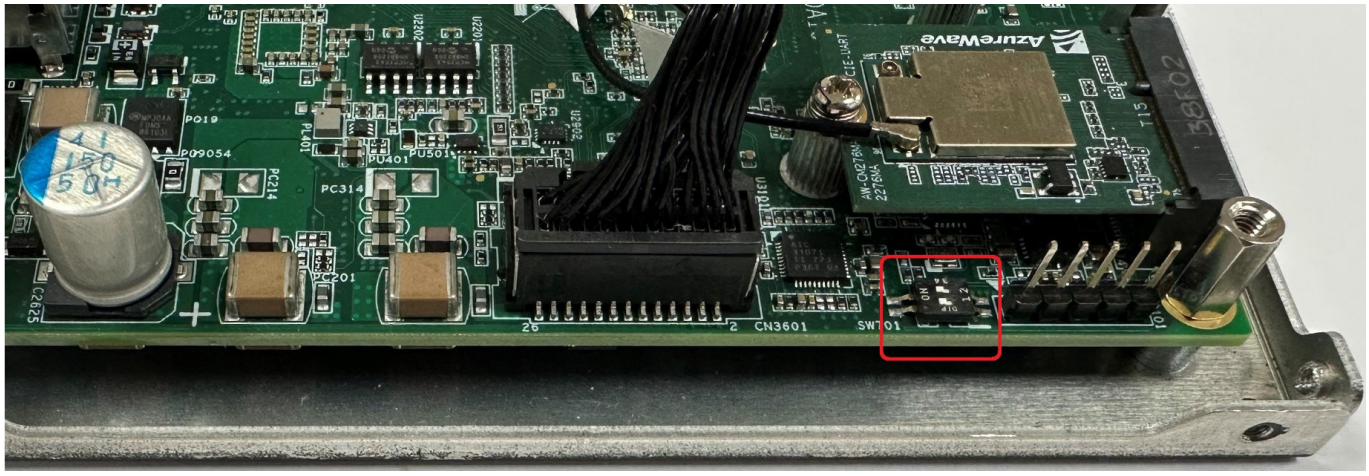
By default, the ADM-IM10 requires an external ignition switch by connecting Pin 2 and Pin 3. Please refer to 4.4 DC Power Terminal Block.



5.2 DIP Switch Settings

Boot Mode (SW701)

SW701[1]	SW701[2]	Boot Modes
OFF	OFF	N/A
ON	OFF	USB Serial Download
OFF	ON	USDHC3 (eMMC boot only, SD3 8-bit)
ON	ON	USDHC2 (SD boot only, SD2) -- Default



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5.3 Software Installation

Prepare a 16GB or larger UHS-III microSD card (Industrial-grade highly recommended)

5.3.1 Operating System Installation on MicroSD Card

1. Download the BSP from the ADM-IM10 product page at https://www.adlinktech.com/products/automotive-computing/fleet-management/adm-im10?lang=en
2. Extract the downloaded file to obtain the image.
3. Use a utility (such as RUFUS) to create a bootable microSD card using the image file.
4. To boot from the microSD card, ensure that the DIP switch is set to ON/ON (factory default).

