SGS01BTHome Manual





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Operation

Die SGS01BTHome has two operation modes: "Connection Mode" and "Measure Mode". On startup, if the device is not paired, it enters "Operation Mode" for 60 seconds, before switching to "Measure Mode". If the device is already paired, it starts up directly with "Measure Mode".

Connect and pair the device.

Mode Unpaired device:

Sends BLE ADVind advertisements with device name and

appearance. Paired device:

Sends BLE ADVdirect advertisements (no data).

Mode timeout 60 seconds. BLE connection timeout 4 minutes.

Measure Config. Device Mode 0 (default, ultra low power):

Mode Sends BLE ADVnoconn advertisements with sensor data in

BTHome format. Device is not connectable.

ADV interval 8 seconds. Config. Device Mode 1:

Sends BLE ADVind advertisements with sensor data in BTHome format and allows BLE connections "low duty".

ADV interval 3 seconds.

Button

Short Press Toogle between the operation modes.

Long Press (10 sec) Factory Reset (reset configuration. and pairing)

LED

The LED is connected to the MCU and cannot be controlled direct by the module firmware. The LED should flash in "Connection Mode".

Encryption

To encrypt the device after a factory reset:

- 1. Connect (and pair) the device to get a BLE encrypted device connection.
- 2. Write a 6 digit pin number to the BLE attribute "Pin Code".

Format: 4 bytes little endian (eg. 0x40,0xE2,0x01,0x00 for "123456").

3. Disconnect and reconnect/pair the device.

For authentication enter the 6 digits pin number.

An authenticated, encrypted and secured connection will be established.

(May need delete pairing/bonding info at your BLE master before).

4. The device will itself create and persist store a random CCM encryption key (16 bytes) for BTHome data.

You can read and modify the key, see BLE attribute "Encryption Key".

5. BTHome data will be send encrypted.

Sensor configuration

BLE Attribute	Values	
"Pin Code"	6 digit number used for authentication	
"Encryption Key"	16 bytes value for BTHome data encryption (0=none)	
"Power Level"	+10 to -5 dbm (signed byte)	
"Device Mode"	0x00 = ultra low power (no connect in measure mode)	
	0x01 = medium power (connect in measure mode)	
	see "Operation"	
"Factory Reset"	0x02 = soft restart	
	0x03 = factory reset	
	(Will be executed after disconnect)	

Estimated battery lifetime

Current alive 3V 20mA (todo? check/measure average)

Current deep sleep 3V 19uA

Critical Bat. Voltage 2,6V (2x 1,3V low duty)

Bat. Capacity: 1000 mAh

Dev.Mode 0: no conn <4 ms / 8 sec (sleep/alive)

Dev.Mode 1: no conn 4,5 ms / 3 sec (sleep/alive)

Dev.Mode 2: conn 5 ms / 1 sec (sleep/alive)

Lifetime (calculated)

Dev.Mode 0: no conn	34800 hrs	4 years
Dev.Mode 1: no conn	20400 hrs	2,3 years
Dev.Mode 1: conn	8500 hrs	1 year

Remark: Values have to be checked.

BLE GATT attribute list

Service 1800 GAP

Device Name 2a00 Appearance 2a01 Peri.Conn.Param. 2a04

Service 1801 GATT

Service Changed 2a05

Service 180A Device Information

Serial Number 2a25 Firmware Revision 2a26 Hardware Revision 2a27 Software Revision 2a28 Manufacturer 2a29

Service 180F Battery Service

Battery Level 2a19

 Service
 DE8A5AAC-A99B-C315-0C80-60D4CBB51225

 Pin Code
 0ffb7104-860c-49ae-8989-1f946d5f6c03

 Encryption Key
 eb0fb41b-af4b-4724-a6f9-974f55aba81a

Power Level 2a07

Device Mode 9546a87d-d32e-4573-81e1-d597c5e1da74
BTHome Data d52246df-98ac-4d21-be1b-70d5f66a5ddb
Factory Reset b0a7e40f-2b87-49db-801c-eb3686a24bdb

Service 00010203-0405-0607-0809-0a0b0c0d1912 TELink OTA

OTA Data 00010203-0405-0607-0809-0a0b0c0d2b12

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