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**HOPERF**

**HM-WF8720**

**AT 指令手册**

文档版本	更新日期	修改内容
V1.0	2020.4.28	初版
V1.1	2020.5.14	更正文档错误, 增加休眠指令

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## 1. 串口设置

UART TX	UART RX	波特率	数据位	奇偶校验	停止位
GPIOA_14	GPIOA_13	38400	8	无	1

## 2. 命令列表

描述	AT 指令
<b>常用指令</b>	
AT 就绪指令	AT
重启模块	ATSR
查询版本信息	ATSV
设置AT指令回显模式和调试	ATSE
出厂重置	ATSY
串口配置	ATSU
OTA 升级	ATSO
选择有效镜像	ATSC
GPIO 控制	ATSG
PWM 控制	ATSW
进入休眠模式	ATSP
<b>Wifi 指令</b>	
设置WIFI模式	ATPW
连接 AP (STA 模式下)	ATPN
断开连接AP	ATWD
扫描 AP	ATWS
设置AP模式	ATPA
查询WIFI信息	ATW?
设置DHCP模式	ATPH
设置静态IP (STA模式下)	ATPE
设置静态IP (AP模式下) 和 DHCP规则	ATPF
设置自动连接	ATPG
设置MAC地址	ATPM
读取MAC地址	ATRM
<b>TCPIP 指令</b>	
查询网络连接状态	ATPI

查询错误码	ATPO
创建TCP/UDP/SSL 服务端	ATPS
创建TCP/UDP/SSL 客户端	ATPC
关闭 TCP/UDP/SSL 连接	ATPD
发送数据包	ATPT
接受数据包	ATPR
使能自动接受模式	ATPK
Ping	ATPP
使能透传模式	ATPU
保存连接并使能自动连接	ATPL
<b>BLE 指令</b>	
设置 Central 模式	ATBc
连接Peripheral设备	ATBC
断开连接	ATBD
读取ATT信息	ATBG
扫描BT设备	ATBS
读操作	ATBR
写操作	ATBW
设置 Peripheral 模式	ATBp
设置广播间隔	ATBA
设置设备名称	ATBN
发送数据	ATBe
BT配网	ATBB

### 3. 常用指令

#### 3.1 AT – AT 就绪指令

AT	
描述	该命令测试系统是否启动成功并进入 AT 指令环境
回复	[AT] OK

#### 3.2 ATSR – 重启模块

#### ATSR

<b>描述</b>	该命令用于重启模块
<b>回复</b>	[ATSR] OK

### 3.3 ATSV – 查询版本信息

ATSV	
<b>描述</b>	该命令用于查看 AT 指令版本以及 SDK 版本
<b>回复</b>	[ATSV] OK:<CHIP_TYPE>,<software-version>
<b>错误码</b>	1: 获取版本信息失败

### 3.4 ATSE – 设置 AT 指令回显

ATSE=<echo>			
<b>描述</b>	该命令用于开启/关闭串口回显		
<b>回复</b>	[ATSE] OK		
<b>参数</b>	<table border="1"> <tr> <td>&lt;echo&gt;</td> <td>0: 关闭回显(默认) 1: 开启回显</td> </tr> </table>	<echo>	0: 关闭回显(默认) 1: 开启回显
<echo>	0: 关闭回显(默认) 1: 开启回显		
<b>错误码</b>	1, 2: 参数错误 3:回显设置只能 1 或 0		
<b>示例</b>	关闭回显和调试 # ATSE=0		

### 3.5 ATSY – 出厂重置

ATSY	
<b>描述</b>	该命令用于清除 flash 数据, 模块重置到出厂配置
<b>回复</b>	[ATSY] OK [ATSY] ERROR:<error_no>

<b>错误码</b>	1: 恢复默认数据失败 2: 恢复默认镜像失败
<b>注意</b>	模块会重启

## 3.6 ATSU – 串口配置

ATSU=<baudrate>,<databits>,<stopbits>,<parity>,<flowcontrol>,<configmode>		
<b>描述</b>	该命令用于修改串口配置	
<b>回复</b>	[ATSU] OK [ATSU] ERROR:<error_code>	
<b>参数</b>	<baudrate>	2400, 4800, 9600, 19200, 38400(default),57600, 115200, 921600, 1152000
	<databits>	5: 5 bit data 6: 6 bit data 7: 7 bit data 8: 8 bit data (default)
	<stopbits>	1: 1 bit stop (default) 2: 2 bit stop
	<parity>	0: None parity (default) 1: Odd parity 2: Even parity
	<flowcontrol>	0: disable flowcontrol (default) 1: enable RTS and CTS
	<configmode>	0: set the current configuration and will not save to flash 1: save configuration to flash and take effect immediately 2: save configuration to flash and take effect after reboot
<b>错误码</b>	1: 命令格式错误 2: 命令参数错误	

## 3.7 ATSO – OTA 升级

ATSO=<ip>,<port>		
<b>描述</b>	该命令用于升级软件	
<b>回复</b>	[ATSO] OK [ATSO] ERROR:<error_code>	
<b>参数</b>	<ip>	Download server ip address
	<port>	Download server port number



<b>错误码</b>	1: 命令格式错误 2: 命令参数错误
<b>注意</b>	1: 服务器未启动 2: 模块和服务器未在同一网络

## 3.8 ATSC – 选择有效镜像

ATSC=<image ID>			
<b>描述</b>	该命令用于选择有效镜像		
<b>回复</b>	[ATSC] OK [ATSC] ERROR:<error_code>		
<b>参数</b>	<table border="1"> <tr> <td>&lt;image ID&gt;</td> <td>0: default image 1: OTA upgrade image</td> </tr> </table>	<image ID>	0: default image 1: OTA upgrade image
<image ID>	0: default image 1: OTA upgrade image		
<b>错误码</b>	1: 命令格式错误 2: 命令参数错误		
<b>注意</b>	模块会重启		