SW701[1]	SW701[2]	Boot Modes
ON	**ON**	**USDHC2 (SD boot only, SD2) -- Default**

5. Power on the system; the ADM-IM10 system is now ready for use.

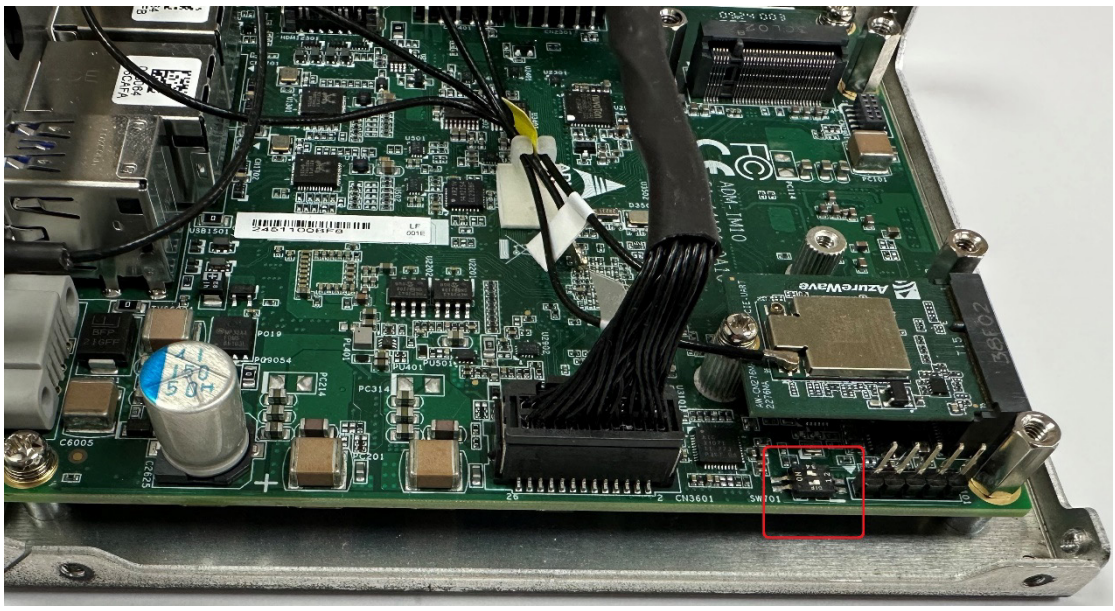
5.3.2 Operating System Installation on eMMC

1. On a separate computer, copy the BSP image file onto a USB flash drive (16GB or larger; both NTFS and exFAT formats are supported).
2. Plug in the USB flash drive.
3. Boot from the microSD card as described in section 5.3.1
4. Verify the USB device (/dev/sd*), then copy the image to the eMMC by running the following:

```
#dd if=nameofimage.img of=/dev/mmcblk2 bs=1M
14000+0 records in
14000+0 records out
14680064000 bytes (15 GB, 14 GiB) copied, 818.596 s, 17.9 MB/s
```

5. Once the **dd** operation is completed, power off the system.
6. Change the boot mode to boot from eMMC by switching DIP switch SW701[1] to off position.

SW701[2]	SW701[1]	Boot Modes
ON	**OFF**	USDHC3 (eMMC boot only, SD3 8-bit)



7. Remove the microSD, then power on the system.

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5.4 SSH for Remote Access

SSH is enabled by default on the LAN port, which can be used for remote system access after the OS has been installed.

SSH Configuration Guide:

1. Prepare a client computer for an SSH connection using PuTTY or another SSH-compatible program. There is no need to manually set a static IP.
2. Connect a network cable between the client computer and the LAN2 port on the ADM-IM10.



