ASN-NBIOT

with ARM Cortex M4 MCU and NB-IoT module BOX PC

Quick Reference Guide

1st Ed – 03 July 2020

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Avalue Customer Services

Each and every Avalue's product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new Avalue device is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name Avalue has come to be known.

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We want you to get the maximum performance from your products. So if you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally a lot more detailed than the ones we can give over the phone. So please consult the user's manual first.
To receive the latest version of the user's manual; please visit our Web site at:
http://www.avalue.com.tw/

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1. Getting Started

1.1 Safety Precautions

Warning!

Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!

Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

1.2 Packing List

- 1 x ASN-NBIOT with ARM Cortex M4 MCU and NB-IoT module BOX PC
- Other major components include the followings:
  - Din Rail Mounting Kit

If any of the above items is damaged or missing, contact your retailer.

1.3 System Specifications

Component	
MCU	• STM32L476ZGT6
LPWAN Module	• Quectel BC95GJB-02-STD / NB-IOT module
GPS module	• Quectel L70B-M39 / GPS module
Motion Sensor	• Support 3D accelerometer and 3D gyroscope
Indicate LED	• LED for Power & NBIOT connection status • Power: Green→OK; Orange→Charging; Red→ Lower battery • NBIOT: Green→Connected; Red→ Disconnected
Battery	• Support rechargeable battery
External I/O	
Power input	• Power input from DC IN(8V~18V from M12 connector)
M12 Connector	• IP65 M12 connector for sensors I/O interface
Indicator Light	• YES (NBIOT & Power status)
Internal I/O	
Micro USB	• Firmware update interface for STM32L476ZGT6
Micro SD	• Micro SD socket for storage extension
SIM Slot	• Micro SIM slot for on board NBIOT module used
JIO1	• I/O interface for sensors, include with UART/SPI/I2C/ADC/DAC signals
Antenna 1	• Antenna connector for NBIOT module
Antenna 2	• Antenna connector for GPS module
Power Requirement	
Power Input	• 8V ~ 18V Wide Range DC IN (Typical : 12V DC IN)
Power Connector Type	• M12
Battery	• 1S2P 18650 6000 mAh, 3.6V
Mechanical	
IP Level	• IP65
Shell Material	• PC
Color	• Black
Dimension	• W x H x D : 94 x 148 x 38.7 mm
Weight	• w/o Battery : 0.23KG • w/ Battery : 0.33 KG
Mounting	• DIN 35 rail, wall mount
Fanless	• Yes
Reliability	
Operating Temperature	• -20°C ~ 60°C w/o battery • 15°C ~ 40°C w/ battery

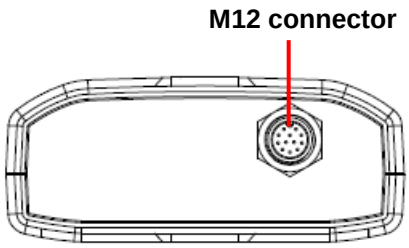
Operating Humidity	• 40°C @ 95% Relative Humidity, Non-condensing
Storage Temperature	• -40°C ~ 85°C w/o battery • -20°C ~ 20°C w/ battery
Dust and Rain Test	• IP65 Rating
Vibration Test	• Random Vibration Operation 1. Test PSD : 0.00454G²/Hz , 1.5 Grms 2. System condition : operation mode 3. Test frequency : 5~500 Hz 4. Test axis : X,Y and Z axis 5. Test time : 30 minutes per each axis 6. IEC60068-2-64 Test Fh 7. Storage : SD Card • Sine Vibration test (Non-operation) 1. Test Acceleration : 2G 2. Test frequency : 5~500 Hz 3. Sweep：1 Oct/ per one minute. (logarithmic) 4. Test Axis : X,Y and Z axis 5. Test time : 30 min. each axis 6. System condition : Non-Operating mode 7. Reference IEC 60068-2-6 Testing procedures • Package Vibration Test: 1. Test PSD : 0.026G²/Hz , 2.16 Grms 2. Test frequency : 5~500 Hz 3. Test axis : X,Y and Z axis 4. Test time : 30 minutes per each axis 5. IEC 60068-2-64 Test Fh
Mechanical Shock Test	• 1. Wave from : Half Sine wave • 2. Acceleration Rate : 10g • 3. Duration Time : 11ms • 4. No. of shock : Z axis 300 times • 5. Test Axis : Z axis • 6. Operation mode • 7. Reference IEC 60068-2-27 testing procedures • Test Eb : Shock Test
Drop Test	• Package drop test • Reference ISTA 2A, Method : IEC-60068-2-32 Test:Ed • Test Ea : Drop Test 1. Test phase : One corner, three edges, six faces

	2. Test high : 96.5cm 3. Package weight : 5Kg 4. Test drawing

Note: Specifications are subject to change without notice.

