

LW004-PB V3

Downlink Command

CONTENT

1 About this Manual.....	3
2 Downlink Command.....	3
2.1 Downlink Command Format	3
2.2 The Sample of Read Device's Parameters	4
2.2.1 System Function Parameter Read.....	4
2.2.2 Working mode Parameter Read	5
2.2.3 Auxiliary mode Parameter Read	7
2.2.4 Positioning Parameter Read	8
2.2.5 LoRaWAN Parameter Read	11
2.3 The Sample of Configure Device's Parameters.....	13
2.3.1 System Function Parameter Configuration.....	13
2.3.2 Working mode Parameter Configuration	14
2.3.3 Auxiliary mode Parameter Conifguration	15
2.3.4 Positioning Parameter Configuration	17
2.3.5 LoRaWAN Parameter Configuration	20
3 Revision History.....	21

1 About this Manual

The purpose of this manual is to outline how to use Downlink Command for LW004-PB V3.

2 Downlink Command

All downlink commands of LW004-PB V3 will be sent in Port 100.

The downlink command has five main parts: system function, working mode, auxiliary operation, positioning and LoRaWAN.

2.1 Downlink Command Format

- A complete downlink command will consist of several parts
- All downlink commands will begin with ED

The downlink command depends on the described in the following table.

Byte Index	Type	Content	Description
Byte 0	HEAD	0xED	All downlink commands will begin with ED
Byte 1	FLAG	0x00, 0x01, or 0x02	Command type. 0x00: Read device parameters; 0x01: Configure device parameters; 0x02: Data Notification
Byte 2	CMD	0x01 ~ 0xFF	Message ID. Each parameter has a unique ID
Byte 3	LEN	0x00 ~ 0XF0	The length of Command Data 0x00 means the command type is 0x00.
Byte 4 – XX	DATA	Maximum 240 bytes	Command Data The Command Data is available only if the instruction type is 0x01. Other instruction types don't have this part.

When the device receives the command, the device will send the Response message. The sample is as follows:

- ① When FLAG is 0x00. It means the instruction type is Read device parameters.

Downlink Command: 0x ED 00 02 00

Response message: 0x ED 00 02 02 01 01

(The contents of the first three bytes are the same as the Downlink Command, the remaining of response message is the value of this parameter and the length of the value.

02 01 01 is the remaining of this response message, 02 means that the length of parameter value

is two bytes, **01 01** means that the value of this parameter is 01 01)

② When FLAG is 0x01. It means the instruction type is Configure device parameters.

Downlink command: ED 01 02 02 00 05

Response message: ED 01 02 **01 01** (If the parameters are set successfully)

ED 01 02 **01 00** (If the parameters aren't set successfully)

(The contents of the first three bytes are the same as the Downlink Command. If the remaining of response message is 0x 01 01, it means that the parameters are set successfully; If the remaining of response message is 0x 01 00, it means that the parameters aren't set successfully)

2.2 The Sample of Read Device's Parameters

2.2.1 System Function Parameter Read

Command Description	CMD	LEN (Bytes)	Example
Read Battery Voltage	05	2	Send: ED 00 05 00 Response: ED 00 05 02 0E 10 (Convert to decimal, the unit is mV. The voltage is 3600mV)
Read switch state of off by power button	06	1	Send: ED 00 06 00 Response: ED 00 06 01 00 (00 means OFF; 01 means ON)
Read low power prompt percent	07	1	Send: ED 00 07 00 Response: ED 00 07 01 32 (Convert to decimal, the unit is %. The low power prompt percent is 50%)
Read switch state of low power payload	08	1	Send: ED 00 08 00 Response: ED 00 08 01 00 (00 means OFF; 01 means ON)
Read ADV Name of Bluetooth broadcast	09	0~16	Send: ED 00 09 00 Response: ED 00 09 04 4D 6F 6B 6F (Convert to ASCII. The ADV Name of Bluetooth broadcast is Moko)
Read ADV interval of Bluetooth broadcast	0A	1	Send: ED 00 0A 00 Response: ED 00 0A 01 32 (Convert to decimal, the unit is 100ms. The ADV interval of Bluetooth broadcast is 5000ms)
Read Bluetooth TX Power	0B	1	Send: ED 00 0B 00 Response: ED 00 0B 01 03 (Convert to decimal, the unit is dBm. The Bluetooth TX Power is 3dBm)
Read Broadcast timeout	0C	1	Send: ED 00 0C 00 Response: ED 00 0C 01 03 (Convert to decimal, the unit is mins. The Broadcast timeout is 3 mins)

Read switch state of login password	0D	1	Send: ED 00 0D 00 Response: ED 00 0D 01 00 (00 means no need password when login in; 01 means need password when login in)
Read login password	0E	8	Send: ED 00 0E 00 Response: ED 00 0E 08 4D 6F 6B 6F 34 33 32 31 (Convert to ASCII. The login password is Moko4321)
Read time zone	0F	1	Send: ED 00 0F 00 Response: ED 00 0F 01 18 (It is a signed number, convert to decimal, the unit is 0.5. The current time zone is UTC+ 12)
Read 3-axis wakeup threshold	11	1	Send: ED 00 11 00 Response: ED 00 11 01 03 (Convert to decimal, the unit is 16mg. The wakeup threshold is 48mg)
Read 3-axis wakeup duration	12	1	Send: ED 00 12 00 Response: ED 00 12 01 05 (Convert to decimal, the unit is 10ms. The wakeup duration is 50ms)
Read motion threshold	13	1	Send: ED 00 13 00 Response: ED 00 13 01 0A (Convert to decimal, the unit is 2mg. The motion threshold is 20mg)
Read motion duration	14	1	Send: ED 00 14 00 Response: ED 00 14 01 05 (Convert to decimal, the unit is 5ms. The motion duration is 25ms)
Read trip end timeout	15	1	Send: ED 00 15 00 Response: ED 00 15 01 05 (Convert to decimal, the unit is 10s. The trip end timeout is 50s)