## 3.9 ATSG – GPIO 控制

ATSG=<R/W/D>,<PORT>[,<DATA>,<DIR>,<PULL>]											
<b>描述</b>	该命令用于控制 GPIO 引脚										
<b>回复</b>	[ATSG] OK:<val> [ATSG] ERROR:<error_code>										
<b>参数</b>	<table border="1"> <tr> <td>&lt;R/W&gt;</td> <td>“R”: read gpio “W”: write gpio “D” delete gpio</td> </tr> <tr> <td>&lt;PORT&gt;</td> <td>Px_x, ex: PA_4</td> </tr> <tr> <td>[&lt;DATA&gt;]</td> <td>0 or 1 when write gpio</td> </tr> <tr> <td>[&lt;DIR&gt;]</td> <td>Pin direction: 0: PIN_INPUT 1: PIN_OUTPUT</td> </tr> <tr> <td>[&lt;PULL&gt;]</td> <td>Pin mode: 0: PullNone/PullDefault 1: PullUp 2: PullDown</td> </tr> </table>	<R/W>	“R”: read gpio “W”: write gpio “D” delete gpio	<PORT>	Px_x, ex: PA_4	[<DATA>]	0 or 1 when write gpio	[<DIR>]	Pin direction: 0: PIN_INPUT 1: PIN_OUTPUT	[<PULL>]	Pin mode: 0: PullNone/PullDefault 1: PullUp 2: PullDown
	<R/W>	“R”: read gpio “W”: write gpio “D” delete gpio									
	<PORT>	Px_x, ex: PA_4									
	[<DATA>]	0 or 1 when write gpio									
	[<DIR>]	Pin direction: 0: PIN_INPUT 1: PIN_OUTPUT									
[<PULL>]	Pin mode: 0: PullNone/PullDefault 1: PullUp 2: PullDown										

	3: OpenDrain
<b>错误码</b>	1: 命令格式错误 2: 命令参数错误 3: 无效引脚名
<b>注意</b>	PA_0,PA_13,PA_14 保留

## 3.10 ATSW – PWM 控制

ATSW=<ENABLE>,<PORT>[,<PERIOD>,<PERCENT>]		
<b>描述</b>	该命令用于控制 PWM 输出	
<b>回复</b>	[ATSW] OK [ATSW] ERROR:<error_code>	
<b>参数</b>	<ENABLE>	1: enable pwm output 2: disable pwm output
	<PORT>	Px_x, ex: PC_4
	<PERIOD>	Period value in us
	<PERCENT>	Duty cycle ex: 0.4 40% high 60%low
<b>错误码</b>	1: 命令格式错误 2: 命令参数错误 3: 无效引脚名 4: ENABLE 非 0 或 1 5: 无效 PWM 引脚 6: 该 PWM 通道已被占用	
<b>注意</b>	PA_0,PA_13,PA_14 保留	

## 3.11 ATSP – 进入休眠模式

ATSP=<POWER_MODE>,<WAKEUP_SOURCE>[,<DURATION> or <PIN_INDEX>]		
<b>描述</b>	该命令用于设置设备进入休眠模式，降低使用功耗	
<b>回复</b>	[ATSP] OK [ATSP] ERROR:<error_code>	
<b>参数</b>	<POWER_MODE>	1: sleep mode 2: standby mode 3: deepsleep mode
	<WAKEUP_SOURCE>	1: uart

		2:timer 3:gpio
	<DURATION>	Timer value ( ms)
	<PIN_INDEX>	Pin number Ex: 1 :PA_1; 5 :PA_5
<b>错误码</b>	1: 命令格式错误 2: 参数数量错误 3: 参数无效 4: 无效引脚号	
<b>注意</b>	1, PA_0,PA_13,PA_14 保留 2.串口唤醒源只限于 sleep 模式下 3.休眠模式下无法维持连接，建议进入休眠前先断开所有连接	

## 4. WiFi 指令

### 4.1 ATPW – 设置 WIFI 模式

ATPW=<mode>		
<b>描述</b>	该命令用于设置 WIFI 模式，执行 ATPN 和 ATPA 指令前应检查 WIFI 模式	
<b>回复</b>	[ATPW] OK [ATPW] ERROR:<error_no>	
<b>参数</b>	<mode>	1 : Station mode (default) 2 : AP mode
<b>错误码</b>	1: 命令格式错误 2: 命令参数错误	

### 4.2 ATPN – 连接 AP

ATPN=<ssid>,<pwd>[,<key_id>,<bssid>]	
<b>描述</b>	该命令用于连接 AP

<b>回复</b>	[ATPN] OK [ATPN] ERROR:<error_code>	
<b>参数</b>	<ssid>	This 参数 can't be empty Format: "ssid" Must add prefix '\' for special character(' , \ , " , [ , ]')
	<pwd>	1. WPA/WPA2 : length is 8~64 2. WEP : length is 5 or 13
	[<key_id>]	For WEP security, must be 0~3. If not set, it will use id 0 as default
	[<bssid>]	Format : 6 bytes hex number e.g. 112233445566
<b>错误码</b>	1: 命令格式错误 2: 命令参数错误 3: wifi 初始化错误 4: 连接 AP 失败 5: WIFI 模式错误 6: 设置 AP 安全类型错误 7: DHCP 超时使用静态 IP 192.168.1.80	
<b>注意</b>	1. 执行 ATPW 指令前, 必须设置 WIFI 为 STA 模式 2. 如果 AP 没有密码参数 <pwd> 留空 e.g. ATPN=" SSID" or ATPN=" SSID" ,,112233445566	

## 4.3 ATWD – 断开连接 AP

ATWD	
<b>描述</b>	该命令用于断开与 AP 的连接
<b>回复</b>	[ATWD] OK [ATWD] ERROR:<error_code>
<b>错误码</b>	3: 操作错误 4: 断开超时

## 4.4 ATWS – 扫描 AP

ATWS	
<b>描述</b>	该命令用于扫描周围 AP

<b>回复</b>	AP : <num>,<ssid>,<chl>,<sec>,<rssi>,<bssid> [ATWS] OK [ATWS] ERROR:<error_no>
<b>注意</b>	AP 信息打印信息: 序号, SSID, 信道, 安全模式, 信号强度, BSSID

## 4.5 ATPA – 设置 AP 模式

ATPA=<ssid>,<pwd>,<chl>,<hidden>[,<max_conn>]		
<b>描述</b>	该命令用于配置 AP 模式	
<b>回复</b>	[ATPA] OK [ATPA] ERROR:<error_no>	
<b>参数</b>	<ssid>	This 参数 can't be empty  Format: "ssid" Must add prefix '\' for special character(' , \ , " , [ , ])
	<pwd>	WPA/WPA2 : length is 8~64
	<chl>	Channel : 1~11
	<hidden>	0 : Not hidden SSID 1 : hidden SSID
	[<max_conn>]	Max number of STAs, should be [1,3], default is 3
<b>错误码</b>	1: 命令格式错误 2: 命令参数错误 3: wifi 初始化错误 4: AP 开启失败 5: wifi 模式错误	
<b>注意</b>	1. 执行 ATPW 指令前必须设置 WIFI 模式为 AP 模式 2. 如果没有密码参数<pwd>留空. e.g. ATPA=" SSID" „11,0	

