iLensBLE protocol

1. Broadcast Service Data

Broadcast data case: 0x020102020A0009FF694C656E732D73770B09694C656E732D35383833

Part I:

02 01 02 Length: 02 (hexadecimal) = 2 (decimal).

Type: 01, indicates that the Flags Data: 02

Explanation: Flags:

0x02 indicates that the device is in General DiscoverableMode and does not support Bluetooth Classic (BR/EDR). Part II:

02 0A00 Length: 02

Type: 0A, which indicates the transmit power level (Tx PowerLevel) Data: 00

Explanation: TxPower Level: 0x00 indicates that the transmit power is 0dBm

Part III: 09 FF 69 4C 65 6E 73 2D 7377

Length: 09 (9 bytes)

Type: FF, which indicates Manufacturer SpecificData (Manufacturer Specific Data). ）： 69 4C 65 6E 73 2D 7377

Explanation: Convert data section to ASCII characters Result: iLens-sw is used for search filtering.

Part IV: 0B 09 69 4C 65 6E 73 2D 35 38 38 33

Length: 0B (11 bytes) Type: 09, indicating Complete LocalName (full local name) Data: 69 4C 65 6E 73 2D 35 38 38 33

Explanation: Partially converted data to ASCII characters: Result: iLens-5883 This is the full name of the device.

2. Device information service

Service uuid：0x180A

features	UUID	description
Serial Number String	0x2A25	SN number. (READ)

features	UUID	description
Firmware Revision	0x2A26	Firmware software version number (READ).
Hardware Revision	0x2A27	The hardware number (READ) of the product
Software Revision	0x2A28	Application software version number (READ).
Manufacturer Name String	0x2A29	Device manufacturer name (READ).

3. Device configuration services

Service uuid:58211C97-482A-2808-2D3E-228405F1E749

3.1 Set the Bluetooth name

features	UUID	data	description
Device Name	43446626-85f8-432a-871e-ac8c0a57004c	The name of the device	Set the device name

1. For compatibility and display effect, it is generally recommended that the name length should not exceed 20 characters to ensure complete display on various devices

2. Bluetooth device names use UTF-8 encoding and support multiple language characters, including Chinese, English, numbers and some symbols, try to avoid using invisible characters, special control characters or emojis, as they may not display correctly on some devices

3.2 Battery settings

features	UUID	description
Battery Level	33BD4A32-F763-0391-2820-55610F999AEF	Battery level 0~100 (READ).
Box Battery Level	25275D09-7C76-B90E-431C-6719DEAD1046	Battery level 0~100 (READ).
Battery Level Status	B189323F-4BAB-D09C-4E24- DCC5FE65BEF1	Definition of battery state status, including whether it is

		charging 0: Default 1: Charging (READ).

3.3 Current Time

Characteristic UUID:54AC7F82-EB87-AA4E-0154-A71D80471E6E (READ,WRITE)

year (2)	month (1)	day (1)	hour (1)	divide (1)	second (1)	dayofweek (1)	fraction256 (1)	reason (1)

reason	description
0x01 (Manual Time Update)	Manual time updates. This means that the time change was made manually by the user
0x02 (External Reference Time Update)	External reference time updates. Indicates that the change in time came from an external time reference source.
0x03 (Change of Time Zone)	Time zone changes. Indicates that the time zone in which the device is located has changed.
0x04 (Change of DST)	Daylight saving time changed. Indicates that the daylight saving time setting of the device has changed.

3.4 Brightness settings

features	UUID	data(n)	description
Brightness settings	462b6a99-3378-4364-9156-48aa972afd98	Brightness 0~100 Length 4OctetINT type needs to be turned to small end	SETTINGS, GET GLASSES BRIGHTNESS (READ, WRITE).

3.5 Sleep time setting

features	UUID	data(n)	description

Hibernation time setting	f1491672-dd25-4322-b3de-20747ae657c4	The unit second length of 2octet needs to be turned to the small end	Get the current sleep time (READ, WRITE) for setting glasses

3.6 Weather settings

features	UUID	data(n)	description
Set the weather in the current area	c255aa9b-6470-4dd4-8ee8- df4152f0cb87	See the table below	Set the current city weather (WRITE).