2.2.2 Working mode Parameter Read

Command Description	CMD	LEN (Bytes)	Example
Read switch state of shut down payload	20	1	Send: ED 00 20 00 Response: ED 00 20 01 00 (00 means OFF; 01 means ON)
Read current working mode	21	1	Send: ED 00 21 00 Response: ED 00 21 01 00 (00 means standby mode ; 01 means timing mode; 02 means periodic mode; 04 means motion mode)
Read heartbeat interval	22	2	Send: ED 00 22 00 Response: ED 00 22 02 00 32 (Convert to decimal, the unit is min. The heartbeat interval is 50mins)

Read report interval of periodic mode	23	2	Send: ED 00 23 00 Response: ED 00 23 02 32 (Convert to decimal, the unit is min. The report interval of periodic mode is 50mins)
Read position strategy of timing mode	24	1	Send: ED 00 24 00 Response: ED 00 24 01 02 (00 means BLE; 01 means GPS; 02 means BLE&GPS)
Read report timing point of timing mode	25	0~10	Send: ED 00 25 00 Response: ED 00 25 02 01 03 (Convert to decimal, the unit is 15mins. 01 means 00:15; 02 means 00:30; 03 means 00:45; 04 means 01:00.....; The report timing point is 00:15 and 00:45 . Maximum 10 report timing points can be set)
Read position strategy of timing mode	26	1	Send: ED 00 26 00 Response: ED 00 26 01 02 (00 means BLE; 01 means GPS; 02 means BLE&GPS)
Read motion mode setting	27	1	Send: ED 00 27 00 Response: ED 00 27 01 19 (Convert to binary. Bit 0 refers fix on start; Bit 1 refers fix in trip; Bit 2 refers fix on end; Bit 3 refers notify event on start; Bit 4 refers notify event in trip; Bit 5 refers notify event on end. If the value is 0, it means off; if the value is 1, it means on)
Read position strategy of fix on start	28	1	Send: ED 00 28 00 Response: ED 00 28 01 02 (00 means BLE; 01 means GPS; 02 means BLE&GPS)
Read number of fix on start	29	1	Send: ED 00 29 00 Response: ED 00 29 01 05 (Convert to decimal. The number of fix on start is 5 times)
Read position strategy of fix in trip	2A	1	Send: ED 00 2A 00 Response: ED 00 2A 01 02 (00 means BLE; 01 means GPS; 02 means BLE&GPS)
Read report interval of fix in trip	2B	4	Send: ED 00 2B 00 Response: ED 00 2B 04 00 00 00 0A (Convert to decimal, the unit is s. The report interval of fix in trip is 10s)
Read position strategy of fix on end	2C	1	Send: ED 00 2C 00 Response: ED 00 2C 01 02 (00 means BLE; 01 means GPS; 02 means BLE&GPS)
Read number of fix on trip end	2D	1	Send: ED 00 2D 00 Response: ED 00 2D 01 03 (Convert to decimal. The number of fix on trip end is 3 times)
Read report interval on trip end	2E	2	Send: ED 00 2E 00 Response: ED 00 2E 02 00 64 (Convert to decimal, the unit is s. The report interval on trip end is 100s)

2.2.3 Auxiliary mode Parameter Read

Command Description	CMD	LEN (Bytes)	Example
Read positioning strategy of downlink for position	30	1	Send: ED 00 30 00 Response: ED 00 30 01 02 (00 means BLE; 01 means GPS; 02 means BLE&GPS)
Read switch state of man down detection	31	1	Send: ED 00 31 00 Response: ED 00 31 01 00 (00 means OFF; 01 means ON)
Read positioning strategy of man down detection	32	1	Send: ED 00 32 00 Response: ED 00 32 01 02 (00 means BLE; 01 means GPS; 02 means BLE&GPS)
Read man down detection timeout	33	1	Send: ED 00 33 00 Response: ED 00 33 01 0A (Convert to decimal, the unit is min. The man down detection timeout is 10mins)
Read report interval of man down state	34	2	Send: ED 00 34 00 Response: ED 00 34 02 00 64 (Convert to ASCII, the unit is s. The report interval of man down state is 100s)
Read switch state of notify event on man down start	35	1	Send: ED 00 35 00 Response: ED 00 35 01 00 (00 means OFF; 01 means ON)
Read switch state of notify event on man down end	36	1	Send: ED 00 36 00 Response: ED 00 36 01 00 (00 means OFF; 01 means ON)
Read vibrate intensity	37	1	Send: ED 00 37 00 Response: ED 00 37 01 32 (Convert to decimal, the unit is %. The vibrate intensity is 50%)
Read alarm type	38	1	Send: ED 00 38 00 Response: ED 00 38 01 00 (00 means off; 01 means Alert alarm; 02 means SOS alarm)
Read exit alarm type	39	1	Send: ED 00 39 00 Response: ED 00 39 01 05 (Convert to decimal, the unit is s. The exit alarm type is long press SOS button for 5s)
Read switch state of SOS alarm start	3A	1	Send: ED 00 3A 00 Response: ED 00 3A 01 00 (00 means OFF; 01 means ON)
Read switch state of SOS alarm end	3B	1	Send: ED 00 3B 00 Response: ED 00 3B 01 00 (00 means OFF; 01 means ON)
Read positioning strategy of SOS alarm	3C	1	Send: ED 00 3C 00 Response: ED 00 3C 01 02 (00 means BLE; 01 means GPS; 02 means BLE&GPS)

