

# OPL1000

ULTRA-LOW POWER 2.4GHZ WI-FI + BLUETOOTH SMART SOC

## AT Instruction Set and Examples



OPULINKS

<http://www.opulinks.com/>

Copyright © 2017-2018, Opulinks. All Rights Reserved.

---

OPL1000-AT-instruction-set-example-R05 | Version 0.30

Date	Version	Contents Updated
2018-04-16	0.1	<ul style="list-style-type: none"> <li>Initial Release</li> </ul>
2018-05-18	0.2	<ul style="list-style-type: none"> <li>Add wifi example</li> <li>Add AT+CWAUTOCONN</li> </ul>
2018-05-25	0.3	<ul style="list-style-type: none"> <li>Fix some mistakes</li> </ul>
2018-05-31	0.4	<ul style="list-style-type: none"> <li>Add tcp server example</li> <li>Fix some mistakes</li> </ul>
2018-06-20	0.5	<ul style="list-style-type: none"> <li>Fix some mistakes</li> </ul>
2018-06-27	0.6	<ul style="list-style-type: none"> <li>Fixed some wrong description in several AT commands such as AT+BLECFGMTU etc.</li> </ul>
2018-06-28	0.7	<ul style="list-style-type: none"> <li>Fix some description mistakes</li> </ul>
2018-07-17	0.8	<ul style="list-style-type: none"> <li>Revise CIPSTATUS description</li> <li>Add AT+MACADDRDEF</li> </ul>
2018-07-19	0.9	<ul style="list-style-type: none"> <li>Add AT+RFHP</li> <li>Modify AT+BLEADDR—设置 BLE public 设备地址</li> </ul>
2018-07-27	0.10	<ul style="list-style-type: none"> <li>Add more description for AT+BLEADDR and AT+CIPSTAMAC</li> </ul>
2018-07-27	0.11	<ul style="list-style-type: none"> <li>Add AT+READFLASH, AT+WRITEFLASH and AT+ERASEFLASH</li> </ul>
2018-08-02	0.12	<ul style="list-style-type: none"> <li>Add more description for AT+CWMODE and AT+CWLAP</li> </ul>
2018-08-17	0.13	<ul style="list-style-type: none"> <li>Add AT+DHCPARPCHK</li> </ul>
2018-08-27	0.14	<ul style="list-style-type: none"> <li>Revise AT+CWMODE description</li> </ul>
2018-08-27	0.15	<ul style="list-style-type: none"> <li>Update AT+RFHP description</li> </ul>
2018-09-04	0.16	<ul style="list-style-type: none"> <li>Update valid range for AT+WRITEFLASH and AT+ERASEFLASH</li> </ul>
2018-09-06	0.17	<ul style="list-style-type: none"> <li>Update AT+SWITCHDBG description</li> </ul>
2018-09-13	0.18	<ul style="list-style-type: none"> <li>Add AT+MACDATARATE</li> <li>设置 Wi-Fi Tx data rate</li> </ul>
2018-09-13	0.19	<ul style="list-style-type: none"> <li>Add AT+DTM</li> </ul>
2018-09-18	0.20	<ul style="list-style-type: none"> <li>Add AT+WIFIMACCFG</li> </ul>
2018-09-18	0.21	<ul style="list-style-type: none"> <li>Update AT+GSLP description</li> </ul>

Date	Version	Contents Updated
2018-09-18	0.22	<ul style="list-style-type: none"><li>Update AT+CWAUTOCONN description</li></ul>
2018-09-18	0.23	<ul style="list-style-type: none"><li>Update AT+ BLEADVPARAM description</li></ul>
2018-09-19	0.24	<ul style="list-style-type: none"><li>Add AT+CWFASTCONN</li></ul>
2018-09-20	0.25	<ul style="list-style-type: none"><li>Add AT+RFTM</li></ul>
2018-09-20	0.26	<ul style="list-style-type: none"><li>Add AT+BLEPHYREAD</li><li>Add AT+BLEPHYSET</li></ul>
2018-09-20	0.27	<ul style="list-style-type: none"><li>Update AT+CIPSTAMAC description</li></ul>
2018-09-20	0.28	<ul style="list-style-type: none"><li>Add RF-related AT commands</li></ul>
2018-10-05	0.29	<ul style="list-style-type: none"><li>Update AT+CWJAP description</li></ul>
2018-11-21	0.30	<ul style="list-style-type: none"><li>Add AT+RFTM (BeaconOnlyMode)</li></ul>

