Ra-06 AT command manual

AT Command Introduction

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Version

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V1.1	2019-3-1	ZC	
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1. AT Command Grammar

AT command uses the command line based on the ASCII code, command format refer to below：

Request message format： AT+<CMD>[OPTION][para, ...][\r][\n]. Available to not add the newline characters(\r\n)！

< > Must specify content

[ ] Options

Form 1 AT Request message format

Field	Description
AT+	Command message prefix
CMD	Command string
OPTION	Command operator. Can be following content： “=”： represents setting parameters. “？”： represents the current value of the query parameter. “”： represents an execution instruction “=？”: represents the request instruction of help usage information
Para	Represents the setting parameter value
\r\n	Enter and Newline， ASCII respectively 0x0d,0x0A

Response message format： +OK\r\n （Command execution succeed）

+ERROR(-1)\r\n（command execution failed,， AT command error）

+ERROR(-2)\r\n (command execution failed AT command parameter error）

E.g：

1. Sets the local node address of the module： AT+ADDR=2018
2. Query module local node address ： AT+ADDR?
3. Check the help ： AT+ADDR=?

2. AT command

2.1 Execution of orders

2.1.1 Query version information

Command	Possible return results	Note

AT+VER	+OK and version information	

2.1.2 Restart the system

Command	Possible return results	Note
AT+RST	ID+SBC	Automatically save the setting parameters to the flash before restarting

2.1.3 Restoration of factory settings

Command	Possible return results	Note
AT+FAC	+OK	All user-setting parameters are permanently restored to factory settings and the system is restarted

2.1.4 Print all commands and help information

Command	Possible return results	Note
AT+HELP	+OK	

2.1.5 Query Device Unique Identification Number

Command	Possible return results	Note
AT+UUID	+OK and ID	ID can’t change

2.2 System parameters

2.2.1 Equipment operation mode

Type	Command	Value range	Note
Setting command	AT+MODE=<Digital characters Value>	Value: 0: low power consumption operating 1：deep sleep 2 ： deep sleep+CAD receiving	default low power consumption operating Wake up method under deep sleep:
Query	AT+MODE?		

command		detection （ waked up via wireless） Greater than 100: deep sleep value automatic wake-up in milliseconds	send any data to serial port. To enter CAD receive detection mode, you need to set the CAD interval first, CMD: AT+CSLT

For example, set the device into deep sleep mode： AT+MODE=1。
AT+MODE=5000，Automatic wake-up after 5000 ms of deep sleep.

2.2.2 Equipment commissioning grade

Type	Command	Value range	Note
Setting command	AT+DBGL=<Digital characters Value>	Value: 0：Print only “+OK” 1：User mode, default 2：Debugging mode	
Query command	AT+DBGL?		

2.2.3 Serial port parameter setting

Type	Command	Value range	Note
Setting command	AT+UART=<Value1>,<Value2>,<Value3>	Baud rate Value1：0~9 Parity check Value2：1~2 Stop Value3：0~2	The baud rate suggests not to select too small value 。Greater than 9600bps
Query command	AT+UART?		

Parameter Description：
Buad rate Value1: range 0~9

0:	2400 bps	5:	57600 bps
1:	4800 bps	6:	76800 bps
2:	9600 bps	7:	115200 bps
3:	19200 bps	8:	128000 bps
4:	38400 bps	9:	256000 bps

Parity check Value2: range 1~2
1：Odd（Odd check）
2：Even （Dual checks）

Stop position Value3：range 0~3
0：1

1: 1.5

2： 2

2.3 Lora Parameter Settings

2.3.1 Frequency setting

Type	Command	Value range	Note
Setting command	AT+FREQ=<Digital characters Value>	Value: 9 characters fixed in length, e.g：470300000	Node devices with different frequencies can not communicate
Query command	AT+FREQ?		

2.3.2 lora transmission rate

Type	Command	Value range	Note
Setting command	AT+RATE=<Digital characters Value>	Value: 0~9	0~9,rate from low to high. Node devices at different rates can not communicate with each other
Query command	AT+RATE?		

Rate level	0	1	2	3	4	5	6	7	8	9
Corresponding rate(bps)	122	149	407	487	732	867	1302	2278	4557	9114

2.3.3 Local node address

Type	Command	Value range	Note
Setting command	AT+ADDR=<Digital characters Value>	Value: 1~65534	0: retain 65535:broadcast address
Query command	AT+ADDR?		

