

MDA1L11-3

Wi-Fi module Operation manual

versions	Date	Content	Author
1.0	2019-09-02	initial release	

目录

1. Introduction.....	3
1.1 Top view	4
1.2 Module System Block Diagram.....	4
1.3 Module technical specifications.....	5
2. Structure specification	7
2.1 Module structure size	7
2.2 Hardware interface definition.....	7
3. Wireless Specification	8
4. Label printing requirements	12

1. Introduction

MDA1L11-3 Wireless WIFI module is a low-power WIFI module for the Internet of Things. It supports IEEE802.11b / g / n protocol. It also embeds IPV4 / IPV6 TCP / IP, HTTP, DNS, FTP and other complete network protocols, making the terminal more reliable, convenient and easy to use.

The MDA1L11-3 module contains HolaConW01 single-chip solution. the chip in software and hardware are used in low-power technology, the purpose is to lower the power consumption of the entire board, the product more competitive. At present, the module provides a complete serial interface functions and equipment to communicate, so you can through the serial port and mobile client to connect the cloud and equipment.

- IEEE 802.11b/g/n, 2.4Ghz ,1T1R
- internal antennas
- Green TX Low power saving technology
- Low power monitor mode
- The maximum operationg frequency of the MCU is 160MHz
- Support "ali cloud", optionally support "midea cloud"
- Full encryption support: WPS, WPA, WPA2

- Support IPV4, TCP/IP protocol
- Support HTTP, DNS, FTP and other network protocols

1.1 Top view

Positive figure



On the back of the figure



1.2 Module System Block Diagram

As shown in Figure 1, the MDA1L11-3 module contains HolaConW01 single-chip solution. The module uses the internal antenna design in PCB, both for customers to reduce the cost of the antenna,

but also eliminates the need to consider the antenna assembly space.

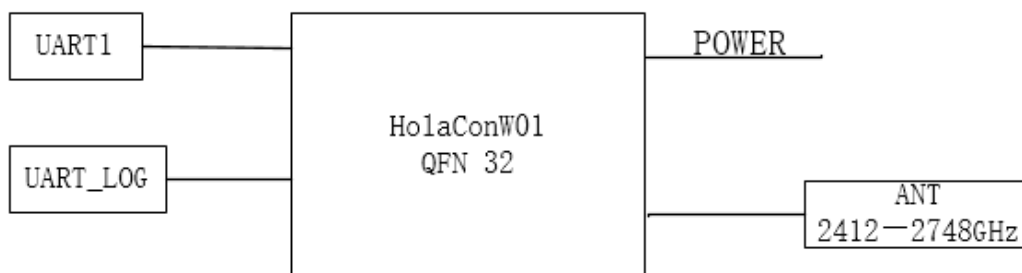


figure 1. Module System Block Diagram

1.3 Module technical specifications

Main chip	HolaConW01
Working frequency	2.412~2.462GHz
WIFI standards supportde	802.11b/g/n(1x1)
Modulation	11b: DBPSK, DQPSK, CCK, DSSS 11g: BPSK, QPSK, 16QAM, OFDM 11n: MCS0~MSC7 OFDM
Supported rates	11b: 1, 2, 5.5 和 11Mbps 11g: 6,9,12,18,24,36,48,54Mbps 11n: MCS0~7
communication interface	UART0 and UART1
PCB layer structure	4 Layers
PCB size	20.0mm(L)x15.0mm(W)x1.0mm(H)
Antenna	internal antennas, 2.4GHz gain value 2dBi
Working temperature	-20℃~+75℃
Storage temperature	-40℃~+75℃

Hardware version	MDA1L11-3_20*15_1L Ver:1.1
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Note/FCC warning: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