## 4.6 ATW? – 查询 WIFI 信息

ATW?	
<b>描述</b>	该命令用于列出 WIFI 状态信息
<b>回复</b>	<mode>,<SSID>,<chl>,<sec>[,<key_id>],<pwd>,<mac>,<ip>,<gw> CLIENT : <num>,<mac> [ATW?] OK

<b>注意</b>	1.信息打印顺序: WIFI 模式, SSID, 信道, 安全模式, [key_id], 密码, MAC 地址, IP 地址, 网关地址 CLIENT: 序号, MAC 地址 2. 在 AP 模式下, 会额外打印连接的 STA 信息
-----------	--

## 4.7 ATPH - 设置 DHCP 模式

ATPH=<mode>,<enable>					
<b>描述</b>	设置 DHCP 模式				
<b>回复</b>	[ATPH] OK [ATPH] ERROR:<error_no>				
<b>参数</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 2px;">&lt;mode&gt;</td> <td style="padding: 2px;">1 : AP mode 2 : STA mode</td> </tr> <tr> <td style="padding: 2px;">&lt;enable&gt;</td> <td style="padding: 2px;">1 : DHCP 2 : Static IP</td> </tr> </table>	<mode>	1 : AP mode 2 : STA mode	<enable>	1 : DHCP 2 : Static IP
<mode>	1 : AP mode 2 : STA mode				
<enable>	1 : DHCP 2 : Static IP				
<b>错误码</b>	1: 命令格式错误 2: 命令参数错误				
<b>注意</b>	1. DHCP 在两种模式下默认开启 2. 在 STA 模式下使用 ATPE 指令设置静态 IP 3. 在 AP 模式下使用 ATPF 指令设置 DHCP 规则				

## 4.8 ATPE - 设置静态 IP (STA 模式下)

ATPE=<ip>[,<gateway>,<mask>]							
<b>描述</b>	该命令用于设置静态 IP						
<b>回复</b>	[ATPE] OK [ATPE] ERROR:<error_no>						
<b>参数</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 2px;">&lt;ip&gt;</td> <td style="padding: 2px;">Static station IP, e.g. 192.168.1.2</td> </tr> <tr> <td style="padding: 2px;">[&lt;gateway&gt;]</td> <td style="padding: 2px;">[optional] set gateway IP</td> </tr> <tr> <td style="padding: 2px;">[&lt;mask&gt;]</td> <td style="padding: 2px;">[optional] set mask IP</td> </tr> </table>	<ip>	Static station IP, e.g. 192.168.1.2	[<gateway>]	[optional] set gateway IP	[<mask>]	[optional] set mask IP
<ip>	Static station IP, e.g. 192.168.1.2						
[<gateway>]	[optional] set gateway IP						
[<mask>]	[optional] set mask IP						
<b>错误码</b>	1: 命令格式错误 2: 命令参数错误						
<b>注意</b>	1. 默认静态 IP 192.168.1.80 2. 有效静态 IP 处于.(ATPH=2,2)设置下						
<b>示例</b>	<pre># ATPE=192.168.1.150 //Set static IP for station to 192.168.1.150 # ATPH=2,2 //Make static IP effective # ATPN=iot_newwifi,abcdef1234 //Connect to iot_newwifi # ATW? //query wifi information</pre>						

	STA,iot_newifi,11,AES,abcdef1234,ec:f0:0e:4e:75:0b,192.168.99.150,192.168.99.1 [ATW?] OK
--	---

## 4.9 ATPF - 设置静态 IP (AP 模式下) 和 DHCP 规则

ATPF=<start_ip>,<end_ip>,<gateway>	
<b>描述</b>	该命令用于设置静态 IP 和 DHCP 规则
<b>回复</b>	[ATPF] OK [ATPF] ERROR:<error_no>
<b>参数</b>	<start_ip>            Set the start IP for client
	<end_ip>              Set the end IP for client
	<gateway>            set gateway IP
<b>错误码</b>	1: 命令格式错误 2: 命令参数错误
<b>注意</b>	1. 默认网关 IP 192.168.43.1 2. 在 DHCP 模式下, 配置 DHCP 规则. (ATPH=1,1) 3. 在静态 IP 下, 配置 AP 的 IP 地址. (ATPH=1,2)
<b>示例</b>	# ATPF=192.168.99.100,192.168.99.102,192.168.99.1 //Set static IP for AP to 192.168.99.1(also used as gateway) # ATPH=1,1 //Make DHCP server effective # ATPW=2 //Configure device to AP mode # ATPA=iot_test,abcdef1234,1,0 // Start Soft AP "iot_test" # ATW? //query wifi information AP,iot_test,1,AES,abcdef1234,ec:f0:0e:4e:75:0b,192.168.99.1,192.168.99.1 [ATW?] OK

## 4.10 ATPG - 设置自动连接

ATPG=<enable>	
<b>描述</b>	该命令设置当模块启动时自动连接
<b>回复</b>	[ATPG] OK [ATPG] ERROR:<error_no>
<b>参数</b>	<enable>            0 : disable auto connect 1 : enable auto connect

<b>错误码</b>	1: 命令格式错误 2: 命令参数错误
<b>注意</b>	该功能默认是关闭的
<b>示例</b>	<pre># ATPN=iot_newifi,abcdef1234 //connect to "iot_newifi", device will store this information into flash # ATPG=1 //enable auto connect, this will be store in flash &gt;&gt;reboot device &gt;&gt;device will read connection information from flash and auto connect to "iot_newifi"</pre>

## 4.11 ATPM – 设置 MAC 地址

ATPM=<mac>			
<b>描述</b>	该命令用于设置设备 MAC 地址		
<b>回复</b>	[ATPM] OK [ATPM] ERROR:<error_no>		
<b>参数</b>	<table border="1"> <tr> <td>&lt;mac&gt;</td> <td>Format : 6 bytes hex number e.g. 00e04cb72300</td> </tr> </table>	<mac>	Format : 6 bytes hex number e.g. 00e04cb72300
<mac>	Format : 6 bytes hex number e.g. 00e04cb72300		
<b>错误码</b>	1: 命令格式错误 2: 命令参数错误		
<b>注意</b>	<ol style="list-style-type: none"> <li>1. 必须重启设备启用新的 MAC 地址</li> <li>2. 该命令会覆盖原有的 MAC 地址, 谨慎操作!</li> </ol>		