The total length of the data area (1)	City length (1)	Weather length (1)	Publication time length (1)	temperature (1)	Wind direction length (1)	Wind strength lengt h (1)	Humidity length (1)	Data area (n)
The total length of the data area n								

The data area includes the city weather announcement time, temperature, wind direction, wind intensity, and humidity data, all of which are in UTF-8 format, including the ending character 0

3.7 Universal Subscriptions

Characteristic UUID：c1329ce5-b463-31a5-8b78-bd220c1480cd Write

type	data	description
0x10	0x01	0x10 is to read the command 0x01 read the version and language of the resouce package

0x10	0x03	0x10 is a read instruction 0x03 read whether the translation is displayed only in the target language
0x10	0x04	0x10 is to read the instruction 0x04 read the traditional Bluetooth address of the glasses

Notify

type	data	description
0x01	page(1) action(1)	See the table below for details
0x10	type(1) length(1) value(length)	type: 0x01->version 0x02->language0x03-> Read Translation Yes or No Only the target language (0x01 on 0x00 off) 0x04->Traditional Bluetooth addresses

page id:

page	description
0x01	navigation
0x02	Look up tables
0x03	Translation
0x04	lyrics

action id:

action	description
0x01	Click
0x04	Press and hold
0x05	Slide forward

0x06	Slip back

4. Custom Services

Service UUID：4b329cf2-3816-498c-8453-ee8798502a08

4.1 Information Tips

Characteristic UUID:0eb521eb-127d-4a9f-b4a2-37241250542d (WRITE)

type (1)	The total length of the data (2)	Type length (1)	Title length (1)	Length of time (1)	Message length (2)	Data area (n)
See Notes	Data length n					

The types are categorized as follows:

WeChat: 0x02 QQ: 0x03 Phone: 0x04 SMS: 0x05 Test: 0x06
Speech Resolution Writeback x07 Phone Hang Up
0x08Telephone answering 0x09

IOS switch message reminds 0x40 0x01 (on) 0x02 (off).

The data area contains the following contents: 1: Type: App name format is: GBK format contains the closing character 0 2: The title format is:The GBK format contains the ending character 03: Time:

The ASCAII code in the format 20210422T175301 contains a ending character 0; It means 17:53:01 on April 22, 2021.4:info:

The format is: GBK format contains a terminator 0

4.2 Navigation Tips

Characteristic UUID:0d240db6-0e0c-43fe-a250-8244b3989faa (WRITE)

The length of the data (1)	ACTION (1)	The length of the first line (1)	The length of the second line (1)	The length of the third line (1)	data (n)
Data length n	See Notes				

There are currently 4 lines of information for navigation

information, the first line of the example is as follows: 1km into xxx road

The current speed of the second line: xxx

The remaining mileage in the third row: xxx, the data in the three rows are in GBK format, including the ending character 0

Time remaining in the fourth row: The remaining time of xxx is added temporarily, and the length needs to be obtained by subtracting the length of the other three rows from the total length in the field

The corresponding image map of ACTION is as follows: R.drawable.amap_navi_lbs_sou2, //0x02 R.drawable.amap_navilbs_sou3, //0x03R.drawable.amap_navilbs_sou4,//0x04R.drawable.amap_navilbs_sou5,//0x05R.drawable.amap_navilbs_sou6,//0x06R.drawable.amap_navilbs_sou7,//0x07R.drawable.amap_navilbs_sou8,//0x08R.drawable.amap_navilbs_sou9,//0x09R.drawable.amap_navilbs_sou10,//0x0aR.drawable.amap_navibs_sou11,//0x0bR.drawable.amap_navilbs_sou12,//0x0cR.drawable.amap_navilbs_sou13,//0x0dR.drawable.amap_navilbs_sou14,//0x0eR.drawable.amap_navilbs_sou15,//0x0fR.drawable.amap_navilbs_sou16,//0x10R.drawable.amapnavilbs_sou17,//0x11R.drawable.amap_navilbs_sou18,//0x12R.drawable.amap_navilbs_sou7,//0x13R.drawable.amapnavilbssou20//0x14 navigation starts//0x15

At the end of navigation 0x16 navigation road book 0x17 deviate from the current road 0x19 0X18 navigation

4.3 Exercise data

features	UUID	data(n)	description
Send motion data	c259c1bd-18d3-c348-b88d-5447aea1b615	See the table below	Send motion data (WRITE) to the glasses

	id(1)	data	description
UI sorting	0x00	data(20)	An index is followed by a type, and the type is the same as the id of the following item, for a total of 10

			ids0x00-0x09 combined into a data glasses end, and the top digits are displayed according to the needs
Record the status	0x01	UINT32	0: Recording starts 1: Recording pauses 2: Recording ends
Heat dissipation	0x02	UINT32	Unit: kcal
Exercise time	0x03	UINT32	Unit: seconds
Total time	0x04	UINT32	Unit: seconds
Pause time	0x05	UINT32	Unit: seconds
Movement distance	0x06	UINT32	Unit: meters
velocity	0x07	UINT32	Unit: km/h
Average movement speed	0x08	UINT32	Unit: km/h
Average speed	0x09	UINT32	Unit: km/h
Maximum speed	0x0A	UINT32	Unit: km/h
Real-time heart rate	0x0B	UINT32	Unit: times/minute
Average	0x0C	UINT32	Unit: times/minute

