

Product Name	GAOTek BLE 4.2 Bluetooth Beacon with Push Button
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1. Product Introduction

VDB03 is an asset-label Bluetooth beacon with a function to prevent disassembly. Its broadcast protocol conforms to Bluetooth BLE broadcast iBeacon (Apple) protocol. It is usually installed in a suitable location. It periodically broadcasts to its surroundings so that other Bluetooth devices such as Bluetooth gateways can scan its broadcast content and calculate the location information. It is usually not connected by other BLE host devices but can be connected through mobile apps and modify its broadcast parameters and other contents.

Skylab Beacon is a mobile phone APP developed by the SKYLAB R&D team for configuring VDB03 parameters. When you connect VDB03 with this APP, you can modify its broadcast frequency, power, UUID, Major, Minor, device name, and other parameters. Still, the modification of broadcast frequency will be invalid after the button is pressed and lifted, or the device is powered on again. These parameters will be broadcast when VDB03 is in a broadcast state.



1 VDB03 Product Picture





2 VDB03 Product Picture

1.1 VDB03 Internal Modules

The VDB03 supports an anti-disassembly button, which can upload an alarm message when the VDB03 is removed. (Ensure the installation surface is flat and press the anti-disassembly button during normal installation.)

The VDB03 is powered by a button lithium metal battery that can be removed and replaced but cannot be recharged.

1.2 VDB03 Features

- Low Power Consumption
- prevent the disassembly.
- Flexible application
- Easy to deploy.
- Advertise Range up to 70 Meters.
- RoHS, FCC, CE RoHS, FCC, CE compliance



1.3 VDB03 Application

- ♦ Asset Label
- Indoor positioning
- Information push
- ♦ Identification
- ♦ WeChat shake

2. Hardware Parameters

Product Parameter						
Dimension(L×W×H)	37.3*23.4*5.1mm					
Battery	CR2032					
Operating Temperature	-30°C~60°C					

Bluetooth Parameters						
Wireless Standards	®4.2					
Frequency Range	2400MHz2483.5MHz					
Data Rates	1Mbps(Bluetooth ® 4.2)					
Modulation Technique	PWM					
Wireless Security	AES HW Encryption					
Transmit Power	-25, -19, -13, -8, -3, 0, +2dBm					
Sensitivity	-94dBm at 1Mbps BLE					
Work Mode	iBeacon					



	Battery life								
TX Power	Adv. Distance	Adv. interval	Status	Battery Life(Month)					
		9000ms	Button Down	39.4					
+2dBm	70m	2000ms	Button up	23.3					
		9000ms	Button Down	43.7					
+0dBm	50m	2000ms	Button up	23.9					

Note: The power consumption data is for reference only, and the battery self-discharge factor is not considered. When the calculated life is greater than the battery life (5 years), the battery life shall be the criterion. The above calculation uses 220mAh as the power reference by default.

3. Install Battery

By default, the VDB03 comes with a button lithium metal battery. If you need to replace the battery, follow these instructions.

(1) Use a flat-head screwdriver or tweezers to insert into the circle below, and then pry open the back shell;





(2) Then take out the product, remove the old battery, and place the new battery according to the position of the old battery, and the product can work normally;



Note: Please be careful to distinguish between positive and negative poles.

4 Watchband size

Unit: mm





5. Software Instructions

5.1 Scan Bluetooth beacons.

Open the APP. If the mobile phone prompts you to turn on Bluetooth, please allow it. After entering the APP interface, drag RSSI (received signal strength indicator) to the appropriate position, and then click "Start scan", the mobile phone will start to scan the surrounding Bluetooth beacons.





5.2 Connect Bluetooth 4.2 Beacon

Click the Beacon you want to connect, and enter the password within 30 seconds, to obtain operating privileges. (Factory Password:1234).

5.3 Configuration introduction



Introductions:

MAC: Chip MAC address(non-modifiable)

Device Name: The name of the Bluetooth 4.2 Beacon that is selected.

UUID Value: ISO/IEC11578:1996 128 (16)/128-bit identifier according to ISO/IEC11578:1996 standard (32 hexadecimal digits)
Major Value: 16 (0-65535)/ set 16-bit identifier (0-65535)
Minor Value: 16 (0-65535)/ set 16-bit identifier (0-65535)
Transmitting Power: Transmit power
Measured Power: 1 Signal strength at 1 meter (Beacon transmission power is 0dBm)
Broadcast interval: Beacon advertise interval

Company ID: The ID number is used as a distinction

Battery: Beacon battery Capacity(non-modifiable)

After the information is configured, the configuration will take effect after the Bluetooth connection is disconnected.