## 4.12 ATRM – 读取 MAC 地址

ATRM	
<b>描述</b>	该命令用于读取设备 MAC 地址
<b>回复</b>	[ATRM] OK xx:xx:xx:xx:xx:xx [ATRM] ERROR



## 5. TCP/IP 指令

### 5.1 ATP0 – 查询错误码

ATP0	
描述	该命令用于查询错误码
回复	[ATP0] OK:<errno> [ATP0] ERROR

### 5.2 ATPS – 创建 TCP/UDP/SSL 服务端

ATPS =<mode>,<Local Port>		
描述	该命令用于创建 TCP/UDP/SSL 服务端	
回复	[ATPS] OK [ATPS] con_id=x (x=[1,9], con_id 0 is reserved) Under TCP mode, if a client connects, there will be respond as below: [ATPS] A client connected to server[<server_id>] con_id:<x>,seed,tcp,address:xxx.xxx.xxx.xxx,port:<x>,socket:<x> (respond format refer to section 5.7 ATPI) [ATPS] ERROR:<error_no>	
参数	<Mode>	0 : TCP mode 1 : UDP mode 2 : SSL mode
	<Local Port>	1~65535
错误码	1: 参数数量错误 2: 本地端口范围 1~65535 3: 创建 con_id 错误 4: 创建服务端线程失败 5: 创建 socket 错误 6: 设置 socket 选项失败 7: 绑定错误 8: 监听错误 9: tcp 服务端已存在错误 10: 确认连接错误 11: 创建子连接 con_id 错误 12: UDP 服务端已存在错误 13: 服务器不能在透传模式下启动错误 14:连接类型未知	

	<p>15: ssl 服务器监听绑定 ip:port 错误</p> <p>16: 服务器证书错误</p> <p>17: 服务器密钥错误</p> <p>18: 服务器证书 x509_cert_parse 失败</p> <p>19: 服务器 ca 列表 x509_cert_parse 失败</p> <p>20: 服务器密钥 pk_parse_key 失败</p> <p>21: ssl 服务器挂起节点失败</p> <p>22: ssl 服务端建立连接错误</p> <p>23: ssl 种子失败</p> <p>24: ssl 初始化错误</p> <p>25: ssl_set_own_cert 错误</p> <p>26: ssl 握手错误</p> <p>27: 创建节点失败</p>
<b>注意</b>	该命令会注册一个 con_id
<b>示例</b>	<pre>//create a TCP server on PORT 5001 # ATPS=0,5001 [ATPS] OK [ATPS] con_id=1 //when a client connects to TCP server[con_id=1] [ATPS] A client connected to server[1] con_id:2,seed,tcp,address:192.168.99.185,port:64068,socket:1 //create a UDP server on PORT 5002 # ATPS=1,5002 [ATPS] OK [ATPS] con_id=3 //query connection information # ATPI con_id:1,server,tcp,address:192.168.99.143,port:5001,socket:0 con_id:2,seed,tcp,address:192.168.99.185,port:64089,socket:1 con_id:3,server,udp,address:192.168.99.143,port:5002,socket:2 [ATPI] OK</pre>

## 5.3 ATPC – 创建 TCP/UDP/SSL 客户端

ATPC =<mode>,< Remote Addr>,< Remote Port>[,<Local Port>]			
<b>描述</b>	该命令用于创建 TCP/UDP/SSL 客户端		
<b>回复</b>	<p>[ATPC] OK</p> <p>[ATPC] con_id=x (x=[1,9], con_id 0 is reserved)</p> <p>[ATPC] ERROR:&lt;error_no&gt;</p>		
<b>参数</b>	<table border="1"> <tr> <td>&lt;Mode&gt;</td> <td>0 : TCP mode</td> </tr> </table>	<Mode>	0 : TCP mode
<Mode>	0 : TCP mode		

		1 : UDP mode 2 : SSL mode
	<Remote Addr>	xxx.xxx.xxx.xxx Or "www.xxx.com"
	< Remote Port>	1~65535
	[<Local Port>]	Local port to bind, only valid for UDP
<b>错误码</b>		1: 参数数量错误 2:远程 IP 格式或找不到 host 错误 3: 远程端口应为 1~65535 4: 创建 con_id 错误 (无可用) 5: 创建客户任务失败 6: inet_ntoa_r 远程地址错误 7: 创建 socket 错误 8: 挂起节点错误 (TCP) 9: 连接错误 10: 挂起节点错误 (UDP) 11: 本地端口应为 1~65535 12: 绑定本地端口错误 13: 连接已存在 14: 设置广播失败 15: 在 socket 上设置多播添加成员失败 16: 设置多播接口失败 17: 连接类型未知 18: 启动与主机的 TCP 连接失败 19: ssl 内存分配失败 20: ssl 初始化失败 21: ssl 握手失败 22: ssl 客户端挂起节点失败
<b>注意</b>		This command will assign a con_id to this TCP/UDP/SSL Client
<b>示例</b>		<pre>//Create a TCP client and connect to TCP server IP 192.168.99.185 on server's port 5001 # ATPC=0,192.168.99.101,5001 [ATPC] OK [ATPC] con_id=4 //Create a UDP client targeting to server "www.google.com" on server's port 8080 # ATPC=1,"www.google.com",8080 [ATPC] OK [ATPC] con_id=5 //query connection information # ATPI</pre>

	<pre>con_id:1,server,tcp,address:192.168.99.143,port:5001,socket:0 con_id:2,seed,tcp,address:192.168.99.185,port:64089,socket:1 con_id:3,server,udp,address:192.168.99.143,port:5002,socket:2 con_id:4,client,tcp,address:192.168.99.185,port:5001,socket:3 con_id:5,client,udp,address:64.233.189.104,port:8080,socket:4 [ATPI] OK</pre>
--	---

