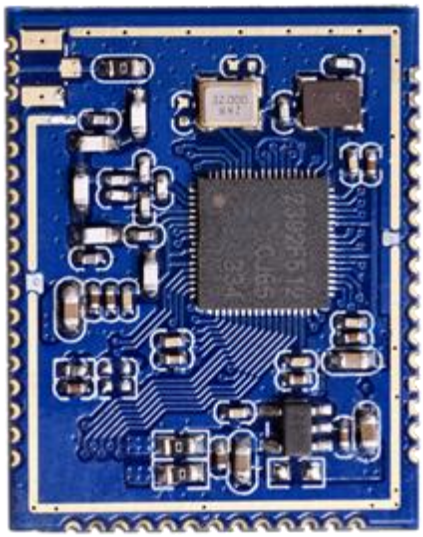
HM-WS-001

Description

- RF SoC mini module
- Stamp hole form
- UART Interface
- Dimensions: 28mm×22mm×2.6mm
- Chipset: CMT2392F512-EQR, Sub-1G Wireless MCU
- Frequency:
  - 868MHz, HM-WS-001-868 (863MHz~870MHz)
  - 915MHz, HM-WS-001-915 (902MHz~928MHz)
- Standard: IEEE802.15.4g/e, Wi-SUN, 6LoWPAN
- Receiver Sensitivity
  - -107dBm @ FSK, 868MHz, 50kbps, 25kHz
  - -102dBm @ FSK, 868MHz, 100kbps, 50kHz
- Modulation
  - OOK
  - 2-GFSK/FSK
  - 4-GFSK/FSK
  - GMSK
- Maximum Data Rate
  - 500kbps @ 2-GFSK/FSK
  - 1000kbps @ 4-GFSK/FSK
- Transmit Output Power Up to +20 dBm
- Current Consumption
  - Sleep mode: < 2.5uA
  - Rx mode: 20mA typ.
  - Tx mode: 40mA @ 13dBm typ.
  - Tx mode: 95mA @ 20dBm typ.
- Operating Voltage:
  - With LDO inside, 2.6V ~ 5.5V
  - Without LDO, 1.8V ~ 3.6V
- Antenna
  - IPEX for external antenna
  - Stamp hole for external antenna
- Operating Temperature: -40℃ ~ +85℃
- Software Support FAN1.0 Router
- Applications
  - Smart Meters
  - Smart Building
  - Smart Home
  - Smart City
  - Industrial Application
  - Sensor Networks

Effect Picture



Physical Photo

Order Infomation

Part Number	MOQ
HM-WS-001-434	1,000 pcs
HM-WS-001-868	1,000 pcs
HM-WS-001-915	1,000 pcs