Read report interval of SOS alarm	3D	2	Send: ED 00 3D 00 Response: ED 00 3D 02 00 64 (Convert to decimal, the unit is s. The report interval of SOS alarm is 100s)
Read SOS alarm trigger mode	3E	1	Send: ED 00 3E 00 Response: ED 00 3E 01 05 (00 means double click; 01 means triple click; 02 means long press 1s; 03 means long press 2s; 04 means long press 3s; 05 means long press 4s; 06 means long press 5s)
Read switch state of Alert alarm start	3F	1	Send: ED 00 3F 00 Response: ED 00 3F 01 00 (00 means OFF; 01 means ON)
Read switch state of Alert alarm start	40	1	Send: ED 00 40 00 Response: ED 00 40 01 00 (00 means OFF; 01 means ON)
Read positioning strategy of Alert alarm	41	1	Send: ED 00 41 00 Response: ED 00 41 01 02 (00 means BLE; 01 means GPS; 02 means BLE&GPS)
Read Alert alarm trigger mode	42	1	Send: ED 00 42 00 Response: ED 00 42 01 05 (00 means single click; 01 means double click; 02 means long press 1s; 03 means long press 2s; 04 means long press 3s; 05 means long press 4s; 06 means long press 5s)

2.2.4 Positioning Parameter Read

Command Description	CMD	LEN (Bytes)	Example
Read GPS positioning timeout	50	2	Send: ED 00 50 00 Response: ED 00 50 02 00 64 (Convert to decimal, the unit is s. The GPS positioning timeout is 100s)
Read PDOP	51	1	Send: ED 00 51 00 Response: ED 00 51 01 64 (Convert to decimal, the unit is 0.1. The PDOP is 10)
Read Bluetooth positioning timeout	52	1	Send: ED 00 52 00 Response: ED 00 52 01 04 (Convert to decimal, the unit is s. The Bluetooth positioning timeout is 4s)
Read number of MAC in Bluetooth fix	53	1	Send: ED 00 53 00 Response: ED 00 53 01 03 (Convert to decimal. The number of MAC in Bluetooth fix is 3)
Read RSSI filter	54	1	Send: ED 00 54 00 Response: ED 00 54 01 C0 (Convert to decimal and minus 256, the unit is dBm. The RSSI filter is -64 dBm)

Read filter relationship	55	1	Send: ED 00 55 00 Response: ED 00 55 01 00 (00 means NO; 01 means MAC; 02 means ADV Name; 03 means Raw Data; 04 means ADV Name&Raw Data; 05 means MAC&ADV Name&Raw Data; 06 means ADV Name Raw Data)
Read switch state of precise match MAC	56	1	Send: ED 00 56 00 Response: ED 00 56 01 00 (00 means OFF; 01 means ON)
Read switch state of reverse filter MAC	57	1	Send: ED 00 57 00 Response: ED 00 57 01 00 (00 means positive filter; 01 means reverse filter)
Read MAC filter rule	58	0~70	Send: ED 00 58 00 Response: ED 00 58 07 06 11 22 33 44 55 66 (06 means the length of mac filter, the mac filter content is 11 22 33 44 55 66)
Read switch state of precise match ADV Name	59	1	Send: ED 00 59 00 Response: ED 00 59 01 00 (00 means OFF; 01 means ON)
Read switch state of reverse filter ADV Name	5A	1	Send: ED 00 5A 00 Response: ED 00 5A 01 00 (00 means positive filter; 01 means reverse filter)
Read switch state of raw data filter	5C	9	Send: ED 00 5C 00 Response: ED 00 5C 09 00 00 00 00 00 00 00 01 (00 means OFF; 01 means ON; Byte 0 of DATA refers to switch state of unknown type; Byte 1 of DATA refers to switch state of iBeacon type; Byte 2 of DATA refers to switch state of eddystone-UID type; Byte 3 of DATA refers to switch state of eddystone-URL type; Byte 4 of DATA refers to switch state of eddystone-TLM type; Byte 5 of DATA refers to switch state of BeaconX Pro-ACC type; Byte 6 of DATA refers to switch state of BeaconX Pro-T&H type; Byte 7 of DATA refers to switch state of MKiBeacon type; Byte 8 of DATA refers to switch state of MKiBeacon&ACC type)
Read major filter of iBeacon type	5E	5	Send: ED 00 5E 00 Response: ED 00 5E 05 00 00 00 00 64 (The 1st byte of Command DATA is the filter flag, 00 means off, 01 means Positive filter. The rest content of Command DATA is the filter content,