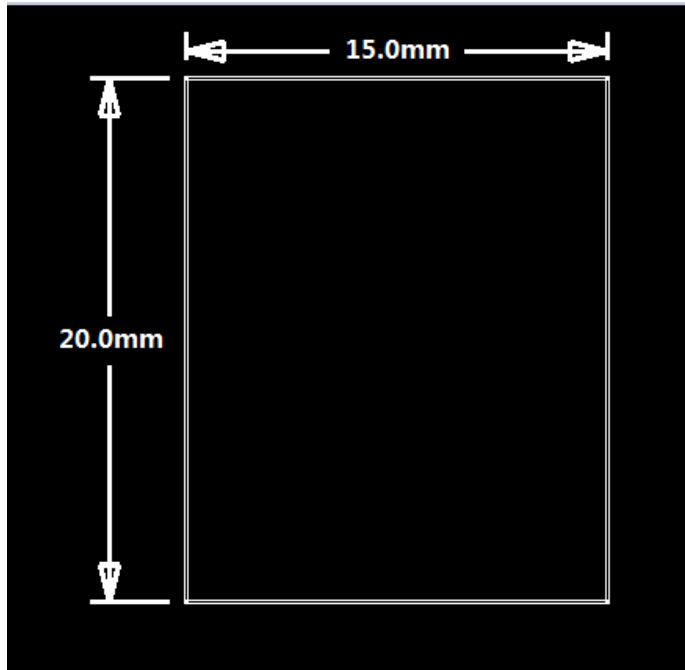
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

—This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.

2. Structure specification

2.1 Module structure size



The size of the module as shown above , length:20.0mm, width:15.0mm, thickness 1.0mm (error +/- 0.1mm)

2.2 Hardware interface definition

PIN	Signal Name	Description
1	VCC	Supply Input Pin
2	RXD	UART receive data
3	TXD	UART transmit data
4	GND	Ground

3. Wireless Specification

Table1: 802.11b mode

Item	Spec				
Specification	IEEE802.11b				
Mode	DSSS / CCK				
Channel	CH1 to CH11				
Data rate	1, 2, 5.5, 11Mbps				
TX Characteristics	Min.	Typ.	Max.	Unit	Remark
1. Power Levels(Calibrated)					
1) 18dBm Target	16	18	20	dBm	
2. Spectrum Mask @ target power					
1) fc +/-11MHz to +/-22MHz	-	-	-30	dBr	
2) fc > +/-22MHz	-	-	-50	dBr	
3. Frequency Error	-10	0	+10	ppm	
RX Characteristics	Min.	Typ.	Max.	Unit	
4 Minimum Input Level Sensitivity					
1) 1Mbps (FER \leq 8%)	-	-93	-98	dBm	
2) 2Mbps (FER \leq 8%)	-	-92	-95	dBm	
3) 5.5Mbps (FER \leq 8%)	-	-90	-93	dBm	
4) 11Mbps (FER \leq 8%)	-	-88	-90	dBm	
5 Maximum Input Level (FER \leq 8%)		0	0.5	dBm	

Table2: 802.11g mode

Item	Spec
Specification	IEEE802.11g
Mode	OFDM
Channel	CH1 to CH11

Data rate	6, 9, 12, 18, 24, 36, 48, 54Mbps				
TX Characteristics	Min.	Typ.	Max.	Unit	
1. Power Levels					
1) 17dBm Target @6Mbps	15	17	19	dBm	
2) 15dBm Target @54Mbps	13	15	17	dBm	
2. Spectrum Mask @ target power					
1) at fc +/- 11MHz	-	-	-20	dBr	
2) at fc +/- 20MHz	-	-	-28	dBr	
3) at fc > +/-30MHz	-	-	-40	dBr	
3 Constellation Error(EVM)@ target power					
1) 6Mbps	-	-22	-25	dB	
2) 9Mbps	-	-23	-25	dB	
3) 12Mbps	-	-24	-26	dB	
4) 18Mbps	-	-24	-27	dB	
5) 24Mbps	-	-25	-27	dB	
6) 36Mbps	-	-25	-30	dB	
7) 48Mbps	-	-25	-31	dB	
8) 54Mbps	-	-28	-32	dB	
4 Frequency Error	-10	0	+10	ppm	
RX Characteristics	Min.	Typ.	Max.	Unit	
5 Minimum Input Level Sensitivity					
1) 6Mbps (PER ≤ 10%)	-	-88	-91	dBm	
2) 9Mbps (PER ≤ 10%)	-	-88	-91	dBm	
3) 12Mbps (PER ≤ 10%)	-	-86	-90	dBm	
4) 18Mbps (PER ≤ 10%)	-	-84	-88	dBm	
5) 24Mbps (PER ≤ 10%)	-	-81	-86	dBm	
6) 36Mbps (PER ≤ 10%)	-	-78	-83	dBm	
7) 48Mbps (PER ≤ 10%)	-	-73	-77	dBm	