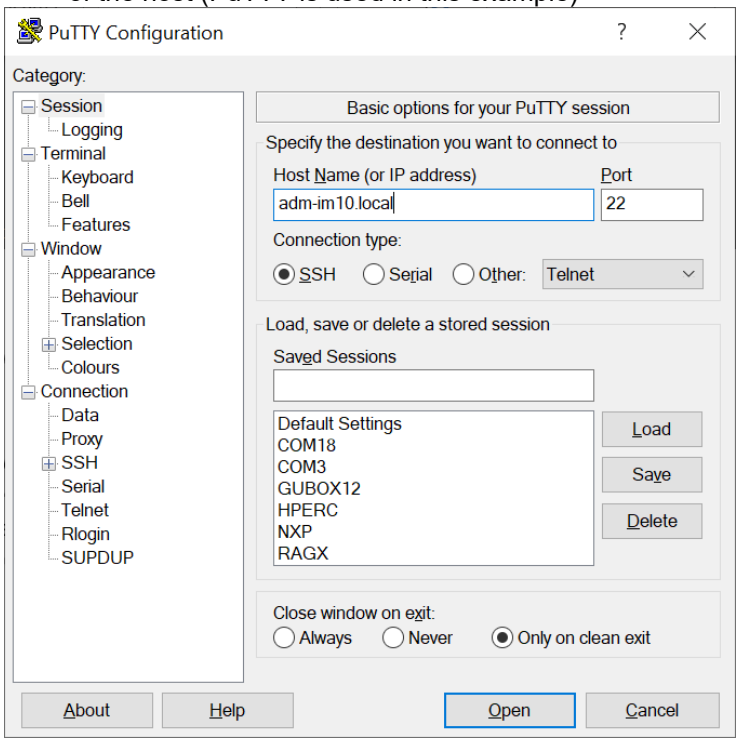
3. From the client computer, ping adm-im10.local to verify an active connection.

```
C:\Users\tim.lin>ping adm-im10.local

Pinging ADM-IM10.local [fe80::230:64ff:fe76:cc41%66] with 32 bytes of data:
Reply from fe80::230:64ff:fe76:cc41%66: time=1ms
Reply from fe80::230:64ff:fe76:cc41%66: time<1ms
Reply from fe80::230:64ff:fe76:cc41%66: time=1ms
Reply from fe80::230:64ff:fe76:cc41%66: time=1ms

Ping statistics for fe80::230:64ff:fe76:cc41%66:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

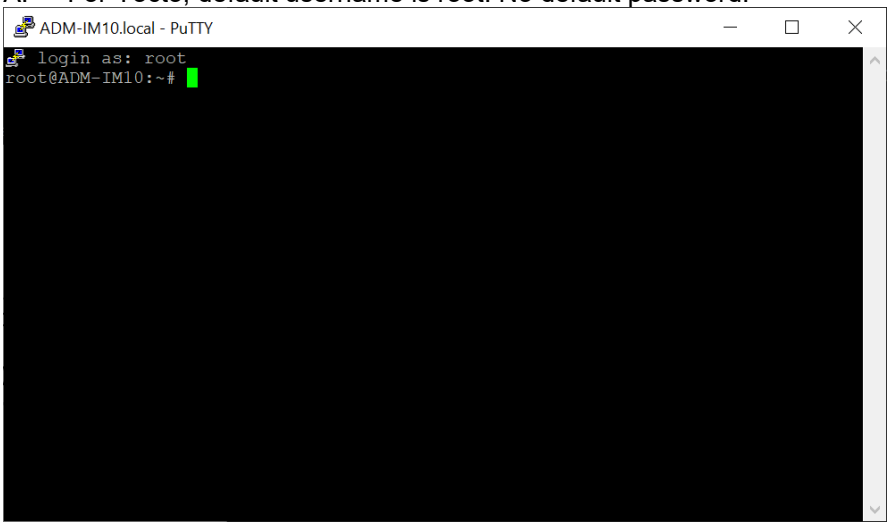
4. Connect to the ADM-IM10 using the address “adm-im10.local”. Ignore any warnings regarding the authenticity of the host (PuTTY is used in this example)



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5. Default username/password

A. For Yocto, default username is root. No default password.



B. For Debian, default username is adlink. Default password is also adlink.



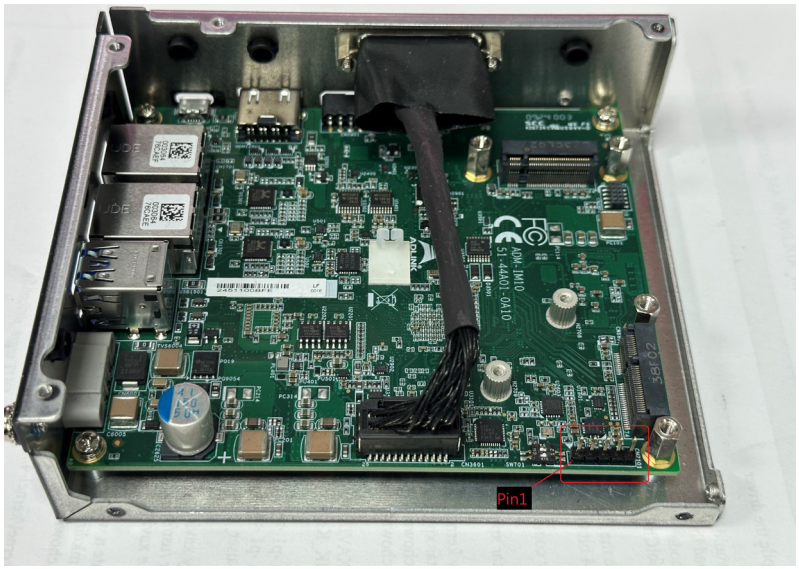
5.5 Internal Debug Port