## 5.4 ATPD – 关闭 TCP/UDP/SSL 连接

ATPD=<con_id>			
<b>描述</b>	该指令用于断开 TCP/UDP/SSL 连接		
<b>回复</b>	[ATPD] OK [ATPD] ERROR:<error_no>		
<b>参数</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 2px;"><b>&lt; con_id &gt;</b></td> <td style="padding: 2px;">con_id=[1,9] for certain connection con_id=0 to close all connections</td> </tr> </table>	<b>&lt; con_id &gt;</b>	con_id=[1,9] for certain connection con_id=0 to close all connections
<b>&lt; con_id &gt;</b>	con_id=[1,9] for certain connection con_id=0 to close all connections		
<b>错误码</b>	1: 命令格式错误 2: 命令参数错误 3: 无该 con_id		
<b>注意</b>	使用 ATPI 指令可列出 con_id		
<b>示例</b>	<pre>//query connection information # ATPI con_id:1,server,tcp,address:192.168.99.143,port:5001,socket:0 con_id:2,seed,tcp,address:192.168.99.185,port:64089,socket:1 con_id:3,server,udp,address:192.168.99.143,port:5002,socket:2 con_id:4,client,tcp,address:192.168.99.185,port:5001,socket:3 con_id:5,client,udp,address:64.233.189.104,port:8080,socket:4 [ATPI] OK //close con_id 5 (udp client) # ATPD=5 [ATPD] OK //query connection information # ATPI con_id:1,server,tcp,address:192.168.99.143,port:5001,socket:0 con_id:2,seed,tcp,address:192.168.99.185,port:64089,socket:1 con_id:3,server,udp,address:192.168.99.143,port:5002,socket:2 con_id:4,client,tcp,address:192.168.99.185,port:5001,socket:3 [ATPI] OK //close con_id 1 (TCP server), and its seed(con_id=2) will be also closed # ATPD=1 [ATPD] OK</pre>		

	<pre>//query connection information # ATPI con_id:3,server,udp,address:192.168.99.143,port:5002,socket:2 con_id:4,client,tcp,address:192.168.99.185,port:5001,socket:3 [ATPI] OK //close all connections # ATPD=0 [ATPD] OK //query connection information # ATPI [ATPI] OK</pre>
--	---

## 5.5 ATPT – 发送数据

ATPT=<data_size>,<con_id>[,<dst_ip>,<dst_port>]:<data>											
<b>描述</b>	此命令用于将数据发送到特定的连接										
<b>回复</b>	[ATPT] OK,<con_id> [ATPT] ERROR:<error_no>										
<b>参数</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"><b>&lt;data_size&gt;</b></td> <td>Data length</td> </tr> <tr> <td><b>&lt;con_id&gt;</b></td> <td>(1~9, con_id 0 is reserved)</td> </tr> <tr> <td><b>[&lt;dst_ip&gt;]</b></td> <td>[optional]xxx.xxx.xxx.xxx (only need for udp server mode)</td> </tr> <tr> <td><b>[&lt;dst_port&gt;]</b></td> <td>[optional]1~65535 (only need for udp server mode)</td> </tr> <tr> <td><b>&lt;data&gt;</b></td> <td>Payload data</td> </tr> </table>	<b>&lt;data_size&gt;</b>	Data length	<b>&lt;con_id&gt;</b>	(1~9, con_id 0 is reserved)	<b>[&lt;dst_ip&gt;]</b>	[optional]xxx.xxx.xxx.xxx (only need for udp server mode)	<b>[&lt;dst_port&gt;]</b>	[optional]1~65535 (only need for udp server mode)	<b>&lt;data&gt;</b>	Payload data
<b>&lt;data_size&gt;</b>	Data length										
<b>&lt;con_id&gt;</b>	(1~9, con_id 0 is reserved)										
<b>[&lt;dst_ip&gt;]</b>	[optional]xxx.xxx.xxx.xxx (only need for udp server mode)										
<b>[&lt;dst_port&gt;]</b>	[optional]1~65535 (only need for udp server mode)										
<b>&lt;data&gt;</b>	Payload data										
<b>错误码</b>	1: 参数数量错误 2: 超过 ATPT 发送缓冲区大小 3: 无该 con_id 4: UDP 客户端 IP 或者 UDP 客户端端口错误 (设备作为 UDP 服务端) 5: sendto 错误 (设备作为 UDP 服务端) 6: sendto 错误 (设备作为 UDP 客户端) 7: TCP 服务器发送错误 8: 写入错误										
<b>注意</b>	1. 使用 ATPI 指令来列出连接状态 2. ATPT 命令不能通过在本地主机上创建的 TCP 服务器发送数据 3. 在分隔符 ":" 之后, 任何输入都有效										
<b>示例</b>	<pre>//query connection information # ATPI con_id:1,server,tcp,address:192.168.99.143,port:5001,socket:0 con_id:2,seed,tcp,address:192.168.99.185,port:64089,socket:1 con_id:3,server,udp,address:192.168.99.143,port:5002,socket:2</pre>										

	<pre> con_id:4,client,tcp,address:192.168.99.185,port:5001,socket:3 con_id:5,client,udp,address:64.233.189.104,port:8080,socket:4 [ATPI] OK //send data to TCP client(Seed) (con_id 2) # ATPT=14,2:Hello! [ATPT] OK,2 //send data to UDP Server via UDP client(con_id 5) # ATPT=14,5:Hello! [ATPT] OK,5 //send data to TCP Server via TCP client(con_id 4) # ATPT=14,4:Hello! [ATPT] OK,4 //send data to UDP client(ip: 192.168.99.185, port:55339) via UDP Server(con_id 3) # ATPT=14,3,192.168.99.185,55339:Hello! [ATPT] OK,3         </pre>
--	---