8) 54Mbps (PER \leq 10%)	-	-72	-75	dBm	
6 Maximum Input Level (PER \leq 10%)		0	-10	dBm	

Table3: 802.11n (HT20) mode

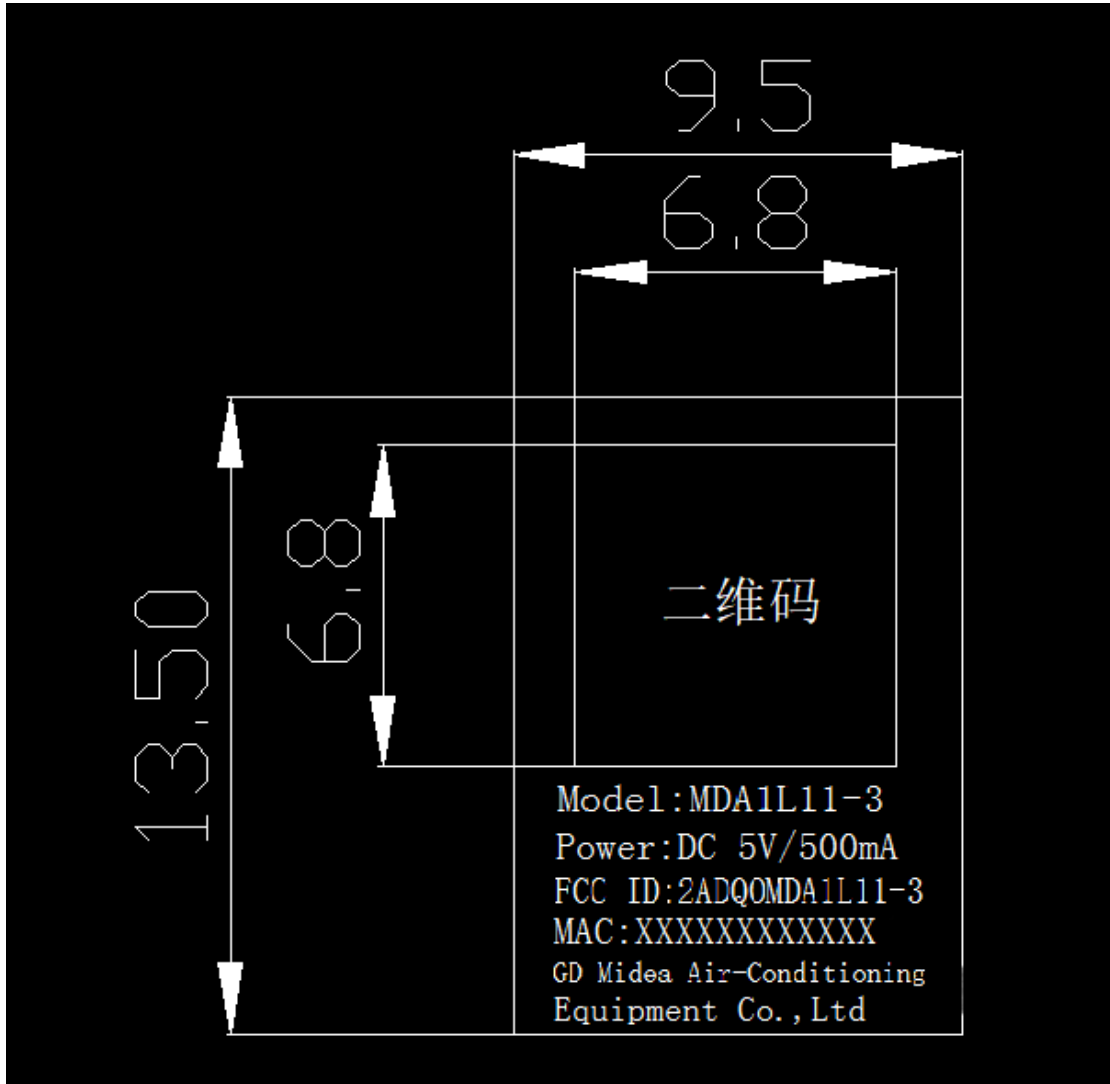
Item	Spec				
Specification	IEEE802.11n HT20 @ 2.4GHz				
Mode	OFDM				
Channel	CH1 to CH11				
Data rate (MCS index)	MCS0/1/2/3/4/5/6/7				
TX Characteristics	Min.	Typ.	Max.	Unit	
1. Power Levels					
1) 17dBm Target@MCS0	15	17	19	dBm	
2) 14dBm Target@MCS7	12	14	16	dBm	
2. Spectrum Mask @target power					
1) at fc +/- 11MHz	-	-	-20	dBr	
2) at fc +/- 20MHz	-	-	-28	dBr	
3) at fc > +/-30MHz	-	-	-45	dBr	
3. Constellation Error(EVM)@ target					

