

MDHKT-100BK

wireless voice intercom and data transmission module

DATA SHEET

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1. Summary:

MDHKT-100BK is a cost-effective wireless voice intercom and data transmission module, with built-in high-performance RF transceiver chip, microcontroller and RF amplifier.

The external MCU can set the working parameters of the module and through the standard asynchronous serial interface (RS232) communication and control the working state of the module.

This module only needs an external antenna, a MIC and a voice amplifier to form a complete intercom or DMR(digital mobile radio) station.

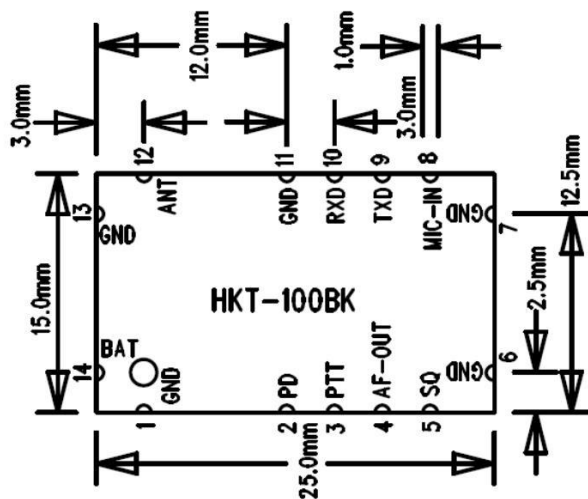
2. Characteristics:

- Frequency demodulation technology based on digital signal processing technology ;
- Frequency range : VHF 136~174MHZ, UHF 400~480MHZ
- Frequency space: 5K/6.25K/12.5K/25K;
- RF output power: Low power 500mW
- Voice Encryption (interference) (8 options)
- SMS transceiver function;
- Built-in CTCSS (38 groups), CDCSS (83 groups) codec;
- Automatic elimination of tail sound function;
- Busy channel lock-out(BCLO) function;
- Digital volume (level 1-9) adjustable;
- Voice control hands-free communication function (level 0-8) adjustable;
- Noise level (0-9) adjustable;
- MIC sensitivity adjustable software (1-8)
- Ultra-low-power sleep mode (0.1uA);
- Supply voltage: 3.3~5.0V

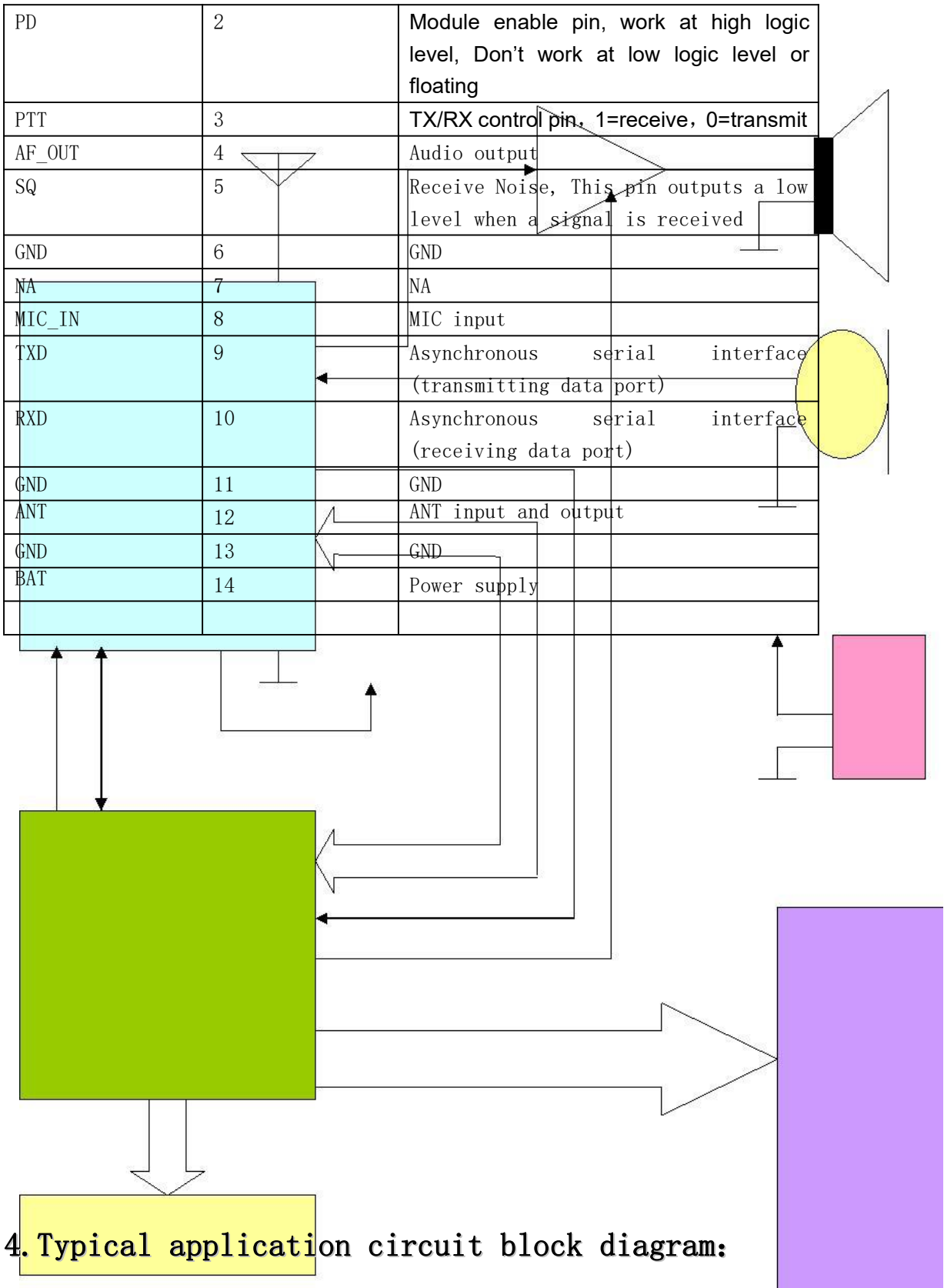
- Size: 15*25*3.0MM;
- RF Range: 3km in open air