The debug port can be used to monitor the start-up process and determine if there are any abnormal system behaviors.

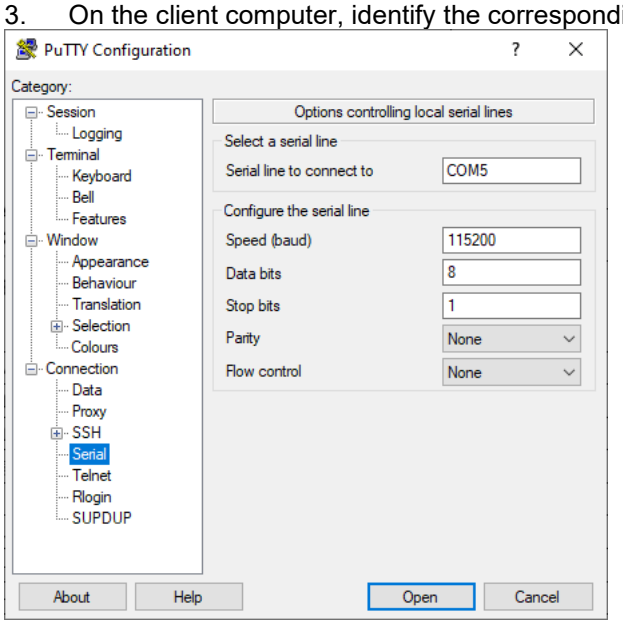
Debug Port Configuration Guide:

1. Open the top cover and locate CN2101.
2. Use the pin definition table below as a reference to connect to another client computer (for example, a USB-TTL converter).

Pin1	TxD
Pin2	RxD
Pin3	GND



3. On the client computer, identify the corresponding COM port used for RS232 access.



4. Open the serial connection, and then power on the ADM-IM10.

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5.6 Port Configuration Sample

A list of commonly-used configuration is provided for reference:

- i2c
  - Detect number of i2c buses
    *#ls -l /dev/i2c**
    crw------- 1 root root 89, 0 Mar 2 04:59 /dev/i2c-0
    crw------- 1 root root 89, 1 Mar 2 04:59 /dev/i2c-1
    crw------- 1 root root 89, 2 Mar 2 04:59 /dev/i2c-2
    crw------- 1 root root 89, 6 Mar 2 04:59 /dev/i2c-6
  - Scan each i2c bus
    #i2cdetect -y -a X (X taken from bus number above)
    - *#i2cdetect -y -a 0*

