



# HAC-Smart Series Radio Modem

## Manual for HAC-UP/M1 UM/M1 UN/M1 LM/M1 LN/M1

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**SHENZHEN HAC TELECOM TECHNOLOGY CO., LTD**



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## The summary of the HAC-Smart series

HAC-Smart Series is a product which is based on the standard wireless module of SHENZHEN HAC TECHNOLOGY CO., LTD. It adds a serial port convertor and a black aluminum extruded shell. It can provide standard serial interface, state indicator, selection and setting of parameter. It can embed many kinds of standard wireless modules which are made by us. Please refer to the product specification for more technical specifications such as frequency, power, sensitivity, voltage, current, distance and so on.

### Functions of the HAC-Smart series

1. It can be embedded with many kinds of wireless modules, for example HAC-UP Series, HAC-UM Series, HAC-UN Series, HAC-LM Series, HAC-LN Series and so on.
2. M1-M4 is based on DB9/M.
3. It can provide standard TTL, RS232 or RS485 serial data port.
4. It has indicator light which can indicate the state of power and transmitting data.
5. Users can choose the channel frequency or parity bit by using switch, but this is only for the HAC-UP Series, HAC-UM Series, HAC-UN Series, HAC-LM Series and HAC-LN Series.
6. Users can customize the LM or LN series with 1W, and the corresponding optional voltage for power supply is 12V or 7.2V~9V.

### The type instruction of the HAC-Smart series

The type name method of HAC-Smart Series: The standard HAC wireless module type + MX series

1. The standard HAC wireless module type can be seen in wireless module specification, for example UP12, UM96, UN12, LM96, LN12 and so on.
2. The M series can be sorted by the interface format and the interface level.
  - ( 1 ) The M1 can provide serial data port of TTL level, standard RS232 and RS485 level .
  - ( 2 ) The M2 only can provide serial data port of standard RS232 level.
  - ( 3 ) The M3 only can provide serial data port of standard TTL level.
  - ( 4 ) The M4 only can provide serial data port of standard RS485 level.



### 3. The example of type for the Smart Series: HAC-UM96/M1



## The functional indicator light of the HAC-Smart series

1. The power indicator light: When the module is electrified, the red light is on.
2. The signal indicator light: Receiving efficient data from air, the green light is on. Transmitting Efficient data to air, the red light is on.

## The switch definition of the HAC-Smart series

Before using HAC-Smart Series, user can make simple configuration based on its own needs to determine the channel and data format. HAC-Smart Series has a 8-bit switch. When the switch is "ON", it is mode 0. By contraries, it is mode 1. The configuration is as follow:

[NOTE: Any changes of the switch will be validated after power up again.](#)

### 1. Channel configuration

The 1, 2, 3 three bits of switch provide eight channel options, and users can choose to use 0-7 channels through the 1, 2, 3 bit. Within one small communication network, if the choice of switch is the same, they can be mutual communication.

The factory default value: SW 321=111(the 7th channel)

Table 3 : Corresponding frequency points of 0~7channels

Channel No.	Frequency	Channel No.	Frequency
SW 321=000(0)	The same as the frequency of standard type	SW 321=100(4)	The same as the frequency of standard type
SW 321=001(1)	The same as the frequency of standard type	SW 321=101(5)	The same as the frequency of standard type
SW 321=010(2)	The same as the frequency of standard type	SW 321=110(6)	The same as the frequency of standard type
SW 321=011(3)	The same as the frequency of standard type	SW 321=111(7)	The same as the frequency of standard type



## 2. Parity mode selection:

HAC-Smart Series can support no-parity and even parity modes, i.e. 8N1/8E1, which can be chosen through the fifth bit of the switch.

Factory default value: the fifth bit = 1, 8E1 (even parity)

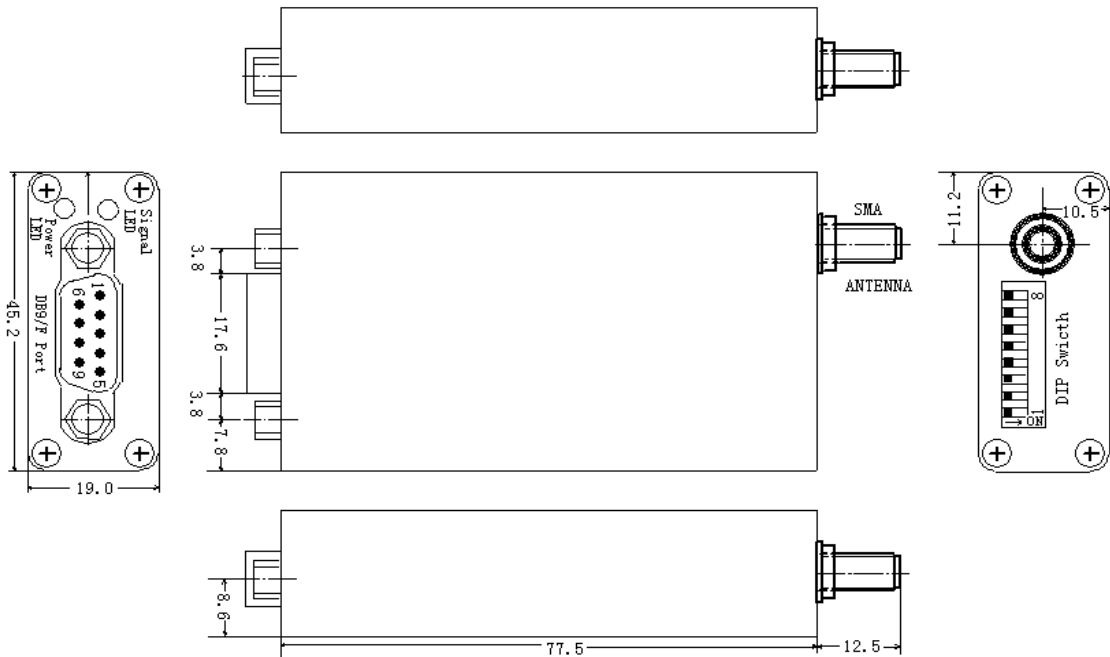
The fifth bit = 1, 8E1 (even parity)

The fifth bit = 0, 8N1 (no-parity)

**The DB9/M interface definition of the HAC-Smart series**

Pin No	Definition	Instruction	Level	Connected to the terminal	Connecting with the computer
1	reservation				
2	RxD	The RxD of RS-232	RS-232	TxD	Connect to the third pin of computer
3	TxD	The TxD of RS-232	RS-232	RxD	Connect to the second pin of computer
4	VCC	Power supply	Standard type	DC power supply	
5	GND	Power ground and Signal ground	0	Ground	Connect to the fifth pin of computer
6	TxD	TxD of TTL	TTL	RxD	
7	RxD	RxD of TTL	TTL	TxD	
8	A	The A of RS-485	RS-485	A	
9	B	The B of RS-485	RS-485	B	

## The dimension and fixing of the HAC-Smart series ( mm )



## The standard configuration of the HAC-Smart series

- 1 . A 10cm helical SMA antenna with an elbow-joint
- 2 . The M1, M2, M3 and M4 can be used with a DB9/M connector.



- 3 . User can buy the bracket if needed. The setting is as follow:



- 4 . User can also buy other litter magnetic vehicle antenna and feeder line if needed.