5.4 Modify Bluetooth 4.2 Beacon Name

Click the "Device Name", and the following UI will be opened. Then enter a length of less than 20bit English characters as the Beacon device name in the following "Enter a Name" box. Then click "confirm to modify". After the modification is successful, "Modification succeeded" will be displayed at the bottom of the interface.

5.5 Modify UUID

Click the "UUID", and the following UI will be opened. Then enter a 32-byte string of sixteen as the UUID of Beacon in the following "Enter a value" box. Then click "confirm to modify". After the modification is successful, "Modification succeeded" will be displayed at the bottom of the interface.

5.6 Modify Major, Minor

Click the "Major", and the following UI will be opened. Then set a value between 0~65535 as the Major value of the device in the following "Enter a value" box. Then click "confirm to modify". Minor is similar, click Minor to enter modify. After the modification is successful, "Modification succeeded" will be displayed at the bottom of the interface.

Modify Minor

Just like you did above to modify Major, click Minor to enter the change.



5.7 Modify Transmitting Power



Another APP, nRF Connect, is used to modify the transmitting power.

1. Open nRF Connect and scan Bluetooth beacons around after the drop-down screen is refreshed.

2. To find the target beacon conveniently, click "No Filter" and enter VDB03 in the first column.

	STOP SCANNING	≡ Devic	es STOP SCANNIN	ig 🚦
SCANNER BOND	ED ADVERTISER	SCANNER	BONDED ADVERTISER	
VDB03	- ×	VDB03	-	×
CONT BONDED	CONNECT :	Q VDB03		: ×
		a Ox Filter b	y raw advertising data	: ×
		🐨 RSSI: —	-1	00 dBm
		🚖 Only favorit	es	



3. Click "CONNECT" on the right to enter the interface in the left picture below, and then click "Nordic UART Service" in the bottom column.

	DIS								
BONDED ADV	ERTISER	VDB E6:65	03 270:9F:E4:DC	×					
CONNECTED NOT BONDED	CLIEN	т	SERVER	:					
Generic Access UUID: 0x1800 PRIMARY SERVICE									
Generic Attribute UUID: 0x1801 PRIMARY SERVICE									
Device Information UUID: 0x180A PRIMARY SERVICE									
Unknown Service UUID: 0000ff00-0000 PRIMARY SERVICE	-1000-800	0-008	05f9b34fb						
Nordic UART Service UUID: 6e400001-b5a3-f393-e0a9-e50e24dcca9e PRIMARY SERVICE									

4. Click the three arrow symbols pointing down to the right of "TX Characteristic" to connect;

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Devices DISCONNECT BONDED ADVERTISER VDB03 E644977019FE44.DC CONNECTED NOT BONDED OUT: UNITOUT PRIMARY SERVICE Generals Attribute	
BONDED ADVERTISER VDB03 E6-6977019FE4-DC × CONNECTED NOT BONDED CLIENT SERVER I OUD: UNIQUO PRIMARY SERVICE SERVER I	
CONNECTED CLIENT SERVER	
PRIMARY SERVICE	
PRIMARY SERVICE	
Conoris Attributo	
Generic Attribute	
UUID: 0x1801	
PRIMARY SERVICE	
Device Information	
UUID: 0x180A	
PRIMARY SERVICE	
Unknown Service	
UUID: 0000ff00-0000-1000-8000-00805f9b34fb	
PRIMARY SERVICE	
Nordic UART Service	
UUID: 6e400001-b5a3-f393-e0a9-e50e24dcca9e	
PRIMARY SERVICE	
RX Characteristic	
RX Characteristic ↑ UUID: 6e400002-b5a3-f393-e0a9-e50e24dcca9e	
RX Characteristic 100000 UUID: 6e400002-b5a3-f393-e0a9-e50e24dcca9e Properties: WRITE, WRITE NO RESPONSE	
RX Characteristic UUID: 6e400002-b5a3-f393-e0a9-e50e24dcca9e Properties: WRITE, WRITE NO RESPONSE TX Characteristic	
RX Characteristic UUID: 6e400002-b5a3-f393-e0a9-e50e24dcca9e Properties: WRITE, WRITE NO RESPONSE TX Characteristic UUID:	
RX Characteristic 1 UUID: 6e400002-b5a3-f393-e0a9-e50e24dcca9e Properties: WRITE, WRITE NO RESPONSE TX Characteristic 11 UUID: 6e400003-b5a3-f393-e0a9-e50e24dcca9e Properties: 0003-b5a3-f393-e0a9-e50e24dcca9e	
RX Characteristic UUID: 6e400002-b5a3-f393-e0a9-e50e24dcca9e Properties: WRITE, WRITE NO RESPONSE TX Characteristic UUID: 6e400003-b5a3-f393-e0a9-e50e24dcca9e Properties: NOTIFY Descriptor:	