```
     0 1 2 3 4 5 6 7 8 9 a b c d e f
00: 00 -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
10: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
20: -- -- -- -- -- UU -- -- -- -- -- -- -- -- -- --
30: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
40: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
50: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
60: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
70: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
```

    - *#i2cdetect -y -a 1*

```
     0 1 2 3 4 5 6 7 8 9 a b c d e f
00: 00 -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
10: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
20: -- -- -- -- -- -- -- -- -- -- -- -- -- -- UU --
30: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
40: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
50: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
60: -- -- -- -- -- -- -- -- -- -- 6a -- -- -- -- --
70: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
```

    - *#i2cdetect -y -a 2*

```
     0 1 2 3 4 5 6 7 8 9 a b c d e f
00: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
10: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
20: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
30: 30 -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
40: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
50: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
60: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
70: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
```

- *#i2cdetect -y -a 6*

  0 1 2 3 4 5 6 7 8 9 a b c d e f

  00: -- -- -- -- -- -- -- -- -- -- -- -- -- --

  10: -- -- -- -- -- -- -- -- -- -- -- -- -- --

  20: -- -- -- -- -- -- -- -- -- -- -- -- -- --

  30: 30 -- -- -- -- -- -- -- -- -- -- -- -- --

  40: -- -- -- -- -- -- -- -- -- -- -- -- -- --

  50: -- -- -- -- -- -- -- -- -- -- -- -- -- --

  60: -- -- -- -- -- -- -- -- -- -- -- -- -- --

  70: -- -- -- -- -- -- -- -- -- -- -- -- -- --

- MCU
  - Command to trigger shutdown
    #i2cset -f -y 1 0x2f 0x40 0x0

- Program front panel “PGM LED”
  - Turn on
    #echo 1 > /sys/class/leds/user_led/brightness
  - Turn off
    #echo 0 > /sys/class/leds/user_led/brightness

- COM1/2 UART-RS232 (by default)
  - Set mode (CN2301)
    #echo RS232 > /sys/class/gpio_switch/com1Mode
  - Set mode (CN2401)
    #echo RS232 > /sys/class/gpio_switch/com2Mode
  - Loopback pins
    COM1 COM2
    Pin1 < ---------- > Pin4
    Pin2 < ---------- > Pin3
    Pin3 < ---------- > Pin2
    Pin4 < ---------- > Pin1
    Pin5 < ---------- > Pin5
  - Execute test utility
    #rs232_test /dev/ttymxc2 /dev/ttymxc3
    /dev/ttymxc3 Read 27 bytes. Received message: Hello! This is uart test...

- COM1/2 UART-RS422 or RS485 4-wire
  - Set mode (CN2301)
    #echo RS422 > /sys/class/gpio_switch/com1Mode
  - Set mode (CN2401)
    #echo RS422 > /sys/class/gpio_switch/com2Mode
  - Loopback pins
    COM1 COM2
    Pin1 < ---------- > Pin4
    Pin2 < ---------- > Pin3
    Pin3 < ---------- > Pin2
    Pin4 < ---------- > Pin1
    Pin5 < ---------- > Pin5
  - Execute test utility
    #rs422_test /dev/ttymxc2 /dev/ttymxc3
    /dev/ttymxc3 Read 27 bytes. Received message: Hello! This is uart test...