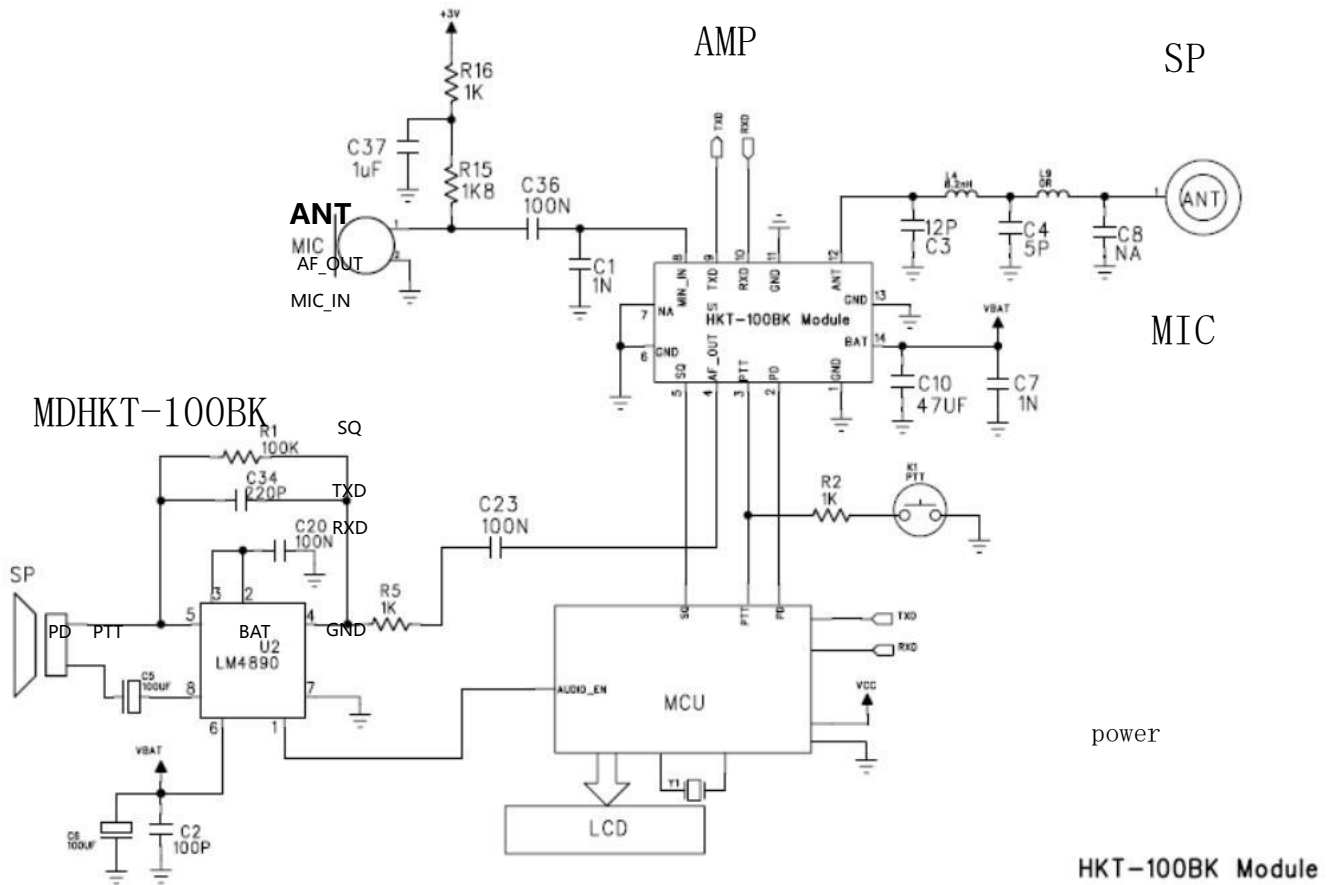
Applications : 1、Portable intercom and paging system;
 2、Wireless Data Transmission (SMS) system;
 3、mobile phone and other products with interphone function embedded.