			convert to decimal. The Major filter of iBeacon type is from 0 (00 00) to 100 (00 0A))
Read minor filter of iBeacon type	5F	5	Send: ED 00 5F 00 Response: ED 00 5F 05 00 00 00 00 64 (The 1st byte of Command DATA is the filter flag, 00 means off, 01 means Positive filter. The rest content of Command DATA is the filter content, convert to decimal. The Minor filter of iBeacon type is from 0 (00 00) to 100 (00 0A))
Read UUID filter of iBeacon type	60	0~16	Send: ED 00 60 00 Response: ED 00 60 02 AA BB (The UUID filter of iBeacon type is AA BB)
Read major filter of MKiBeacon type	62	5	Send: ED 00 62 00 Response: ED 00 62 05 00 00 00 00 64 (The 1st byte of Command DATA is the filter flag, 00 means off, 01 means Positive filter. The rest content of Command DATA is the filter content, convert to decimal. The Major filter of MKiBeacon type is from 0 (00 00) to 100 (00 0A))
Read minor filter of MKiBeacon type	63	5	Send: ED 00 63 00 Response: ED 00 63 05 00 00 00 00 64 (The 1st byte of Command DATA is the filter flag, 00 means off, 01 means Positive filter. The rest content of Command DATA is the filter content, convert to decimal. The Minor filter of MKiBeacon type is from 0 (00 00) to 100 (00 0A))
Read UUID filter of MKiBeacon type	64	0~16	Send: ED 00 64 00 Response: ED 00 64 02 AA BB (The UUID filter of MKiBeacon type is AA BB)
Read major filter of MKiBeacon&ACC type	66	5	Send: ED 00 66 00 Response: ED 00 66 05 00 00 00 00 64 (The 1st byte of Command DATA is the filter flag, 00 means off, 01 means Positive filter. The rest content of Command DATA is the filter content, convert to decimal. The Major filter of MKiBeacon&ACC type is from 0 (00 00) to 100 (00 0A))
Read minor filter of MKiBeacon&ACC type	67	5	Send: ED 00 67 00 Response: ED 00 67 05 00 00 00 00 64 (The 1st byte of Command DATA is the filter flag, 00 means off, 01 means Positive filter. The rest content of Command DATA is the filter content, convert to decimal. The Minor filter of MKiBeacon&ACC type is from 0 (00 00) to 100 (00 0A))
Read UUID filter of MKiBeacon&ACC type	68	0~16	Send: ED 00 68 00 Response: ED 00 68 02 AA BB (The UUID filter of MKiBeacon&ACC type is AA BB)
Read namespace filter of eddystone-UID type	6A	0~10	Send: ED 00 6A 00 Response: ED 00 6A 02 AA BB

			(The namespace filter of eddystone-UID type is AA BB)
Read instance filter of eddystone-UID type	6B	0~6	Send: ED 00 6B 00 Response: ED 00 6B 02 AA BB (The instance filter of eddystone-UID type is AA BB)
Read URL filter of eddystone-URL type	6D	0~29	Send: ED 00 6D 00 Response: ED 00 6D 11 77 77 77 2E 6D 6F 6B 6F 73 6D 61 72 74 2E 63 6F 6D (Convert to decimal. The URL is www.mokosmart.com)
Read TLM type of eddystone-TLM type	6F	1	Send: ED 00 6F 00 Response: ED 00 6F 01 00 (00 means Null; 01 means Version 0; 02 means Version 1)
Read filter rule of Unkonwn type	73	1	Send: ED 00 73 00 Response: ED 00 73 01 00 (00 means A; 01 means A&B; 02 means A B; 03 means A B C; 04 means A&B&C; 05 means (A&B) C)
Read filter content of Unkonwn type	74	0~99	Server Send: ED 00 74 00 Device Response: ED 00 74 11 04 01 01 02 06 04 FF 00 00 06 06 FF 01 03 E0 60 10 (Parse rule: For each filter condition. The 1st byte is length of this filter condition; The 2nd byte is data type; The 3rd byte is the start of position, the 4th byte is the end of position. The rest is filter content. So, 04 01 01 02 06 means the data type of condition A is 0x01, the data position of condition A is from byte 1 to byte 2, the filter content is 0x06. 04 FF 00 00 06 means the data type of condition B is 0xFF, the data position of condition A is from byte 0 to byte 0(byte 0 to byte 0 means retrieve all positions under this type), the filter content is 0x06. 06 FF 01 03 E0 60 10 means the data type of condition C is 0xFF, the data position of condition A is from byte 1 to byte 3, the filter content is 0xE0 60 10)

2.2.5 LoRaWAN Parameter Read

Command Description	CMD	LEN (Bytes)	Example
Read region of device	80	1	Send: ED 00 80 00 Response: ED 00 80 01 05

			(00 means AS923; 01 means AU915; 02 means CN470; 03 means CN779; 04 means EU443; 05 means EU868 ; 06 means KR920; 07 means IN865; 08 means US915; 09 means RU864)
Read LoRaWAN Mode	81	1	Send: ED 00 81 00 Response: ED 00 81 01 01 (01 means ABP mode ; 02 means OTAA mode)
Read DEVEUI	83	8	Send: ED 00 83 00 Response: ED 00 83 08 11 22 33 44 55 66 77 88 (The DEVEUI of device is 11 22 33 44 55 66 77 88)
Read APPEUI	84	8	Send: ED 00 84 00 Response: ED 00 84 08 11 22 33 44 55 66 77 88 (The APPEUI of device is 11 22 33 44 55 66 77 88)
Read APPKEY	85	16	Send: ED 00 85 00 Response: ED 00 85 10 2B 7E 15 16 28 AE D2 A6 AB F7 15 88 09 CF 4F 3C (The APPKEY of device is 2B 7E 15 16 28 AE D2 A6 AB F7 15 88 09 CF 4F 3C)
Read DEVADDR	86	4	Send: ED 00 86 00 Response: ED 00 86 03 11 22 33 44 (The DEVADDR of device is 11 22 33 44)
Read APPSKEY	87	16	Send: ED 00 87 00 Response: ED 00 87 10 2B 7E 15 16 28 AE D2 A6 AB F7 15 88 09 CF 4F 3C (The APPSKEY of device is 2B 7E 15 16 28 AE D2 A6 AB F7 15 88 09 CF 4F 3C)
Read NWKSKEY	88	16	Send: ED 00 88 00 Response: ED 00 88 10 2B 7E 15 16 28 AE D2 A6 AB F7 15 88 09 CF 4F 3C (The NKWSKEY of device is 2B 7E 15 16 28 AE D2 A6 AB F7 15 88 09 CF 4F 3C)
Read uplink message type	89	1	Send: ED 00 89 00 Response: ED 00 89 01 00 (00 means unconfirmed message; 01 means confirmed message)
Read CH	8A	2	Send: ED 00 8A 00 Response: ED 00 8A 02 08 0F (Convert to decimal. The CH of device is from 8 to 15)
Read DR for join	8B	1	Send: ED 00 8B 00 Response: ED 00 8B 01 00 (The DR for join is DRO)