5. Click the arrow symbol pointing upwards on the right of "RX Characteristic" and set it in the popun interface:

≡ Devic	es	DISCONNECT	1	= Devic	85	DISCONNEC
BONDED	ADVERTISER	VD803 66/69/70/9F/E4/DC	×	BONDED		/DB03 8.6970-99/64
CONNECTED		T SERVER	÷	CONNECTED NOT BONDED	CLIENT	SERVER
Seneric Attrit	bute			PRIMARY SERVI	CE 1775	
JUID: 0x1801 RIMARY SERV	ICE			UUID. 0x1801	Jute	
Device Inform	nation			Write v	alue NEW	LOAD
RIMARY SERV	ICE			4 Parsing	known characteristic	s is disabled
UUID: 0000ff00 PRIMARY SERV Nordic UART 9 UUID: 6e40000 PRIMARY SERV	0-0000-1000-800 ICE Service)1-b5a3-f393-e0a9 ICE	0-00805f9b34fb ~e50e24dcca9e		ADD VALU Save as	UINT 8 UINT 10	5
RX Characte UUID: 6e400002-b!	eristic 5a3-f393-e0a9-e5	0e24dcca9e	<u>+</u>)	Advanced	SINT 8	
Properties: W	WRITE, WRITE NO	RESPONSE		SAVE	SINT 16	,
TX Characte UUID: 6e400003-bl	eristic 5a3-f393-e0a9-e5	0e24dcca9e	密	TX Characte	ristic SINT 3	2
Descriptors: Client Chara	cteristic Configura	tion 4	+	Properties: N Descriptors:	OTIFY FLOAT	16
UUID: 0x290 Value: (0x) 01	2 1-00			Client Charac UUID: 0x2902 Value: (0x) 01	teristic Co FLOAT	32
					TEXT)
	Window by Mos	-			BEACO	N MAJOR/



6. After entering the following command, click "SEND" and then pull the interface to the right, you can see "Log in Succ "received.

≡	Devic	es		DISCONNE	ст :	≡	Dev	vices		DISCON	NECT
						BON	IDED	ADVER	RTISER	VDB03 E6:69:70:9	FE4:DC
	NNECTED		CLIEN	T SERVE	R 🚦	CONNE NOT BO		D	CLIEN	T SER	/ER
PRIN	MARY SERVIC	CE				17:32:32. 17:32:33.	996 (417 (Connected t Connection (interval: 7.5)	o E6:69:7 paramete ms, laten	0:9F:E4:D rs updatec cy: 0, time	C I out:
U P D	Write va	alue	NEV	V LOAD	ed.	17:32:33. 17:32:33.	721 9	5000ms) Services disc Connection linterval: 45. 5000ms)	covered paramete Oms, late	rs updated ency: 0, tim	l heout:
1	AT+AUT	H=1234	т	EXT		17:32:37.0	016 (Data written 00-1000-80 (0x) 01-00	to descr 00-0080	. 0000290 5f9b34fb,	2-00 value:
U		JE	B	YT y	×	17:32:37.(17:32:39.)	016 311 (Notification Connection (interval: 97. 6000ms)	s enableo paramete 5ms, late	d" sent rs updated ncy: 10, tin	neout:
NUP	Save as.				. [17:32:52.	669 [Data written 3-e0a9-e50e 41-54-2B-41- 4-0D-0A	to 6e40 24dcca9 -55-54-48	0002-b5a3 e, value: (0 8-3D-31-32	-f39)x) -33-3
L	Advanced				. E	17:32:52.	669	AT+AUTH=1 sent	234		
L	SAVE		CAI			17:32:52.	767 1	Notification 03-b5a3-f39 value: (0x) 4 25-63-63-01	received 3-e0a9-e C-6F-67-;	from 6e40 50e24dcc 20-69-6E-2	00 99e, 20-53-
	UID: e400003-b5 roperties: NO escriptors: lient Charac UID: 0x2902 alue: (0x) 01	ta3-f393-e DTIFY teristic Co	0a9-e50 nfigurati	ie24dcca9e	± ±	17:32:52.	76	'Log in Succ	\sum		
								-			-

Based in New York City & Toronto, GAO Tek Inc. is ranked as one of the top 10 global B2B technology suppliers. GAO ships overnight within the U.S. & Canada & provides top-notch support thanks to its 4 decades of experience.