## 5.6 ATPR – 接收数据

ATPR =<con_id>,<Buffer Size>					
<b>描述</b>	该命令用于从特定的连接 id 接收数据，FW 也可以配置为自动接收模式，这意味着在任何连接上接收到的任何数据包都将自动返回到主机(参见第 5.7 节命令 ATPK)。				
<b>回复</b>	[ATPR] OK,<data size>,<con_id>[,<dst_ip>,<dst_port>]:<data> [ATPR] ERROR:<error_no>				
<b>参数</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"><b>&lt;con_id&gt;</b></td> <td>(1~9, con_id 0 is reserved)</td> </tr> <tr> <td><b>&lt;Buffer Size&gt;</b></td> <td>Data length</td> </tr> </table>	<b>&lt;con_id&gt;</b>	(1~9, con_id 0 is reserved)	<b>&lt;Buffer Size&gt;</b>	Data length
<b>&lt;con_id&gt;</b>	(1~9, con_id 0 is reserved)				
<b>&lt;Buffer Size&gt;</b>	Data length				
<b>错误码</b>	<ol style="list-style-type: none"> <li>1: 命令格式错误</li> <li>2: &lt;Buffer Size&gt; 参数错误 (1 ~ 1600)</li> <li>3: 无该 con_id</li> <li>4: udp 服务端 recvfrom 错误</li> <li>5: udp 客户端 recvfrom 错误</li> <li>6: TCP 服务器接收错误</li> <li>7: 连接丢失</li> <li>8: tcp 读取错误</li> </ol>				
<b>注意</b>	<ol style="list-style-type: none"> <li>1. ATPR 指令用于接收特定 con_id 数据</li> <li>2. ATPR 命令无法通过在本地主机上创建的 TCP 服务器接收数据</li> <li>3. [,&lt;dst_ip&gt;,&lt;dst_port&gt;]只有在通过本地主机创建的 UDP 服务器接收数据时才会附加</li> </ol>				
<b>示例</b>	<pre> //query connection information # ATPI con_id:1,server,tcp,address:192.168.99.143,port:5001,socket:0         </pre>				

```

con_id:2,seed,tcp,address:192.168.99.185,port:64089,socket:1
con_id:3,server,udp,address:192.168.99.143,port:5002,socket:2
con_id:4,client,tcp,address:192.168.99.185,port:5001,socket:3
con_id:5,client,udp,address:64.233.189.104,port:8080,socket:4
[ATPI] OK
//receive data "12345678" via TCP seed (con_id 2)
# ATPR=2,1500
[ATPR] OK,8,2:12345678
//receive data "12345678" via UDP server(con_id 3)
# ATPR=3,1500
[ATPR] OK,8,3,192.168.99.185,52795:12345678
//receive data "12345678" via TCP client(con_id 4)
# ATPR=4,1500
[ATPR] OK,8,4:12345678
    
```

## 5.7 ATPK – 设置自动接收模式

ATPK=<enable>			
<b>描述</b>	该命令用于设置自动接收模式		
<b>回复</b>	[ATPK] OK [ATPK] ERROR:<error_no>		
<b>参数</b>	<table border="1"> <tr> <td>&lt;enable&gt;</td> <td>0 : disable auto receive data mode (default) 1 : enable auto receive data mode</td> </tr> </table>	<enable>	0 : disable auto receive data mode (default) 1 : enable auto receive data mode
<enable>	0 : disable auto receive data mode (default) 1 : enable auto receive data mode		
<b>错误码</b>	1: 命令参数错误 2: 启动自动接收任务失败		
<b>注意</b>	一旦启用自动接收模式，在任何连接上接收到的任何数据包都将以与正常传输模式下 ATPR 相同的格式自动返回到主机(参见第 5.6 节，命令 ATPR 的响应)。但是如果在透明的传输模式下，接收到的数据将返回到主机，而不会在头部留下任何信息。 正常模式: [ATPR] OK,8,3,192.168.99.185,52795:12345678 透传模式: 12345678		

## 5.8 ATPI – 检查网络连接状态

ATPI	
<b>描述</b>	该命令用于检查网络连接状态

<p><b>回复</b></p>	<pre>con_id :&lt;con_id &gt;,&lt;server/seed(TCP client)/client&gt;,\ &lt;tcp/udp&gt;,address:&lt;IP ADDRESS&gt;,port:&lt;PORT&gt;,socket:&lt;socket id&gt; ... [ATPI] OK</pre>
<p><b>示例</b></p>	<pre># ATPI con_id:1,server,tcp,address:192.168.99.143,port:5001,socket:0 con_id:2,seed,tcp,address:192.168.99.185,port:64089,socket:1 con_id:3,server,udp,address:192.168.99.143,port:5002,socket:2 con_id:4,client,tcp,address:192.168.99.185,port:5001,socket:3 con_id:5,client,udp,address:64.233.189.104,port:8080,socket:4 [ATPI] OK</pre>

## 5.9 ATPP – PING 命令

<p>ATPP=&lt;xxxx.xxx.xxx.xxx&gt;,[y/loop] Or ATPP=&lt;con_id&gt;,[y/loop]</p>		
<p><b>描述</b></p>	<p>该命令用于 PING 一个 con_id 或者 PING 一个网络地址</p>	
<p><b>回复</b></p>	<pre>[ATPP] OK [ATPP] ERROR:&lt;error_no&gt;</pre>	
<p><b>参数情况 1</b></p>	<p>&lt;Remote IP&gt;</p>	<p>xxx.xxx.xxx.xxx</p>
	<p>[y/loop]</p>	<p>No assign: Only five ping requests will be sent. Loop: loop, no count Count: loop with count</p>
<p><b>参数情况 2</b></p>	<p>&lt;con_id&gt;</p>	<p>1~NUM_NS(default 10)</p>
	<p>[y/loop]</p>	<p>No assign: Only five ping requests will be sent. Loop: loop, no count Count: loop with count</p>
<p><b>错误码</b></p>	<p>1: 命令格式错误 2: 无该 con_id</p>	
<p><b>示例</b></p>	<pre>//参数情况 1 # ATPP=192.168.1.1 // Only five ping requests will be sent # ATPP=192.168.1.1,loop // loop, no count # ATPP=192.168.1.1,10 // loop 10 times  //参数情况 2 # ATPI con_id:1,server,tcp,address:192.168.99.143,port:5001,socket:0 con_id:2,seed,tcp,address:192.168.99.185,port:64089,socket:1</pre>	



```
con_id:3,server,udp,address:192.168.99.143,port:5002,socket:2
con_id:4,client,tcp,address:192.168.99.185,port:5001,socket:3
con_id:5,client,udp,address:64.233.189.104,port:8080,socket:4
[ATPI] OK
# ATPP=2 //Ping TCP client(con_id 4)
# ATPP=5 //Ping UDP server via UDP client(con_id 2)
# ATPP=4 //Ping TCP server via TCP client(con_id 3)
```