heart rate			
Maximum heart rate	0x0D	UINT32	Unit: times/minute
Current cadence	0x0E	UINT32	Unit: times/minute

	id(1)	data	description
Maximum cadence	0x0F	UINT32	Unit: times/minute
Average cadence	0x10	UINT32	Unit: times/minute
Current power rate	0x11	UINT32	Unit: watts
Maximum power rate	0x12	UINT32	Unit: watts
Average power rate	0x13	UINT32	Unit: watts
Current orientation	0x14	UINT8	0-3 Southeast, Northwest 4-7 Northeast, Southeast, Southwest, Northwest
The curre	0x15	data(n)	The UTF-8 format contains the ending character 0

nt road name			

4.4 File Transfer

Characteristic UUID:8562cfa2-ce05-f27b-b745-0395a22dd9a3

Notify OTA of file information:

id(1)	size(4)	md5(32)	
0x01	The size of the upgrade package, in bytes	Upgrade package MD5	

OTA File Package Transfer:

id(1)	total(2)	index(2)	data length(2)	data(n)	crc16(2)
0x02	Total number of packages	The current package index starts at 0	The current packet data length n	Packet data	CRC16 verification (all data before CRC).

OTA Notify:

	id(1)	data
The upgrade was successful	0x01	N/A
The upgrade failed	0x02	N/A
Data packet loss	0x03	Packet loss index 2-byte little-endian order

4.5 Audio Transmission

Characteristic UUID:14a45127-f4e6-4cc5-a429-ca2bf56def84

Notify:

Notification of audio file information

id(1)	size(4)	md5(32)
0x11	The size of the audio packet, in bytes	Audio package MD5

Audio files are transferred in packages

id(1)	total(2)	index(2)	data(n)
0x12	The total number of indexes	Index of the current package	Packet data

Write:

id(1)	remark
0x01	Start recording
0x02	End recording

4.6 Picture Transfer

Characteristic UUID:8562cfa2-ce05-f27b-b745-0395a22dd9a3

Write:

Notification of image file information

id(1)	size(4)	md5(32)
0x21	The size of the image package, in bytes	Audio package MD5

Picture files are transferred in packages

id(1)	total(2)	index(2)	data(n)
0x22	The total number of indexes	Index of the current package	Packet data

Control Command:

id(1)	Remarks).
cmd type	Control the display and removal of images
0x23	Clear the picture

4.7 Lyrics Tips

Characteristic UUID:44a6e10d-1b43-5eb2-bf9c-2577ba2c1a86

Write: Notifies that song playback is enabled

id(1)	Song title length (1).	Singer length (1).	Total time of the song (2).	data(n)
0x01	The length of the song title is 1 byte	The length of the singer's name is 1 byte	The total time of the song is in seconds	

Notification that playback is over

id(1)
0x02

Lyrics transmission

id(1)	Current progress (2).	The length of the first line (1).	The length of the second line (1).	The length of the third line (1).	Lyrics (n).
0x03	The current progress is in seconds	The length of the first line of lyrics	The length of the second line of lyrics	The length of the third line of lyrics	lyrics

4.8AI Chat

Characteristic: 71C4264B-5FEF-9FE1-CF6A-19739BFD9828

id(1)	data	description
0x31	N/A	The AI Chat Session is enabled

0x32	N/A	The AI chat session is closed
0x33	See the table below for chat data	Chat data
0x34	N/A	The data reply is incorrect
0x35	N/A	Turn on recording
0x36	N/A	Turn off recording

chat data

id(1)	length(2)	data	description
0x01	String data length	String data	userinput data
0x02	String data length	String data	AIresponse data

MIC voice usage process on the iLens side:

1. Use the APP to connect the glasses through BLE, and obtain the BT Bluetooth address, BLE address and BT of the glasses through the BLE protocol interfaceBluetooth addresses are independent of each other.

2. If you are receiving audio through the MIC of glasses, you need to use the BT Bluetooth address obtained to initiate a socket based on Bluetooth spp protocol on the APP side when you need to recordConnections

3. You can choose to start recording by APP or glasses, and the audio data on the glasses side will be transmitted to the mobile phone through the established SPP connection

4. At the end of the recording, the end of the speech will be judged through the voice model of the App, and the voice input will be notified to the user to turn off.