## TABLE OF CONTENTS

1. 介绍	1
1.1. 文档应用范围	1
1.2. 指令说明	1
2. 基础 AT 指令	2
2.1. 基础 AT 指令一览表	2
2.2. 基础 AT 指令描述	2
2.2.1. AT—测试 AT 模块	2
2.2.2. AT+RST—重启模块	2
2.2.3. AT+GMR—查询版本信息	2
2.2.4. AT+GSLP—进入 Deep-sleep 模式	2
2.2.5. ATE—开关回显功能	2
2.2.6. AT+RESTORE—恢复出厂设置	2
2.2.7. AT+UART_CUR—设置 UART 临时配置	2
2.2.8. AT+UART_DEF—设置 UART 配置，保存到 Flash	2
2.2.9. AT+SLEEP—设置 sleep 模式	2
2.2.10. AT+SYSRAM—查询当前剩余 RAM 大小	2
2.2.11. AT+MACADDRDEF—设置设备来源 Mac Address，保存到 flash	2
2.2.12. AT+RFHP—设置 RF Power	2
2.2.13. AT+READFLASH—读取 Flash	2
2.2.14. AT+WRITEFLASH—写入 Flash	2
2.2.15. AT+ERASEFLASH—抹除 Flash	2
2.2.16. AT+DHCPARPCHK—设置 DHCP ARP 检查机制	2
2.2.17. AT+SWITCHDBG—切换至 Debug UART	2
2.2.18. AT+MACDATARATE—设置 Wi-Fi Tx data rate	2
2.2.19. AT+WIFIMACCFG—设置 Wi-Fi 相关参数	2
2.2.20. AT+RFTM—设置 Test Mode	2
2.2.21. AT+MODE—设定 WiFi 模式	2
2.2.22. AT+GO—设定 WiFi 封包与速度	2
2.2.23. AT+CHANNEL—设定 WiFi 通道	2
2.2.24. AT+RESET_CNTS—清除 WiFi Rx 统计量	2
2.2.25. AT+COUNTERS—读取 WiFi Rx 统计量	2
2.2.26. AT+TX—启动/关闭 WiFi Tx 测试	2
2.2.27. AT+RX—启动/关闭 WiFi Rx 测试	2
2.2.28. AT+DTM—设定与开始 BLE Tx/Rx 测试	2

3.	WIFI 功能 AT 指令	3
3.1.	WIFI 功能 AT 指令一览表	3
3.2.	WIFI 功能 AT 指令描述	3
3.2.1.	AT+CWMODE—设置 Wi-Fi 模式	3
3.2.2.	AT+CWLAP—连接 AP	3
3.2.3.	AT+CWLAPOPT—设置 CWLAP 指令的属性	3
3.2.4.	AT+CWLAP—扫描当前可用的 AP	3
3.2.5.	AT+CWQAP—断开与 AP 的连接	3
3.2.6.	AT+CWAUTOCONN—上电是否自动连接 AP	3
3.2.7.	AT+CWFASTCONN—快速连接 AP	3
3.2.8.	AT+CIPSTAMAC—设置 OPL1000 Station 接口的 MAC 地址	3
3.2.9.	AT+CWHOSTNAME—设置 Station 的主机名称	3
4.	TCP/IP 功能 AT 指令	4
4.1.	TCP/IP 功能 AT 指令一览表	4
4.2.	TCP/IP 功能 AT 指令描述	4
4.2.1.	AT+CIPSTATUS—查询网络连接信息	4
4.2.2.	AT+CIPDOMAIN—域名解析功能	4
4.2.3.	AT+CIPSTART—建立 TCP 连接或 UDP 传输	4
4.2.4.	AT+CIPSEND—发送数据	4
4.2.5.	AT+CIPSENDEX—发送数据	4
4.2.6.	AT+CIPCLOSE—关闭 TCP/UDP 传输	4
4.2.7.	AT+CIFSR—查询本地 IP 地址	4
4.2.8.	AT+CIPMUX—设置多连接	4
4.2.9.	AT+CIPSERVER—建立 TCP 服务器	4
4.2.10.	AT+CIPSTO—设置 TCP 服务器超时时间	4
4.2.11.	AT+CIPDINFO—接收网络数据时是否提示对端 IP 和端口	4
4.2.12.	+IPD—接收网络数据	4
4.2.13.	AT+PING—Ping 功能	4
5.	BLE 相关 AT 指令	6
5.1.	BLE 指令一览表	6
5.2.	BLE 指令描述	6
5.2.1.	AT+BLEINIT—BLE 初始化	6
5.2.2.	AT+BLEADDR—设置 BLE 设备地址	6
5.2.3.	AT+BLENAME—设置 BLE 设备名称	6
5.2.4.	AT+BLESCANRSPDATA—设置 BLE 扫描响应	6
5.2.5.	AT+BLEADVPARAM—设置广播参数	6
5.2.6.	AT+BLEADVDATA—设置 BLE 广播数据	6