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1 Block Diagram

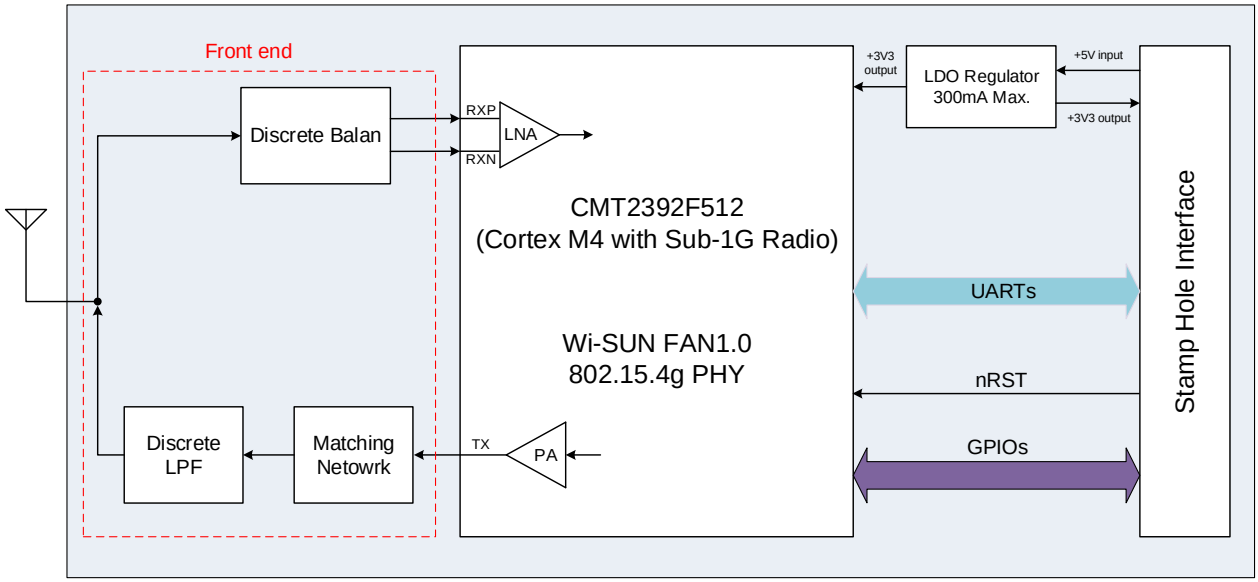

Figure1. Block Diagram

2 Mechanical Spec

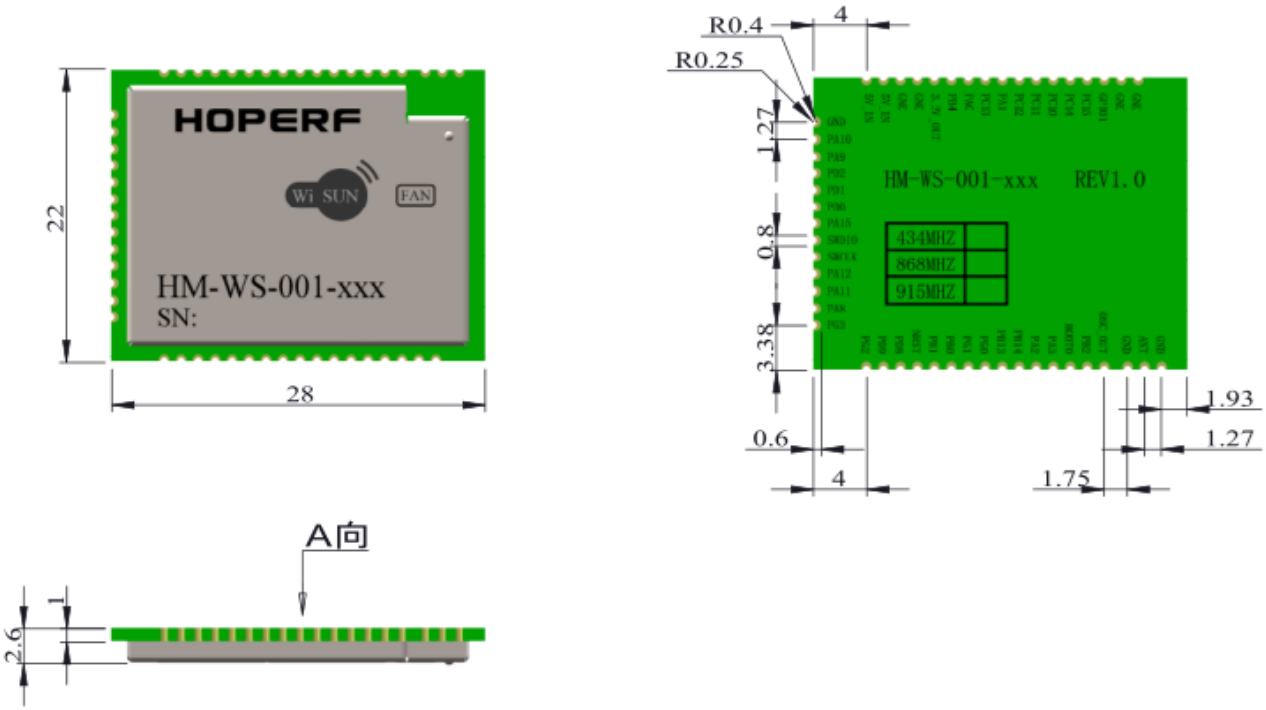

Figure2. Mechanical Dimensional

3 Pin-Definition

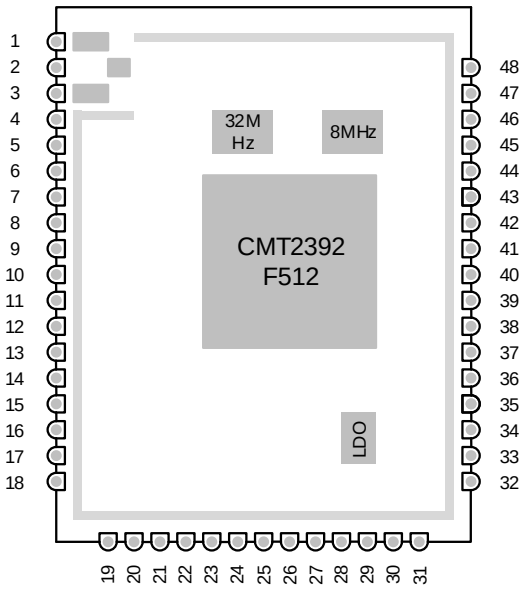

Figure3. Module Pin Out

Pin No.	Pin Name	IO	Function
1	GND	--	Grounding
2	ANT	--	For external antenna
3	GND	--	Grounding
4	OSC_OUT	O	Oscillator output
5	PB2	IO	General purpose IO
6	BOOT0	I	Select Boot Mode, Pull-high means boot from rom for programming
7	PA3 / UART2_RX	IO	UART2_RxD, connect to host
8	PA2 / UART2_TX	IO	UART2_TxD, connect to host
9	PB14 / UART5_RX	IO	General purpose IO or UART5 RxD
10	PB13 / UART5_TX	IO	General purpose IO or UART5 TxD
11	PG0 / LED_TX	IO	Radio transmit indicate
12	PG1/ LED_RX	IO	Radio receive indicate
13	PB0 / UART6_TX	IO	General purpose IO or UART6 TxD
14	PB1/ UART6_RX	IO	General purpose IO or UART6 RxD
15	nReset	I	Reset, low active
16	PD8 / UART3_TX	IO	General purpose IO or UART3 TxD
17	PD9 / UART3_RX	IO	General purpose IO or UART3 RxD
18	PG2	IO	General purpose IO
19	PG3	IO	General purpose IO