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7. Return to the original interface, click the arrow symbol on the right of "RX Characteristic", input the following instructions, click "SEND", and then pull the interface to the right, you can see "[AT]Set OK" received, indicating that the transmitting power is modified successfully.

≡ De	vices	DI	SCONNECT			
BONDE	D ADVERTISE	R VD	B03 59.70.9FE4.DC	×		
CONNECTE NOT BOND	D CL	IENT	SERVER	:		
17-22-22 221	Sources discourse	d		00		
17:32:33.819	Connection param (interval: 45.0ms, 5000ms)	eters u latency:	pdated 0, timeout:	Ge		
17:32:37.016	Data written to de 00-1000-8000-00 (0x) 01-00	scr. 00 805f9b	002902-00 34fb, value:	PR		
17:32:37.016	"Notifications enat	oled" se	nt	De		
17:32:39.311	Connection parameters updated (interval: 97.5ms, latency: 10, timeout:					
17:32:52.669	Data written to 6e 3-e0a9-e50e24dc 41-54-2B-41-55-54 4-0D-0A	40000 ca9e, va 1-48-30	2-b5a3-f39 alue: (0x) 1-31-32-33-3	UL		
17:32:52.669	*AT+AUTH=1234 * sent			No		
17:32:52.767	Notification receiv 03-b5a3-f393-e0a value: (0x) 4C-6F- 75-63-63-0D-0A	ed from 9-e50e 67-20-6	1 6e4000 24dcca9e, 9-6E-20-53-	PR		
17:32:52.767	*Log in Succ * received					
17:33:33.521	Data written to 6e -e0a9-e50e24dcca 4-28-54-58-50-57	40000 19e, val 152-3D	2-b5a3-f393 ue: (0x) 41-5 -32-0D-0A			
17:33:33.521	*AT+TXPWR=2 * sent					
17:33:33.618	Notification receiv 03-b5a3-f393-e0a value: (0x) 58-41-5 4F-48-0D-0A	ed fron 9-e50e 54-5D-5	n 6e4000 24dcca9e, i3-65-74-20-			
17:33:33.618	*AT]Set OK * received					
INFO	B	8	< 11	-		

The power can be set to: -25dbm, -19dbm, -13dbm, -8dbm, -3dbm, 0dBm, 2dBm. The default is 0dBm. Click OK.

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5.8 Modify the reference signal strength

Click "Measured Power", and the following interface will appear, 1 meter away from the Beacon, and then set the Measured Power in the box of "Please input a value", an adjustable range of - 100dbm ~ -30dbm, default is -61dbm. Click OK. After the modification is successful, "Modification succeeded" will be displayed at the bottom of the interface.

Measured Power means: that when the signal intensity received by the receiving equipment is - 61dbm, it can be considered that the distance between the equipment and the Beacon is about 1m.

5.9 Modify Advertise Interval

Click "Broadcast Interval", and the following interface is displayed. In the "Please Enter a value" box, set the broadcast interval. The default value is 2000ms. Click OK. After the modification is successful, "Modification succeeded" will be displayed at the bottom of the interface.

5.10 Modify Company ID

Click "Company ID" and the following interface appears. Fill in a 4-digit hexadecimal number in the "Please enter a value" box as the Company ID. Click OK. After the modification is successful, "Modification succeeded" will be displayed at the bottom of the interface.

Modify Password

Click "Password", the following interface appears, and then enter 4 characters in the "Enter a Password" box as the connection Password, the default is 1234. Click OK. After the modification is successful, "Modification succeeded" will be displayed at the bottom of the interface.

Note: Please save your password in advance, once you change the new password, the original password will be invalid, you must use the new password to log in.

5.11 Download the APP

At present, the latest APP has not been put on the shelves, please contact the sales staff. The APP names are Skylab Beacon and nRF Connect.



Contact us: sales@gaotek.com