3. Dimensions and pins (bottom view):



Pins	Number	Function description
GND	1	GND





MCU

LCD

KEY 5. Reference application circuit

5. technical specification:

- DC electrical parameters (recommended working range)

Symbol	Description	Min	Typical	Max	unit
B+	Supply voltage	2.8	4.0	5.0	V
Tamb	environment temperature	-20		60	° C
	Power on module initialization time	400	500		ms
	CMOS low level voltage	0		0.6	V
	CMOS high level voltage	2.0	2.5	3.0	V

Notes: VCC = 3V(Interface voltage)

- DC electrical parameters (the largest scope of work)

Symbol	Description	Min	Typical	Max	unit
VBAT	Supply voltage	2.8		5.0	V
Tamb	environment temperature	-30		85	° C
I _{IN}	I/O input current ⁽¹⁾	-5		5	mA
V _{IN}	I/O input voltage ⁽¹⁾	-0.3		3.0	V

● **power consumption indicators**

(test condition: VBAT = 4.0V , T_A = 25° C)

operating mode	Description	Test condition	Typical	unit
continuous reception	Receiver on	Input frequency 450.050MHz, RF level. - 47 DBM, AF = 1 KHz, MOD = 1.5 KHz	65	mA
continuous transmission	Transmitter on	Input is 1KHz modulated signal, high power:	330	mA

Receive static noise standby power-saving mode	The receiver is in standby power-saving working state		10	mA
Deep sleep (PDN) low level	The receiver and the transmitter are completely off.	Within 500ms, Power on process is completed and switch to continuous TX/RX mode.	0.1	uA

● **Overall electrical performance specification**

frequency range (MHz)	VHF 136-174MHz, UHF 400-470MHz
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channel spacing (KHz)	25 / 12.5KHZ
antenna impedance(Ω)	50
operating temperature range ($^{\circ}\text{C}$)	-20~+60
frequency stability (ppm)	± 2.5

● Receiving characteristics

(Unless otherwise specified, the test conditions are VBAT = 4.0 V, TA = -25 to 85 ° C)

Symbol	parameter description	Test condition	Min	Typical	Max	Unit
Sensitivity	Reference sensitivity	12dB Output voice message sonar ratio	-120	-122		dBm
	Noise-opening sensitivity	Software adjustable		-120		
	Receiving SNR S/N	1.5 KHZ frequency deviation	52	55		
	adjacent channel selectivity	12.5KHz channel interval	52	60		dB
	intermodulation immunity	12.5KHz channel interval	52	60		
	Spurious response suppression	12.5KHz channel interval	52	60		dB
AF OUT	Audio output (valid value)	Fo=1KHz default volume		150	150	mV
	Audio output distortion	Fo=1KHz		1	3	%
	audio frequency response	300HZ 500HZ 1KHZ 2500Hz		+2 +4 0 -7		

		3000HZ		-13		
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● transmission characteristics

(Unless otherwise specified, the test conditions are VBAT = 4.0 V, T_A = -25 to 85 ° C)

Symbol	parameter descriptor	Test condition	Min	Typical	Max	Unit
P _{OUT}	Output power		350	400	500	mW
	Transmit current			300	350	mA
	Maximum modulation frequency offset limit	Narrow band			2.5	KHZ
		Wide band			5.0	KHZ
	Modulation sensitivity	Software adjustable(8 gears)	5	7	12	MV
	Audio modulation distortion			1	3	%
	modulation characteristic	300HZ		-10		DB
		500HZ		-6		DB
		1000HZ		0		DB
		2500Hz		5		DB
		3000HZ		6		
SNR	Audio modulation distortion		48	50	52	dB
	modulation characteristic			-60		dBc
	Audio modulation distortion			-60		dBc
	modulation characteristic	12.5KHz offset		-65		dBc
	Audio modulation distortion			-36		dBc

6. serial communication protocol :

MDHKT-100BK module provides AT instruction interface, through which it is convenient to communicate and control with the module. The AT instruction set provided by this module covers all the queries and control commands for this module. The customer can use the module according to their own requirements. For details, please refer to MDHKT-100BK Serial Communication Protocol.

Pay Attention:

1, After the module is powered on, if no AT instruction is received, its default working parameters are GBW= 12.5kHz, TFV= 450.050mhz.

RFV= 450.050mhz, receiving and transmitting CTCSS=0, SQ=3, torsion off);

2, When the module is in data communication mode, the PTT pin cannot be connected to the low level.