Read uplink strategy	8C	4	Send: ED 00 8C 00 Response: ED 00 8C 04 01 02 00 05 (Convert to decimal. 01 means ADR ON , 02 means transmissions are 2 times , DR for payload is from DR0 to DR5)
Read switch state of duty-cycle	8D	1	Send: ED 00 8D 00 Response: ED 00 8D 01 00 (00 means OFF ; 01 mean ON)
Read Time Sync interval	8E	1	Send: ED 00 8E 00 Response: ED 00 8E 01 08 (Convert to decimal, the unit is H. The time sync interval is 8H)
Read network check interval	8F	1	Send: ED 00 8F 00 Response: ED 00 8F 01 08 (Convert to decimal, the unit is H. The network check interval is 8H)
Read Nb_trans	90	1	Send: ED 00 90 00 Response: ED 00 90 01 04 (Convert to decimal. The Nb_trans is 4 times)
Read ADR_ACK_LIMIT	91	1	Send: ED 00 91 00 Response: ED 00 91 01 04 (Convert to decimal. The ADR_ACK_LIMIT is 4)
Read ADR_ACK_DELAY	92	1	Send: ED 00 92 00 Response: ED 00 92 01 04 (Convert to decimal. The ADR_ACK_DELAY is 4)

2.3 The Sample of Configure Device's Parameters

2.3.1 System Function Parameter Configuration

Command Description	CMD	LEN (Bytes)	Example
Turn off the device	02	0	Send: ED 01 02 00
Reboot the device	03	0	Send: ED 01 03 00
Configure switch state of off by power button	06	1	Send: ED 01 06 01 00 (00 means OFF ; 01 means ON)
Configure low power prompt percent	07	1	Send: ED 01 07 01 32 (Convert to decimal, the unit is %. The low power prompt percent is 50% . It can be set to 10% or 20% or 30% or 40% or 50% or 60%.)
Configure switch state of low power payload	08	1	Send: ED 01 08 01 00 (00 means OFF ; 01 means ON)
Configure ADV Name of Bluetooth broadcast	09	0~16	Send: ED 01 09 04 4D 6F 6B 6F (Convert to ASCII, the range is 0~16 characters. The ADV Name of Bluetooth broadcast is Moko)
Configure ADV interval of Bluetooth broadcast	0A	1	Send: ED 01 0A 01 32 (Convert to decimal, the unit is 100ms, it ranges from

			1~100. The ADV interval of Bluetooth broadcast is 5000ms)
Configure Bluetooth TX Power	0B	1	Send: ED 01 0B 01 03 (Convert to decimal, the unit is dBm. It is a signed number, It can be set to 40/-20/-16/-12/-8/-4/0/3/4. The Bluetooth TX Power is 3dBm .)
Configure Broadcast timeout	0C	1	Send: ED 01 0C 01 03 (Convert to decimal, the unit is mins, it ranges from 1~60. The Broadcast timeout is 3 mins)
Configure switch state of login password	0D	1	Send: ED 01 0D 01 00 (00 means no need password when login in; 01 means need password when login in)
Configure login password	0E	8	Send: ED 01 0E 08 4D 6F 6B 6F 34 33 32 31 (Convert to ASCII, it should be 8 characters. The login password is Moko4321)
Configure time zone	0F	1	Send: ED 01 0F 01 18 (It is a signed number, convert to decimal, the unit is 0.5, it ranges from UTC-24 ~28. The current time zone is UTC+ 12)
Configure 3-axis wakeup threshold	11	1	Send: ED 01 11 01 03 (Convert to decimal, it ranges from 1~20, the unit is 16mg. The wakeup threshold is 48mg)
Configure 3-axis wakeup duration	12	1	Send: ED 01 12 01 05 (Convert to decimal, it ranges from 1~10, the unit is 10ms. The wakeup duration is 50ms)
Configure motion threshold	13	1	Send: ED 01 13 01 0A (Convert to decimal, it ranges from 10~250, the unit is 2mg. The motion threshold is 20mg)
Configure motion duration	14	1	Send: ED 01 14 01 05 (Convert to decimal, it ranges from 1~50, the unit is 5ms. The motion duration is 25ms)
Configure trip end timeout	15	1	Send: ED 01 15 01 05 (Convert to decimal, it ranges from 3~180, the unit is 10s. The trip end timeout is 50s)
Enable the Bluetooth broadcast	16	0	Send: ED 01 16 00

2.3.2 Working mode Parameter Configuration

Command Description	CMD	LEN (Bytes)	Example
Configure switch state of shut down payload	20	1	Send: ED 01 20 01 00 (00 means OFF; 01 means ON)
Configure current working mode	21	1	Send: ED 01 21 01 00 (00 means standby mode ; 01 means timing mode; 02 means periodic mode; 04 means motion mode)