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20	PA8	IO	Mode Select Pull-high for UserMode, Pull-low for TestMode
21	PA11	IO	General purpose IO
22	PA12	IO	General purpose IO
23	PA14 / SWCLK	IO	General purpose IO, Jlink debug interface SWCLK
24	PA13 / SWDIO	IO	General purpose IO, Jlink debug interface SWDIO
25	PA15	IO	General purpose IO
26	PD0	IO	General purpose IO
27	PD1	IO	General purpose IO
28	PD2	IO	General purpose IO
29	PA9 / UART1_TX	IO	UART1_TxD, console for running logs
30	PA10 / UART1_RX	IO	UART1_RxD, console for running logs
31	PB3	IO	General purpose IO
32	+5V_IN	--	DC power input, +5V
33	+5V_IN	--	DC power input, +5V
34	GND	--	Grounding
35	GND	--	Grounding
36	+3V3_OUT	--	DC power output, +3.3V
37	PB4	IO	General purpose IO
38	PA0 / WKUP	IO	General purpose IO
39	PC13 / TAMPER / RTC	IO	General purpose IO
40	PA1	IO	General purpose IO
41	PC12 / MOSI	IO	General purpose IO, Hardware SPI MOSI
42	PC11 / MISO	IO	General purpose IO, Hardware SPI MISO
43	PC10 / SCK	IO	General purpose IO, Hardware SPI SCK
44	PC14 / OSC32_IN	IO	General purpose IO, or for 32768Hz crystal
45	PC15 / OSC32_OUT	IO	General purpose IO, or for 32768Hz crystal
46	RF_GPIO1	IO	Radio test input / output port
47	GND	--	Grounding
48	GND	--	Grounding