5.2.7.	AT+BLEADVSTART—开始 BLE 广播	6
5.2.8.	AT+BLEADVSTOP—结束 BLE 广播	6
5.2.9.	AT+BLECONNPARAM—更新 BLE 连接参数	6
5.2.10.	AT+BLEDISCONN—断开 BLE 连接	6
5.2.11.	AT+BLEDATALEN—设置 BLE 数据包长度	6
5.2.12.	AT+BLECFGMTU—设置 GATT MTU 的长度	6
5.2.13.	AT+BLEGATTSSRVCRE—GATTS 创建服务	6
5.2.14.	AT+BLEGATTSSRVSTART—GATTS 开启服务	6
5.2.15.	AT+BLEGATTSSRVSTOP—GATTS 停止服务	6
5.2.16.	AT+BLEGATTSSRV—GATTS 发现服务	6
5.2.17.	AT+BLEGATTSSCHAR—GATTS 发现服务特征	6
5.2.18.	AT+BLEGATTSSNTFY—GATTS 通知服务特征值	6
5.2.19.	AT+BLEGATTSSIND—GATTS 指示服务特征值	6
5.2.20.	AT+BLEGATTSSSETATTR—GATTS 设置服务特征值	6
5.2.21.	AT+BLEGATTCPRIMSRV—GATTC 发现基本服务	6
5.2.22.	AT+BLEGATTCCINCLSRV—GATTC 发现包含服务	6
5.2.23.	AT+BLEGATTCCCHAR—GATTC 发现服务特征	6
5.2.24.	AT+BLEGATTCCRD—GATTC 读取服务特征值	6
5.2.25.	AT+BLEGATTCCWR—GATTC 写服务特征值	6
5.2.26.	AT+DTM—BLE 测试模式	6
5.2.27.	AT+BLEPHYREAD—读取目前連線的 PHY	6
5.2.28.	AT+BLEPHYSET—設置目前連線的 PHY	6
5.3.	BLE AT CMD Error Code	6
6.	AT 指令使用示例	7
6.1.	单连接 TCP 客户端	7
6.2.	UDP 传输	7
6.2.1.	固定远端的 UDP 通信	7
6.2.2.	远端可变的 UDP 通信	7
6.3.	多连接 TCP 服务器	7

## 1. 介绍

---

### 1.1. 文档应用范围

### 1.2. 指令说明

## 2. 基础 AT 指令

---

### 2.1. 基础 AT 指令一览表

### 2.2. 基础 AT 指令描述



## **3. WIFI 功能 AT 指令**

---

### **3.1. WIFI 功能 AT 指令一览表**

### **3.2. WIFI 功能 AT 指令描述**

## 4. TCP/IP 功能 AT 指令

---

### 4.1. TCP/IP 功能 AT 指令一览表

### 4.2. TCP/IP 功能 AT 指令描述



## 5. BLE 相关 AT 指令

---

### 5.1. BLE 指令一览表

### 5.2. BLE 指令描述

### 5.3. BLE AT CMD Error Code

## 6. AT 指令使用示例

---

本章介绍几种常见的 AT 指令使用示例。

### 6.1. 单连接 TCP 客户端

### 6.2. UDP 传输

### 6.3. 多连接 TCP 服务器