Configure heartbeat interval	22	2	Send: ED 01 22 02 00 32 (Convert to decimal, it ranges from 1~14400, the unit is min. The heartbeat interval is 50mins)
Configure report interval of periodic mode	23	2	Send: ED 01 23 02 32 (Convert to decimal, it ranges from 1~14400, the unit is min. The report interval of periodic mode is 50mins)
Configure position strategy of timing mode	24	1	Send: ED 01 24 01 02 (00 means BLE; 01 means GPS; 02 means BLE&GPS)
Configure report timing point of timing mode	25	0~10	Send: ED 01 25 02 01 03 (Convert to decimal, the unit is 15mins. 01 means 00:15; 02 means 00:30; 03 means 00:45; 04 means 01:00.....; The report timing point is 00:15 and 00:45 . Maximum 10 report timing points can be set)
Configure position strategy of timing mode	26	1	Send: ED 01 26 01 02 (00 means BLE; 01 means GPS; 02 means BLE&GPS)
Configure motion mode setting	27	1	Send: ED 01 27 01 19 (Convert to binary. Bit 0 refers fix on start; Bit 1 refers fix in trip; Bit 2 refers fix on end; Bit 3 refers notify event on start; Bit 4 refers notify event in trip; Bit 5 refers notify event on end. If the value is 0, it means off; if the value is 1, it means on)
Configure position strategy of fix on start	28	1	Send: ED 01 28 01 02 (00 means BLE; 01 means GPS; 02 means BLE&GPS)
Configure number of fix on start	29	1	Send: ED 01 29 01 05 (Convert to decimal, it ranges from 1~255. The number of fix on start is 5 times)
Configure position strategy of fix in trip	2A	1	Send: ED 01 2A 01 02 (00 means BLE; 01 means GPS; 02 means BLE&GPS)
Configure report interval of fix in trip	2B	4	Send: ED 01 2B 04 00 00 00 0A (Convert to decimal, it ranges from 10~86400, the unit is s. The report interval of fix in trip is 10s)
Configure position strategy of fix on end	2C	1	Send: ED 01 2C 01 02 (00 means BLE; 01 means GPS; 02 means BLE&GPS)
Configure number of fix on trip end	2D	1	Send: ED 01 2D 01 03 (Convert to decimal, it ranges from 1~255. The number of fix on trip end is 3 times)
Configure report interval on trip end	2E	2	Send: ED 01 2E 02 00 64 (Convert to decimal, it ranges from 10~300, the unit is s. The report interval on trip end is 100s)

2.3.3 Auxiliary mode Parameter Configuration

Command Description	CMD	LEN (Bytes)	Example
Request Position (Downlink for position)	01	00	Send: ED 01 01 00 The device will start positioning process and report location payload.
Configure positioning strategy of downlink for position	30	1	Send: ED 01 30 01 02 (00 means BLE; 01 means GPS; 02 means BLE&GPS)
Configure switch state of man down detection	31	1	Send: ED 01 31 01 00 (00 means OFF; 01 means ON)
Configure positioning strategy of man down detection	32	1	Send: ED 01 32 01 02 (00 means BLE; 01 means GPS; 02 means BLE&GPS)
Configure man down detection timeout	33	1	Send: ED 01 33 01 0A (Convert to decimal, it ranges from 1~120, the unit is min. The man down detection timeout is 10mins)
Configure report interval of man down state	34	2	Send: ED 01 34 02 00 64 (Convert to ASCII, it ranges from 10~600, the unit is s. The report interval of man down state is 100s)
Configure switch state of notify event on man down start	35	1	Send: ED 01 35 01 00 (00 means OFF; 01 means ON)
Configure switch state of notify event on man down end	36	1	Send: ED 01 36 01 00 (00 means OFF; 01 means ON)
Configure vibrate intensity	37	1	Send: ED 01 37 01 32 (Convert to decimal, the unit is %. The vibrate intensity is 50% . Low means 10%; Medium means 50%; High means 80%.)
Configure alarm type	38	1	Send: ED 01 38 01 00 (00 means off ; 01 means Alert alarm; 02 means SOS alarm)
Configure exit alarm type	39	1	Send: ED 01 39 01 05 (Convert to decimal, it ranges from 5~15, the unit is s. The exit alarm type is long press SOS button for 5s)
Configure switch state of SOS alarm start	3A	1	Send: ED 01 3A 01 00 (00 means OFF; 01 means ON)
Configure switch state of SOS alarm end	3B	1	Send: ED 01 3B 01 00 (00 means OFF; 01 means ON)
Configure positioning strategy of SOS alarm	3C	1	Send: ED 01 3C 01 02 (00 means BLE; 01 means GPS; 02 means BLE&GPS)
Configure report interval of SOS alarm	3D	2	Send: ED 01 3D 02 00 64 (Convert to decimal, it ranges from 10~600, the unit is s. The report interval of SOS alarm is 100s)
Configure SOS alarm trigger mode	3E	1	Send: ED 01 3E 01 05 (00 means double click; 01 means triple click; 02 means long press 1s; 03 means long press 2s; 04 means long press 3s; 05

			means long press 4s ; 06 means long press 5s)
Configure switch state of Alert alarm start	3F	1	Send: ED 01 3F 01 00 (00 means OFF; 01 means ON)
Configure switch state of Alert alarm start	40	1	Send: ED 01 40 01 00 (00 means OFF; 01 means ON)
Configure positioning strategy of Alert alarm	41	1	Send: ED 01 41 01 02 (00 means BLE; 01 means GPS; 02 means BLE&GPS)
Configure Alert alarm trigger mode	42	1	Send: ED 01 42 01 05 (00 means single click; 01 means double click; 02 means long press 1s; 03 means long press 2s; 04 means long press 3s; 05 means long press 4s ; 06 means long press 5s)
Stop or trigger Alarm	43	1	Send: ED 01 43 01 01 (00 means Stop alarm; 01 means Trigger alarm)