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4 Application Circuit

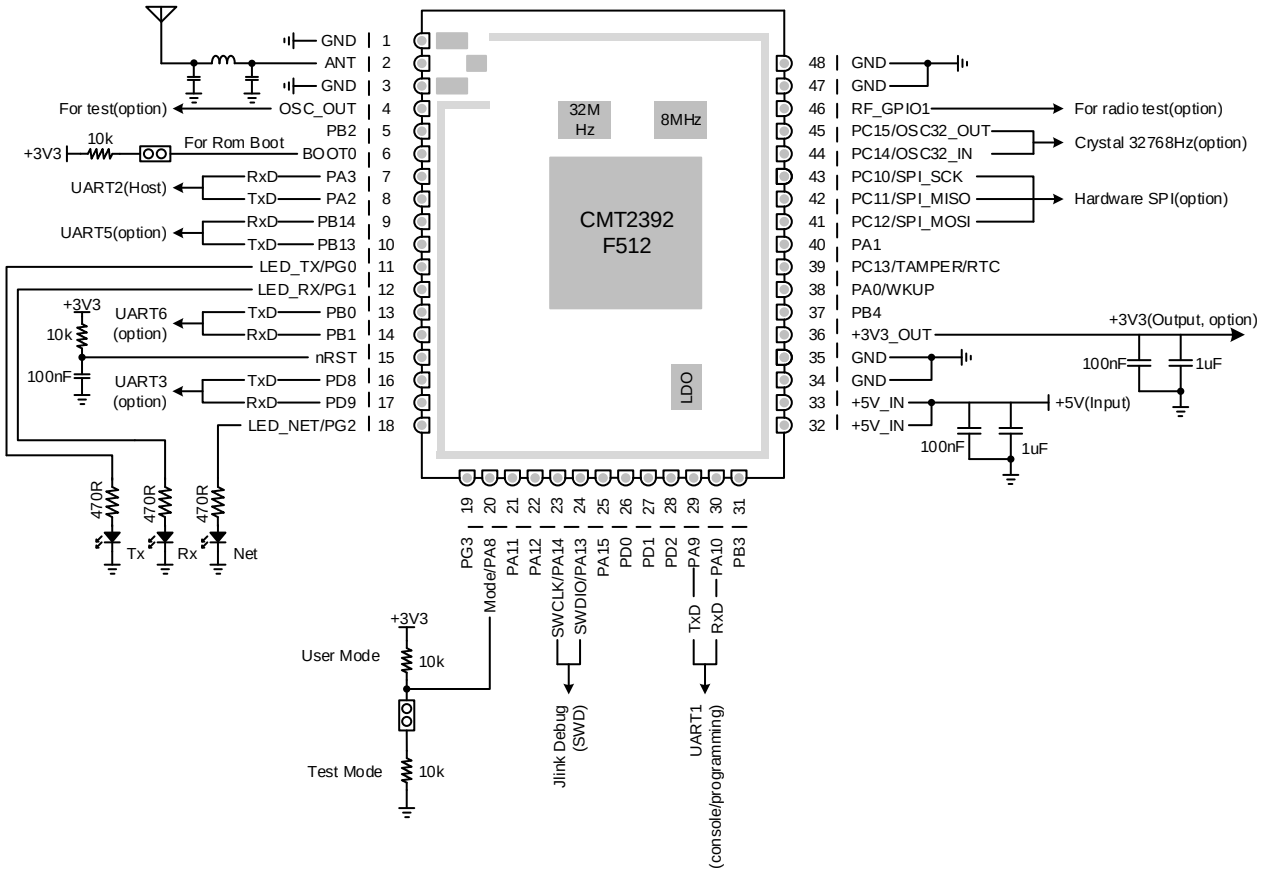

Figure4. Application Circuit

5 Protocol Stack Diagram

Security	Application	DHCP v6client / relay / server
802.1x 802.11i EAP_TLS	Transport	UDP
	Network	IPv6 / ICMPv6 / RPL / 6LoWPAN / MPL
	Data Link	Frequency hopping / Discovery and Join / Protocol Dispatch / Frame Exchange / CSMA
	PHY	802.15.4g PHY

Figure5. Protocol Stack

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