## 5.10 ATPU – 设置透明传输模式

ATPU=<enable>	
<b>描述</b>	该命令用于设置透明传输模式
<b>回复</b>	[ATPU] OK [ATPU] ERROR:<error_no>
<b>参数</b>	<enable>      1 : enable TT mode (only “1” is valid by now)
<b>错误码</b>	1: 命令参数错误 2: 无连接可用 3: 服务端无法进入透传模式 4: 存在多个连接 5: 开启透传任务失败
<b>注意</b>	要启用透传模式只能创建一个 TCP/UDP 客户端连接
<b>示例</b>	//For TT(transparent transmission) mode # ATPD=0 //close all connections [ATPD] OK # ATPC=0,192.168.99.101,5001 //create TCP client, single connection [ATPC] OK [ATPC] con_id=1 # ATPU=1 //enter TT mode //20ms interval between sending packets //auto recv mode is also enabled [ATPU] OK > //enter data transmission mode, any input is treated as data to send, //besides the uart echo is turned off, which means any input character //won't have uart echo Hello! //first packet (wait for 20ms) Hello! //second packet (wait for 20ms) ---- //input four hyphens("-") to return to command mode

```
# //return to command mode now, auto recv is disabled, uart echo is turned on
```

## 5.11 ATPL – 保存连接并开启自动连接

ATPL=<enable>			
<b>描述</b>	该命令用于保存连接信息到 flash 并当系统启动时自动连接		
<b>回复</b>	[ATPL] OK [ATPL] ERROR:<error_no>		
<b>参数</b>	<table border="1"> <tr> <td>&lt;enable&gt;</td> <td>0 : erase translink info in flash and disable autolink 1 : save translink and enable autolink</td> </tr> </table>	<enable>	0 : erase translink info in flash and disable autolink 1 : save translink and enable autolink
<enable>	0 : erase translink info in flash and disable autolink 1 : save translink and enable autolink		
<b>错误码</b>	1:命令参数错误 2: 参数数量错误 3: 无连接		
<b>注意</b>	设备利用 flash 中存储的信息自动建立连接并进入透传模式。		
<b>示例</b>	<pre># ATPD=0 //close all connectiosn [ATPD] OK # ATPN=iot_test,12345678 //connect to AP [ATPN] OK # ATPG=1 //enable auto connect, this will be store in flash [ATPG] OK # ATPC=0,192.168.99.101,5001 //create TCP client, single connection [ATPC] OK [ATPC] con_id=1 # ATPL=1 //save information into flash [ATPL] OK # ATSR //reboot device [ATSR] OK AT COMMAND READY &gt; // start data transmission from here, 20ms between packets ---- //input four hyphens("-") to return to command mode # //return to command mode</pre>		

## 6. BLE 指令

### 6.1 ATBc – 设置 Central 模式

ATBc =<enable>			
<b>描述</b>	该命令用于使能 BLE Central 模式		
<b>回复</b>	[ATBc] OK [ATBc] ERROR:<error_no>		
<b>参数</b>	<table border="1"> <tr> <td>&lt; enable &gt;</td> <td>0 : disable Central mode (default) 1 : enable Central mode</td> </tr> </table>	< enable >	0 : disable Central mode (default) 1 : enable Central mode
< enable >	0 : disable Central mode (default) 1 : enable Central mode		
<b>错误码</b>	1: 命令格式错误 2: 命令参数数量错误 3: 参数 enable 只能设置 1 或 0 4: 设备处于 peripheral 模式		

### 6.2 ATBC – 连接 Peripheral 设备

ATBC =<addr_type>,<addr>					
<b>描述</b>	该命令用于和 Peripheral 设备建立连接				
<b>回复</b>	[ATBC] OK [ATBC] ERROR:<error_no>				
<b>参数</b>	<table border="1"> <tr> <td>&lt; addr_type &gt;</td> <td>“P”: public “R”: random</td> </tr> <tr> <td>&lt;addr&gt;</td> <td>XXXXXXXXXXXX</td> </tr> </table>	< addr_type >	“P”: public “R”: random	<addr>	XXXXXXXXXXXX
< addr_type >	“P”: public “R”: random				
<addr>	XXXXXXXXXXXX				
<b>错误码</b>	1: 命令格式错误 2: 命令参数数量错误 3: 设备处于非 Central 模式				
<b>注意</b>	当设备被 Central 连接后输出: [BLE] Connected 当设备断开连接后输出: [BLE] Disconnected				
<b>示例</b>	ATBC=P,001122334455 [BLE] Connected				

## 6.3 ATBD – 断开连接

ATBD	
描述	该命令用于和 Peripheral 设备断开连接
回复	[ATBC] OK [ATBC] ERROR:<error_no>
错误码	1: 命令格式错误 2: 设备处于非 Central 模式

## 6.4 ATBG – 读取 ATT 信息

ATBG =<query_type>[,<start_handle>,<end_handle>][, <uuid_type>,<uuid>]		
描述	该命令用于读取 Peripheral 的 ATT 信息	
回复	[ATBG] OK [ATBG] ERROR:<error_no> Result: [DIVS16] att_handle-end_group_handle[, uuid16] [DIVS128] att_handle-end_group_handle[, uuid128] [DIVC16] decl_handle, properties, value_handle[, uuid16] [DIVC128] decl_handle, properties, value_handle[, uuid128] [DIVD16] handle, uuid16 [DIVD128] handle, uuid128	
参数	< query_type >	“ALL”: all services “SRV”: services by uuid “CHARDIS”: characteristic “CHARUUID”: characteristic by uuid “CHARDDIS”: characteristic descriptor
	<start_handle>	0x1~0xFFFF
	<end_handle>	0x1~0xFFFF
	<uuid_type>	0: 16bit 1: 128bit
	<uuid>	Uuid in hex
错误码	1: 命令格式错误 2: 命令参数数量错误 3: 设备处于非 Central 模式	
注意	该指令只能在建立连接后使用	
示例	Get all services: ATBG=ALL Discover services by uuid: ATBG=SRV,uuid_type,uuid	

	Discover characteristic: ATBG=CHARDIS,start_handle,end_handle Discover characteristic by uuid: ATBG=CHARUUID,start_handle,end_handle, type, uuid Discover characteristic descriptor: ATBG=CHARDDIS,start_handle,end_handle eg:ATBG=ALL eg(uuid16):ATBG=SRV,0,1803 eg(uuid128):ATBG=SRV,1,00112233445566778899aabbccddeeff eg:ATBG=CHARDIS,0x8,0xFF eg(uuid16):ATBG=CHARUUID,0x1,0xFFFF,0,B001 eg(uuid128):ATBG=CHARUUID,0x1,0xFFFF,1,00112233445566778899aabbccddeeff eg:ATBG=CHARDDIS,0xe,0x10
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## 6.5 ATBS – 扫描 BT 设备