2.3.4 Target node address

Type	Command	Value range	Note
Setting command	AT+TADDR=<Digital characters Value>	Value: 1~65535	0: retain 65535 ： broadcast address
Query	AT+TADDR?		

command			

2.3.5 lora Transmission power

Type	Command	Value range	Note
Setting command	AT+POWER=<Digital characters Value>	Value: 2~20	
Query command	AT+POWER?		

2.3.6 Lead code length

Type	Command	Value range	Note
Setting command	AT+PRE=<Digital characters Value>	Value: 6~5000 Unit： Symbol	Default value：8 Advise do not exceed 5000
Query command	AT+PRE?		

2.3.7 Spread spectrum factor SF frequency bandwidth BW coding rate setting

Type	Command	Value range	Note
Setting command	AT+SBC=<Digital characters Value1>,<Value2>,<Value3>	Spread spectrum factor Value1：6~12 Frequency bandwidth Value2：0~9 Coding rate Value3：1~4	If the command and AT RATE are mutually exclusive, setting this parameter the former will invalidates，in contrast same argument.
Query command	AT+SBC?		

Spread spectrum factor：6: 64, 7: 128, 8: 256, 9: 512, 10: 1024, 11: 2048, 12: 4096 chips

Frequency bandwidth：0: 7.8kHz, 1: 10.4 kHz, 2: 15.6 kHz, 3: 20.8 kHz, 4: 31.2 kHz,
5: 41.6 kHz, 6: 62.5 kHz, 7: 125 kHz, 8: 250 kHz, 9: 500 kHz。

Coding rate：1：4/5 2：4/6 3：4/7 4：4/8

E.g：AT+SBC=7,7,2

2.3.8 CAD Interval

Type	Command	Value range	Note
Setting command	AT+CSLT=<Digital characters Value>	Value: 100~ 5000 Unit：ms	Enter CAD receive detection to set this parameter first. Default value 200.
Query command	AT+CSLT?		

2.3.9 Frequency jump cycle

Type	Command	Value range	Note
Setting command	AT+FHSS=<Value>	Value: 0~255 0 ： Closed frequency hopping, default	Recommend greater30
Query command	AT+FHSS?		

2.3.10 Setting the frequency hopping list

Type	Command	Value range	Note
Setting command	AT+CH=<Value1>,<Value2>	Value1: Set Network Number Value2：Frequency value, Unit：Hz	Frequency hopping by number
Query command	AT+CH?		

E.g：AT+CH=0,475000000
AT+CH=1,475100000
AT+CH=2,475300000

2.3.11 Setting Network Number

Type	Command	Value range	Note
Setting command	AT+NETID=<Value>	Value：1~254 Default value：90	Modules with different network numbers can not communicate with each other
Query command	AT+NETID?		

2.4 Transmission and receiving command

2.4.1 Transmission data

Type	Command	Value range	Note
Setting command	AT+MSG=<Value>	ASCII Characters or binary data	For nodes communication, receive reply message after ACKMSG send
	AT+ACKMSG=<Value>（reponse）		

Query command	No		

2.4.2 Receiving data

Type	Command	Value range	Note
Setting command	AT+RECV=<Digital characters Value>	Value: 0：Closed reception 1：Receiving data 2：Enable CAD detection and receive	CAD interval must be set before entering CAD detection mode （AT+CSLT）
Query command	AT+RECV?		

2.5 Configure mode

First set the node to working mode, then join the gateway, if it is Plan B mode, join the gateway to synchronize the gateway.

2.5.1 Node join the gateway

Command	Possible return results	Note
AT+JOIN	+OK	Gets the gateway assigned address and communication frequency

2.5.2 Node joining the gateway operating mode

Type	Command	Value range	Note
Setting command	AT+PLAN=<Value>	Value: A,B,C	Plan A:Open reception only after sending dataPlan B: Set specific time to receive Plan C: Continue to receive
Query command	AT+PLAN?		

2.5.3 Node and Synchronization Gateway

Type	Command	Value range	Note
Setting command	AT+SYNC=<Value>	Value: 0：Cancel	Request at PLan B mode

Query command	N/A	1：Synchronization	

2.5.4 Send data to gateway

Type	Command	Data range	Note
Setting command	AT+NETMSG=<Data>		Send message from node to gateway
Query command	N/A		