



FEATURE

● System

- Chipset: STM32WLE5(single core)
- High performance ARM® Cortex®-M4 32-bit RISC core operating up to 48 MHz frequency
- Embedded memories (256 Kbytes of Flash memory and 64 Kbytes of RAM)
- Hardware encryption AES 256-bit
- True random number generator (RNG)
- CRC calculation unit
- Unique device identifier (64-bit UID compliant with IEEE 802-2001 standard)
- 96-bit unique die identifier
- Hardware public key accelerator (PKA)
- 1.8 V to 3.6 V power supply

● Clock Source

- 32 MHz TCXO & 32 KHz XTAL

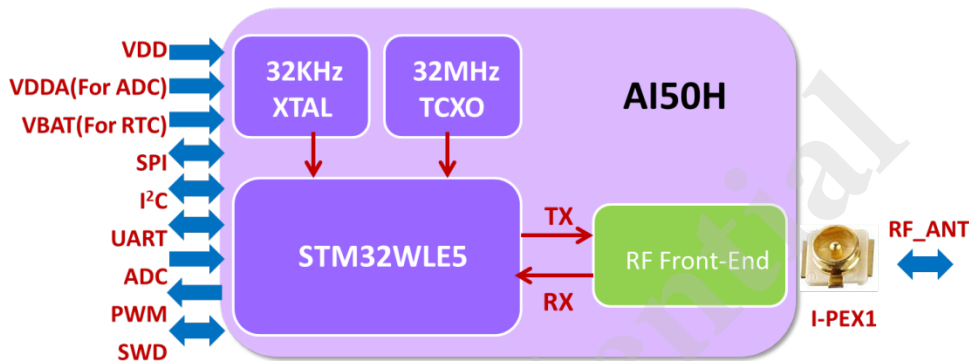
● System Peripherals

- 2 DMA, 2 USART, 1 LPUART, 2 SPI, 3 I2C
- RTC wakeup counter, SysTick, Watchdog
- Channel Timer

● Radio

- LoRa Modem: FSK, GFSK, MSK, GMSK, BPSK, LoRa modulation
- +21 dBm RF output vs. 3.3V supply@BW125kHz ∙ SF12
- Programmable bit rate up to 300 kbps
- High sensitivity: down to -136 dBm for LoRa @125kHz, SF12 and -122dBm for 2-FSK @1.2kbps
- Excellent blocking immunity
- Automatic RF Sense and CAD with ultra-fast AFC
- I-PEX MHF Connector
- LGA 58Pin – Stamp hole type
- Small footprint : 20 mm x 20 mm x 1.95 mm(Typ.)

Block Diagram



Technical Specification

Model Name	AI50H
Product Description	LoRa Wireless Communication Module
Package	LGA 58Pin – Stamp hole type
Host Interface	UART
RF output	I-PEX MHF Connector
Dimension	20 mm x 20 mm x 1.95 mm(Typ.)

Recommended Operation Conditions

Operating Voltage	<ul style="list-style-type: none"> ■ 3.3V
Temperature	<ul style="list-style-type: none"> ■ Storage : -50°C ~ +125°C ■ Operating : -40°C ~ +85°C ■ Low Power Dissipation^(*Note) : -40°C ~ +95°C
Humidity	<ul style="list-style-type: none"> ■ Operating : 10 ~ 95% (Non-Condensing) ■ Storage : 5 ~ 95% (Non-Condensing)

Electrical Specifications

Frequency	863-930 MHz
Band Width	7.8 - 500 KHz
Bit rate	LoRa BR : 0.013 – 17.4 kb/s (G)FSK BR : 0.6 - 300 kb/s
SF	SF5 - SF12
Tx Power	+21dBm
Sensitivity	< -136dBm @125kHz, SF12

*Note: Low Power Dissipation: means low TX duty cycle and low GPIO driving and sinking current.

PIN Definition

Pin No.	Pin Name	Pin No.	Pin Name
1	PA13	34	PA3
2	PA14	35	PA4
3	GND	36	PA5
4	VBAT	37	PA6
5	PC13	38	PA7
6	VREF+	39	GND
7	VDDA	40	GND
8	PA15	41	Boot 0
9	PB15	42	NRST
10	PB3	43	PB11
11	PB4	44	PB10
12	PB5	45	PA9
13	PB6	46	PA8
14	GND	47	VDD
15	PB7	48	GND
16	GND	49	PB1
17	PB8	50	PB2
18	PB9	51	PB12
19	PC0	52	PB13
20	PC1	53	PB14
21	PC2	54	PA10
22	PC3	55	PA11
23	PC4	56	PA12
24	PC5	57-58	GND
25	PC6		
26	GND		
27	GND		
28	GND		
29	GND		
30	GND		
31	NC		
32	GND		
33	PA2		

Mechanical Dimension

Unit: mm(Typ.)