power					
1) MCS0	-	-22	-24	dB	
2) MCS1	-	-25	-27	dB	
3) MCS2	-	-26	-28	dB	
4) MCS3	-	-27	-29	dB	
5) MCS4	-	-27	-29	dB	
6) MCS5	-	-28	-30	dB	
7) MCS6	-	-28	-30	dB	
8) MCS7	-	-29	-31	dB	
4. Frequency Error	-10	0	+10	ppm	
RX Characteristics	Min.	Typ.	Max.	Unit	
5. Minimum Input Level Sensitivity					
1) MCS0 (PER \leq 10%)	-	-89	-91	dBm	
2) MCS1 (PER \leq 10%)	-	-85	-87	dBm	
3) MCS2 (PER \leq 10%)	-	-83	-84	dBm	
4) MCS3 (PER \leq 10%)	-	-80	-82	dBm	
5) MCS4 (PER \leq 10%)	-	-77	-79	dBm	

6) MCS5 (PER \leq 10%)	-	-73	-75	dBm	
7) MCS6 (PER \leq 10%)	-	-72	-73	dBm	
8) MCS7 (PER \leq 10%)	-	-70	-71	dBm	
6. Maximum Input Level (PER \leq 10%)	-	0	-8	dBm	

4. Label printing requirements

Label size is 13.5*9.5mm, label material is white, Song typeface; The dimension of the QR code is 6.8*6.8mm.



QR code content:

The content of the QR code is shown in the following table.

QR code content		
Field	Characters in length	note
The initial code	4	Fixed content as "MAC:"
The MAC address	12	Fixed as "XXXXXXXXXXXX"

Production information	26	If the content is less than 26 characters, fill in the front with the character "X" Factory code (2 a) + job number (8) + production date (6th) + small software version number (6) + enterprise code (4 digits) : "01 xxxxxxxx1608020001090000"
Software version number	12	Fixed as "050808011944"
The power supply	4	Fixed content as "3.3v" or "5.0v"
current	5	Fixed content as "500mA"

Note:

Starting code (4 bits) : MAC:

MAC address (12 bits) : XXXXXXXXXX

Production information (bit 26) : 01 XXXXXXXX 160919 000109 0000

Position 1 and 2: represent the manufacturing plant

Position 3-10: represents the job number of the manufacturing plant

Bit 11~16: production date, such as September 19, 2016 marked 160919

Bits 17 to 22: software minor version Numbers

No. 23-26: enterprise code, midea's internal business department is "0000"

Non-american enterprise code according to the software code.

Software version (12 bits) : 050808011944

Power supply (4-bit) : working voltage of the module

Current (5 bits) : 500mA

5. FCC label statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

-To satisfy FCC exterior labeling requirements, the following text must be placed on the exterior of the end product. "Contains Transmitter module FCC ID: 2ADQOMDA1L11-3"