2.3.4 Positioning Parameter Configuration

Command Description	CMD	LEN (Bytes)	Example
Configure GPS positioning timeout	50	2	Send: ED 01 50 02 00 64 (Convert to decimal, it ranges from 60~600, the unit is s. The GPS positioning timeout is 100s)
Configure PDOP	51	1	Send: ED 01 51 01 64 (Convert to decimal, it ranges from 25~100, the unit is 0.1. The PDOP is 10)
Configure Bluetooth positioning timeout	52	1	Send: ED 01 52 01 04 (Convert to decimal, it ranges from 1~10, the unit is s. The Bluetooth positioning timeout is 4s)
Configure number of MAC in Bluetooth fix	53	1	Send: ED 01 53 01 03 (Convert to decimal it ranges from 1~5. The number of MAC in Bluetooth fix is 3)
Configure RSSI filter	54	1	Send: ED 01 54 01 C0 (Convert to decimal and minus 256, the unit is dBm, it ranges from -127~0. The RSSI filter is -64 dBm)
Configure filter relationship	55	1	Send: ED 01 55 01 00 (00 means NO ; 01 means MAC; 02 means ADV Name; 03 means Raw Data; 04 means ADV Name&Raw Data; 05 means MAC&ADV Name&Raw Data; 06 means ADV Name Raw Data)
Configure switch state of precise match MAC	56	1	Send: ED 01 56 01 00 Response: ED 00 56 01 00 (00 means OFF; 01 means ON)
Configure switch state of reverse filter MAC	57	1	Send: ED 01 57 01 00 (00 means positive filter ; 01 means reverse filter)

Configure MAC filter rule	58	0~70	Send: ED 01 58 07 06 11 22 33 44 55 66 (06 means the length of mac filter, the mac filter content is 11 22 33 44 55 66 It can set 10 sets at most.)
Configure switch state of precise match ADV Name	59	1	Send: ED 01 59 01 00 (00 means OFF; 01 means ON)
Configure switch state of reverse filter ADV Name	5A	1	Send: ED 01 5A 01 00 (00 means positive filter; 01 means reverse filter)
Configure switch state of raw data filter	5C	9	Send: ED 01 5C 09 00 00 00 00 00 00 00 01 (00 means OFF; 01 means ON; Byte 0 of DATA refers to switch state of unknown type; Byte 1 of DATA refers to switch state of iBeacon type; Byte 2 of DATA refers to switch state of eddystone-UID type; Byte 3 of DATA refers to switch state of eddystone-URL type; Byte 4 of DATA refers to switch state of eddystone-TLM type; Byte 5 of DATA refers to switch state of BeaconX Pro-ACC type; Byte 6 of DATA refers to switch state of BeaconX Pro-T&H type; Byte 7 of DATA refers to switch state of MKiBeacon type; Byte 8 of DATA refers to switch state of MKiBeacon&ACC type)
Configure major filter of iBeacon type	5E	5	Send: ED 01 5E 05 00 00 00 00 64 (The 1st byte of Command DATA is the filter flag, 00 means off, 01 means Positive filter. The rest content of Command DATA is the filter content, convert to decimal. The Major filter of iBeacon type is from 0 (00 00) to 100 (00 0A))
Configure minor filter of iBeacon type	5F	5	Send: ED 01 5F 05 00 00 00 00 64 (The 1st byte of Command DATA is the filter flag, 00 means off, 01 means Positive filter. The rest content of Command DATA is the filter content, convert to decimal. The Minor filter of iBeacon type is from 0 (00 00) to 100 (00 0A))
Configure UUID filter of iBeacon type	60	0~16	Send: ED 01 60 02 AA BB (It ranges from 0~16 characters. The UUID filter of iBeacon type is AA BB)
Configure major filter of MKiBeacon type	62	5	Send: ED 01 62 05 00 00 00 00 64 (The 1st byte of Command DATA is the filter flag, 00 means off, 01 means Positive filter. The rest content of Command DATA is the filter content, convert to decimal. The Major filter of MKiBeacon type is from 0 (00 00) to 100 (00 0A))

Configure minor filter of MKiBeacon type	63	5	Send: ED 01 63 05 00 00 00 00 64 (The 1st byte of Command DATA is the filter flag, 00 means off, 01 means Positive filter. The rest content of Command DATA is the filter content, convert to decimal. The Minor filter of MKiBeacon type is from 0 (00 00) to 100 (00 0A))
Configure UUID filter of MKiBeacon type	64	0~16	Send: ED 01 64 02 AA BB Response: ED 00 64 02 AA BB (It ranges from 0~16 characters. The UUID filter of MKiBeacon type is AA BB)
Configure major filter of MKiBeacon&ACC type	66	5	Send: ED 01 66 05 00 00 00 00 64 (The 1st byte of Command DATA is the filter flag, 00 means off, 01 means Positive filter. The rest content of Command DATA is the filter content, convert to decimal. The Major filter of MKiBeacon&ACC type is from 0 (00 00) to 100 (00 0A))
Configure minor filter of MKiBeacon&ACC type	67	5	Send: ED 01 67 05 00 00 00 00 64 (The 1st byte of Command DATA is the filter flag, 00 means off, 01 means Positive filter. The rest content of Command DATA is the filter content, convert to decimal. The Minor filter of MKiBeacon&ACC type is from 0 (00 00) to 100 (00 0A))
Configure UUID filter of MKiBeacon&ACC type	68	0~16	Send: ED 01 68 02 AA BB (It ranges from 0~16 characters. The UUID filter of MKiBeacon&ACC type is AA BB)
Configure namespace filter of eddystone-UID type	6A	0~10	Send: ED 01 6A 02 AA BB (It ranges from 0~10 characters. The namespace filter of eddystone-UID type is AA BB)
Configure instance filter of eddystone-UID type	6B	0~6	Send: ED 01 6B 02 AA BB (It ranges from 0~6 characters. The instance filter of eddystone-UID type is AA BB)
Configure URL filter of eddystone-URL type	6D	0~29	Send: ED 01 6D 11 77 77 77 2E 6D 6F 6B 6F 73 6D 61 72 74 2E 63 6F 6D (It ranges from 0~29 characters. Convert to decimal. The URL is www.mokosmart.com)
Configure TLM type of eddystone-TLM type	6F	1	Send: ED 01 6F 01 00 (00 means Null; 01 means Version 0; 02 means Version 1)
Configure filter rule of Unkonwn type	73	1	Send: ED 01 73 01 00 (00 means A; 01 means A&B; 02 means A B; 03 means A B C; 04 means A&B&C; 05 means (A&B) C)
Configure filter content of Unkonwn type	74	0~99	Server Send: ED 01 74 11 04 01 01 02 06 04 FF 00 00 06 06 FF 01 03 E0 60 10 (Parse rule: For each filter condition.