1.4 System Overview

1.4.1 Bottom View

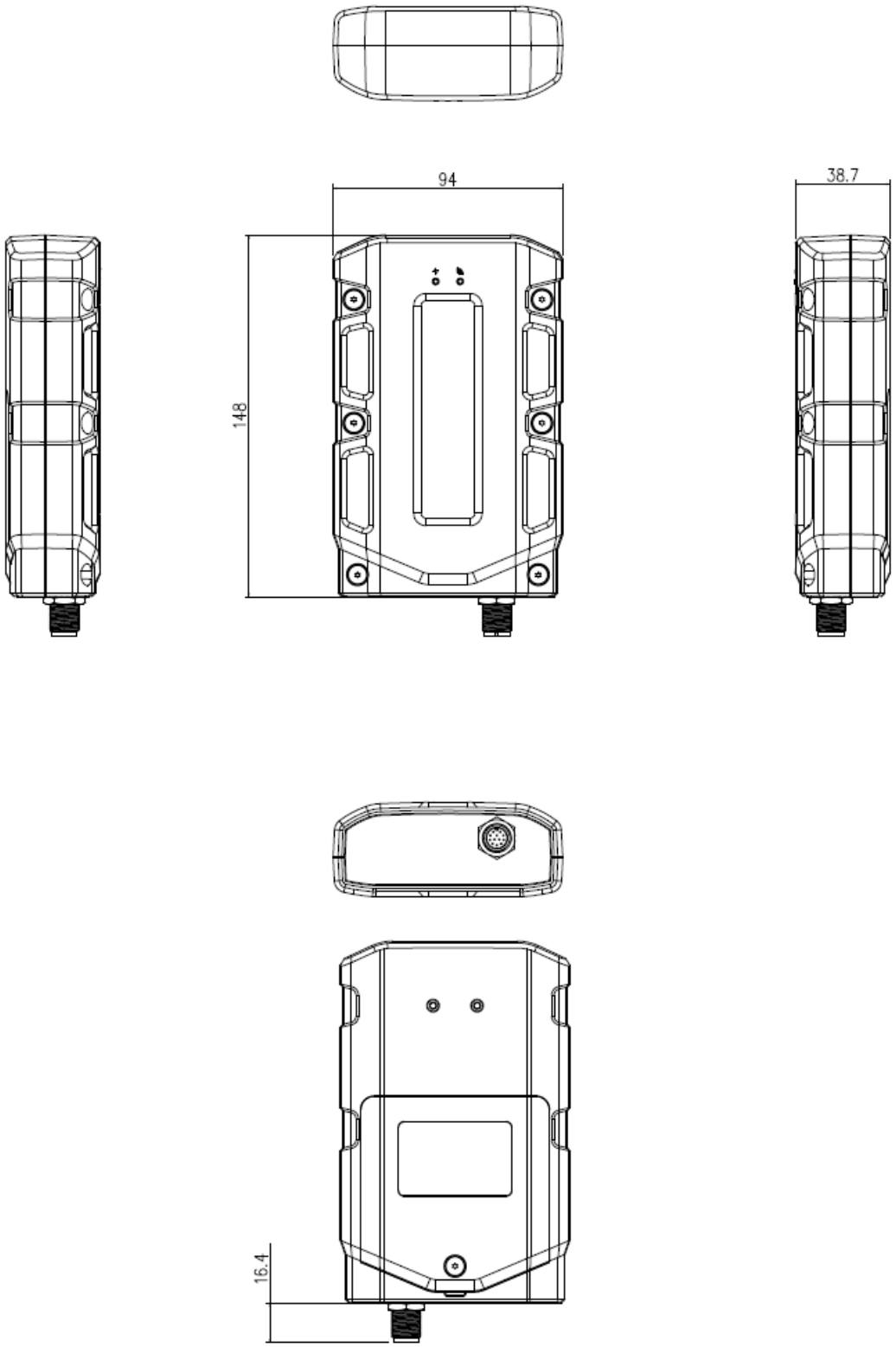


Connectors

Label	Function	Note
M12 connector	M12 connector with UART/SPI/I2C/ADC/DAC interface	

1.5 System Dimensions

1.5.1 Front & Top View



(Unit: mm)

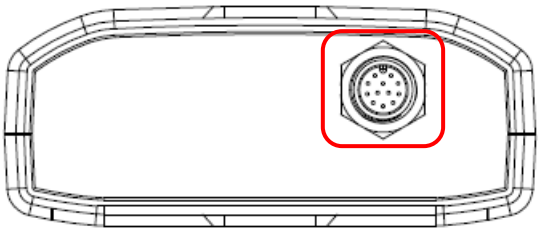
2. Hardware Configuration

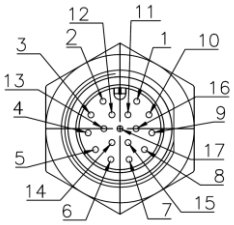
Note: If you need more information, please visit our website:

http://www.avalue.com.tw

2.1 ASN-NBIOT connector mapping

2.1.1 M12 connector with UART/SPI/I2C/ADC/DAC interface (M12 connector)





PIN	Signal
1	+8~+18VIN
2	+8~+18VIN
3	LPCOMTX
4	LPCOMRX
5	GND
6	+V3.3S
7	ADC_DAC_R
8	SPI1_CS
9	GND
10	SPI1_SCK
11	I2C_SDA
12	SPI1_MISO
13	I2C_SCL
14	SPI1_MOSI
15	+VEXT
16	GPIO1
17	+VSEN