ATBS =<enable>			
<b>描述</b>	该命令用于扫描外部 BT 设备		
<b>回复</b>	[ATBS] OK [ATBS] ERROR:<error_no> [ATBS] adv_type,addr_type,mac ,rssi[,deviceName]		
<b>参数</b>	<table border="1" style="width: 100%;"> <tr> <td style="width: 30%;"><b>&lt; enable &gt;</b></td> <td>0 : stop scan device 1 : start scan device</td> </tr> </table>	<b>&lt; enable &gt;</b>	0 : stop scan device 1 : start scan device
<b>&lt; enable &gt;</b>	0 : stop scan device 1 : start scan device		
<b>错误码</b>	1: 命令格式错误 2: 命令参数数量错误 3: 设备处于非 Central 模式		

## 6.6 ATBR – 读操作

ATBR =<handle> or ATBR =<start_handle>,<end_handle>,<uuid_type>,<uuid>									
<b>描述</b>	该命令用于执行读操作								
<b>回复</b>	[ATBR] OK [ATBR] ERROR:<error_no> [BLE] reci:size,data(byte)								
<b>参数</b>	<table border="1" style="width: 100%;"> <tr> <td style="width: 30%;"><b>&lt; handle &gt;</b></td> <td>0x1~0xFFFF</td> </tr> <tr> <td><b>&lt;start_handle&gt;</b></td> <td>0x1~0xFFFF</td> </tr> <tr> <td><b>&lt;end_handle&gt;</b></td> <td>0x1~0xFFFF</td> </tr> <tr> <td><b>&lt;uuid_type&gt;</b></td> <td>0: 16bit</td> </tr> </table>	<b>&lt; handle &gt;</b>	0x1~0xFFFF	<b>&lt;start_handle&gt;</b>	0x1~0xFFFF	<b>&lt;end_handle&gt;</b>	0x1~0xFFFF	<b>&lt;uuid_type&gt;</b>	0: 16bit
<b>&lt; handle &gt;</b>	0x1~0xFFFF								
<b>&lt;start_handle&gt;</b>	0x1~0xFFFF								
<b>&lt;end_handle&gt;</b>	0x1~0xFFFF								
<b>&lt;uuid_type&gt;</b>	0: 16bit								

		1: 128bit
	<uuid>	Uuid in hex
<b>错误码</b>	1: 命令格式错误 2: 命令参数数量错误 3: 设备处于非 Central 模式	
<b>注意</b>	该指令只能在建立连接后使用	
<b>示例</b>	Read characteristic: ATBR=handle Read characteristic value by uuid: ATBR=start_handle,end_handle,uuid_type,uuid eg(uuid16):ATBR=0xa eg(uuid16):ATBR=0x1,0xFFFF,0,B001 eg(uuid128):ATBR=0,0x1,0xFFFF,1,00112233445566778899aabbccddeeff	

## 6.7 ATBW – 写操作

ATBW =<write_type>,<handle>,<length>,<value>		
<b>描述</b>	该命令用于执行写操作	
<b>回复</b>	[ATBW] OK [ATBW] ERROR:<error_no>	
<b>参数</b>	<write_type>	1: write request 2: write command
	<handle>	0x1~0xFFFF
	<length>	Total command size <= 256
	<value>	Ascii hex
<b>错误码</b>	1: 命令格式错误 2: 命令参数数量错误 3: 设备处于非 Central 模式	
<b>注意</b>	该指令只能在建立连接后使用	
<b>示例</b>	ATBW=conn_id,type,handle,length,value eg:ATBW=1,0xc,1,02 eg:ATBW=2,0x19,3,313233	

## 6.8 ATBp – 设置 Peripheral 模式

ATBp =<enable>	
<b>描述</b>	该命令用于使能 BLE Peripheral 模式

<b>回复</b>	[ATBp] OK [ATBp] ERROR:<error_no>	
<b>参数</b>	< enable >	0 : disable Peripheral mode (default) 1 : enable Peripheral mode
<b>错误码</b>	1: 命令格式错误 2: 命令参数数量错误 3: 参数 enable 只能设置 1 或 0 4: 设备处于 Central 模式	
<b>注意</b>	当设备被 Central 连接后输出: [BLE] Connected 当设备断开连接后输出: [BLE] Disconnected	

## 6.9 ATBA – 设置广播间隔

ATBA =<adv_interval_max>,<adv_interval_min>		
<b>描述</b>	该命令用于设置当设备处于 Peripheral 模式时的广播间隔	
<b>回复</b>	[ATBA] OK [ATBA] ERROR:<error_no>	
<b>参数</b>	< adv_interval_max >	32 - 16384 (20ms - 10240ms 0.625ms/step))
	<adv_interval_min>	32 - 16384 (20ms - 10240ms 0.625ms/step))
<b>错误码</b>	1: 命令格式错误 2: 命令参数数量错误	

## 6.10 ATBN – 设置设备名称

ATBN =<Device_Name>		
<b>描述</b>	该命令用于设置当设备广播时显示的设备名称	
<b>回复</b>	[ATBN] OK [ATBN] ERROR:<error_no>	
<b>参数</b>	<Device_Name>	Max 22 char
<b>错误码</b>	1: 命令格式错误 2: 命令参数数量错误 3: 设备名大于 22 字符	

## 6.11 ATBe – 发送数据

ATBe =<data_size>,0:<data>	
<b>描述</b>	该命令用与向建立连接的设备发送数据
<b>回复</b>	[ATBe] OK [ATBe] ERROR:<error_no>
<b>参数</b>	<data_size>                      Data length
	<data>                              Payload Data
<b>错误码</b>	1: 命令参数数量错误 2: 数据长度大于 514 字符 3: 发送失败 4: 模式错误
<b>注意</b>	该指令只能在 Peripheral 模式或 Central 模式下并处于连接下使用

## 6.12 ATBB – BT 配网

ATBB =<enable>	
<b>描述</b>	该命令用于使能 BT 配网，需使用配套 APP
<b>回复</b>	[ATBB] OK [ATBB] ERROR:<error_no>
<b>参数</b>	< enable >                      0 : disable BT config (default) 1 : enable BT config
<b>错误码</b>	1: 命令格式错误 2: 命令参数数量错误 3: 参数 enable 只能设置 1 或 0 4: 设备处于 Peripheral 模式或 Central 模式