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- COM1/2 UART-RS485 2-wire
  - Set RS485 mode (CN2301)
    #echo RS485 > /sys/class/gpio_switch/com1Mode
  - Set RS485 mode (CN2401)
    #echo RS485 > /sys/class/gpio_switch/com2Mode
  - Loopback pins
    COM1 COM2
    Pin1 < ----------> Pin1
    Pin2 < ----------> Pin2
    Pin5 < ----------> Pin5
  - Execute test utility
    #rs485_test /dev/ttymxc2 /dev/ttymxc3
    /dev/ttymxc3 Read 27 bytes. Received message: Hello! This is uart test...

- DB26-CAN bus
  - Loopback CAN1 to CAN2
    CAN1 CAN2
    #8 CAN1_H < ----------> #11 CAN2_H
    #9 CAN1_L < ----------
  - Configure CAN ports
    #ip link set can0 up type can bitrate 1000000 dbitrate 2000000 fd on

    #ip link set can1 up type can bitrate 1000000 dbitrate 2000000 fd on
  - CAN packet test
    - Open a terminal session, then execute
      #candump can0 &
    - Open a separate terminal session, then execute
      #cansend can1 300##1AC.AB.AD.AE.75.49.AD.D1
    - Candump should receive the following:
      can0 300 [08] AC AB AD AD 75 49 AD DA

- DB26 UART-RS232 only
  - Loopback pins

COM1 COM2
Pin19 < ----------> Pin24
Pin20 < ----------> Pin23
Pin21 < ----------> Pin26
Pin22 < ----------> Pin25

Pin	Signal	Pin	Signal
1	GND_AUDIO	14	HDC_DO0
2	LOUTR_B	15	HDC_DO1
3	LOUTL_B	16	HDC_DI0
4	GND_AUDIO	17	HDC_DI1
5	MICIN1P	18	GND
6	MICIN1N	19	HDC_TXA
7	GND	20	HDC_RXA
8	CAN1_H	21	HDC_RTSA
9	CAN1_L	22	HDC_CTSA
10	GND	23	HDC_TXB
11	CAN2_H	24	HDC_RXB
12	CAN2_L	25	HDC_RTSB
13	GND	26	HDC_CTSB

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- Check port settings
  #dmesg | grep ttyUSB
  [12.633734] usb 1-1.4: xr_serial converter now attached to ttyUSB0
  [12.649895] usb 1-1.4: xr_serial converter now attached to ttyUSB1
- Execute test utility
  #rs232_test /dev/ttyUSB0 /dev/ttyUSB1

  /dev/ttyUSB1 Read 27 bytes. Received message: Hello! This is uart test...

- DB26 DI/DO
  - Loopback pins
    Pin14 < ---------- > Pin16
    Pin15 < ---------- > Pin17

Pin	Signal	Pin	Signal
1	GND_AUDIO	14	HDC_DO0
2	LOUTR_B	15	HDC_DO1
3	LOUTL_B	16	HDC_DI0
4	GND_AUDIO	17	HDC_DI1
5	MICIN1P	18	GND
6	MICIN1N	19	HDC_TXA
7	GND	20	HDC_RXA
8	CAN1_H	21	HDC_RTSA
9	CAN1_L	22	HDC_CTSA
10	GND	23	HDC_TXB
11	CAN2_H	24	HDC_RXB
12	CAN2_L	25	HDC_RTSB
13	GND	26	HDC_CTSB

  - Change DO output level and read DI input value
    #echo 1 > /sys/class/gpio_switch/do0

    #cat /sys/class/gpio_switch/di0
    0root@ADM-IM10:~#

    #echo 0 > /sys/class/gpio_switch/do0

    #cat /sys/class/gpio_switch/di0
    1root@ADM-IM10:~#

    #echo 1 > /sys/class/gpio_switch/do1

    #cat /sys/class/gpio_switch/di1
    0root@ADM-IM10:~#

    #echo 0 > /sys/class/gpio_switch/do1

    #cat /sys/class/gpio_switch/di1
    1root@ADM-IM10:~#

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- Audio output
  - List all audio-capable devices
    #aplay -l
    **** List of PLAYBACK Hardware Devices ****
    card 0: audiohdmi [audio-hdmi], device 0: i.MX HDMI i2s-hifi-0 [i.MX HDMI i2s-hifi-0]
    Subdevices: 1/1
    Subdevice #0: subdevice #0
    card 1: tlv320aic3x [tlv320aic3x], device 0: HiFi tlv320aic3x-hifi-0 [HiFi tlv320aic3x-hifi-0]
    Subdevices: 1/1
    Subdevice #0: subdevice #0
  - HDMI audio output
    - Plug in HDMI monitor, then play a sound file
      #aplay -f dat filename.wav