			<p>The 1st byte is length of this filter condition; The 2nd byte is data type; The 3rd byte is the start of position, the 4th byte is the end of position. The rest is filter content.</p> <p>So, 04 01 01 02 06 means the data type of condition A is 0x01, the data position of condition A is from byte 1 to byte 2, the filter content is 0x06. 04 FF 00 00 06 means the data type of condition B is 0xFF, the data position of condition A is from byte 0 to byte 0 (byte 0 to byte 0 means retrieve all positions under this type), the filter content is 0x06. 06 FF 01 03 E0 60 10 means the data type of condition C is 0xFF, the data position of condition A is from byte 1 to byte 3, the filter content is 0xE0 60 10)</p>
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2.3.5 LoRaWAN Parameter Configuration


Command Description	CMD	LEN (Bytes)	Example
Configure region of device	80	1	Send: ED 01 80 01 05 (00 means AS923; 01 means AU915; 02 means CN470; 03 means CN779; 04 means EU443; 05 means EU868 ; 06 means KR920; 07 means IN865; 08 means US915; 09 means RU864)
Configure LoRaWAN Mode	81	1	Send: ED 01 81 01 01 (01 means ABP mode ; 02 means OTAA mode)
Configure DEVEUI	83	8	Send: ED 01 83 08 11 22 33 44 55 66 77 88 (The DEVEUI of device is 11 22 33 44 55 66 77 88)
Configure APPEUI	84	8	Send: ED 01 84 08 11 22 33 44 55 66 77 88 (The APPEUI of device is 11 22 33 44 55 66 77 88)
Configure APPKEY	85	16	Send: ED 01 85 10 2B 7E 15 16 28 AE D2 A6 AB F7 15 88 09 CF 4F 3C (The APPKEY of device is 2B 7E 15 16 28 AE D2 A6 AB F7 15 88 09 CF 4F 3C)
Configure DEVADDR	86	4	Send: ED 01 86 03 11 22 33 44 (The DEVADDR of device is 11 22 33 44)
Configure APPSKEY	87	16	Send: ED 01 87 10 2B 7E 15 16 28 AE D2 A6 AB F7 15 88 09 CF 4F 3C (The APPSKEY of device is 2B 7E 15 16 28 AE D2 A6 AB F7 15 88 09 CF 4F 3C)

			88 09 CF 4F 3C)
Configure NWKSKY	88	16	Send: ED 01 88 10 2B 7E 15 16 28 AE D2 A6 AB F7 15 88 09 CF 4F 3C (The NKWSKEY of device is 2B 7E 15 16 28 AE D2 A6 AB F7 15 88 09 CF 4F 3C)
Configure uplink message type	89	1	Send: ED 01 89 01 00 (00 means unconfirmed message; 01 means confirmed message)
Configure CH	8A	2	Send: ED 01 8A 02 08 0F (Convert to decimal. The CH of device is from 8 to 15)
Configure DR for join	8B	1	Send: ED 01 8B 01 00 (The DR for join is DR0)
Configure uplink strategy	8C	4	Send: ED 01 8C 04 01 02 00 05 (Convert to decimal. 01 means ADR ON, 02 means transmissions are 2 times, DR for payload is from DR0 to DR5)
Configure switch state of duty-cycle	8D	1	Send: ED 01 8D 01 00 (00 means OFF; 01 mean ON)
Configure Time Sync interval	8E	1	Send: ED 01 8E 01 08 (Convert to decimal, it ranges from 0~255, the unit is H. The time sync interval is 8H)
Configure network check interval	8F	1	Send: ED 01 8F 01 08 (Convert to decimal, it ranges from 0~255, the unit is H. The network check interval is 8H)
Configure Nb_trans	90	1	Send: ED 01 90 01 04 (Convert to decimal, it ranges from 1~8. The Nb_trans is 4 times)
Configure ADR_ACK_LIMIT	91	1	Send: ED 01 91 01 04 (Convert to decimal, it ranges from 1~255. The ADR_ACK_LIMIT is 4)
Configure ADR_ACK_DELAY	92	1	Send: ED 01 92 01 04 (Convert to decimal, it ranges from 1~255. The ADR_ACK_DELAY is 4)

3 Revision History

Version	Description	Editor	Date
1.0	Initial version	Allen	2022-05-24
1.1	Modify chapters 2.3	Allen	2024-06-04

MOKO TECHNOLOGY LTD.

 4F,Buidling2, Guanghui Technology Park,
MinQing Rd, Longhua, Shenzhen, Guangdong, China

 Tel:86-755-23573370-829

 Support_lora@mokotechnology.com

 <https://www.mokosmart.com>