- Inertial Measure Unit
  - Check node location
    #ls -l /sys/bus/iio/devices/
    total 0
    lrwxrwxrwx 1 root root 0 Apr 28 17:42 iio:device0
    -> ../../../devices/platform/soc@0/30800000.bus/30a40000.i2c/i2c-2/2-006b/iio:device0
    lrwxrwxrwx 1 root root 0 Apr 28 17:42 iio:device1
    -> ../../../devices/platform/soc@0/30800000.bus/30a40000.i2c/i2c-2/2-006b/iio:device1
  - Read gyroscope value
    #cd /sys/bus/iio/devices/iio\:device0
    #cat in_anglvel_x_raw
    140
    #cat in_anglvel_y_raw
    -435
    #cat in_anglvel_z_raw
    88
  - Read accelerometer value
    #cd /sys/bus/iio/devices/iio\:device1
    #cat in_accel_x_raw
    -183
    #cat in_accel_y_raw
    130
    #cat in_accel_z_raw
    -13094

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5.7 GPS Configuration

The Sierra Wireless EM7421 is used in this example to configure GPS and LTE connections.

5.7.1 4G LTE Function (Sierra Wireless AirPrime EM7421)

1. Boot into Linux OS
2. Check module interface exist:

ip addr
wwan0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500
qdisc pfifo_fast state UNKNOWN group default qlen 1000

Check ttyUSBx node exist:
ls -l /dev/ttyUSB*
...
...
crw-rw---- 1 root dialout 188, 2 Mar 2 21:51 /dev/ttyUSB2

Check communication with module:
minicom -o -D /dev/ttyUSB2 -b 9600
ATZ
OK

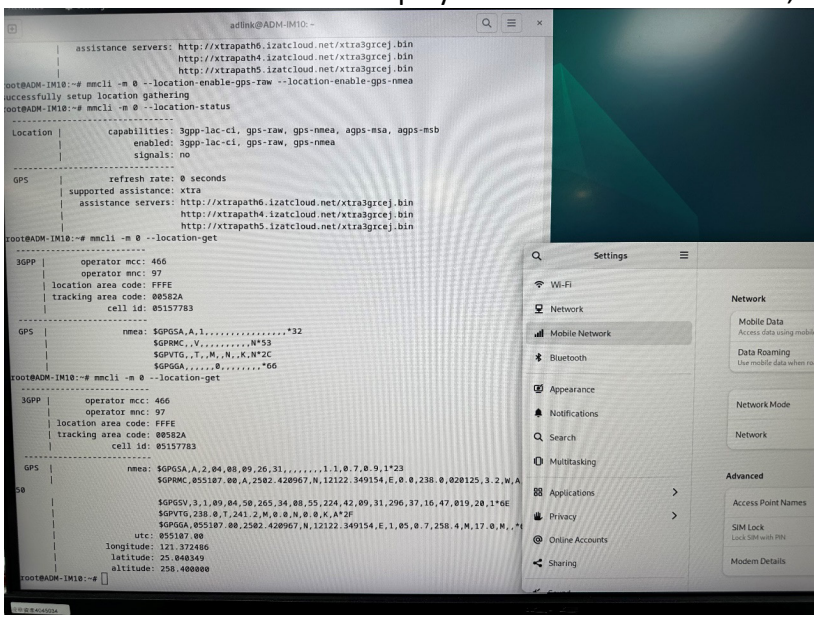
ATI
Manufacturer: Sierra Wireless, Incorporated
Model: EM7421
Revision: SWI9X50C_01.14.03.00 b06bd3 jenkins 2020/09/23
10:53:35
IMEI: 356281110512247
IMEI SV: 13
FSN: 8G2354204002B1
+GCAP: +CGSM

Check SIM ready:
AT+ICCID
ICCID: 89886972104700951650
OK
AT+CPIN?

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5.7.2 4G GPS Function (Sierra Wireless AirPrime EM7421)

- Install the AirPrime module along with the antennas
- In Terminal, execute the following command to test GPS
  - sudo mmcli -L
  - sudo mmcli -m 0 --enable
  - sudo mmcli -m 0 --location-status
  - sudo mmcli -m 0 --location-enable-gps-raw --location-enable-gps-nmea
  - sudo mmcli -m 0 --location-status
  - sudo mmcli -m 0 --location-get
- Above commands will display relevant GPS information, sample output below:



Safety Instructions

Read and follow all instructions marked on the product and in the documentation before you operate your system. Retain all safety and operating instructions for future use.

- Please read these safety instructions carefully.
- Please keep this User‘s Manual for later reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- When installing/mounting or uninstalling/removing equipment, turn off the power and unplug any power cords/cables.
- To avoid electrical shock and/or damage to equipment:
  - Keep equipment away from water or liquid sources.
  - Keep equipment away from high heat or high humidity.
  - Keep equipment properly ventilated (do not block or cover ventilation openings).
  - Make sure to use recommended voltage and power source settings.
  - Secure the power cord (do not place any object on/over the power cord).
  - Only install/attach and operate equipment on stable surfaces and/or recommended mountings.
  - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.
- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.

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