

Bluetooth Low Energy Decibel Meter Datasheet

V1.1

Model	Description
JW1407DMV20	Measure environment sound volume, calculate decibel value, transmit via bluetooth low energy. Alert if exceed preset range. Strong shell fixed by 4 screws. About 4 months battery life depending on working parameters (Measure interval 60s, measure window 1s, TX power 0 db, Advertise interval 1s), White/Black shell color, includes 1pc CR2477 coin battery, could pass CE & RoHS & FCC-ID certification.

The Bluetooth LE Decibel Meter JW1407DMV20 is a low energy Bluetooth® 5.0 digital broadcasting device, it measure environment sound volume, calculate decibel value. Transmit to bluetooth gateway or Android / iOS devices. It could be used for house, office, factory, school, library, etc.

FEATURES

- Open data protocol
- About 4 months battery lifetime within default working parameters.
 - Support changing working parameters.

CERTIFICATIONS (pending)

- RoHS
- CE
- FCC-ID



SPECIFICATION

Compatibility

- Supported iOS 7.0+ and Android 4.3+ system;
- Compatible with all Bluetooth® 4.0+ devices;

Replaceable battery and Battery Level

- Replaceable coin battery;
- Easy to get the real-time battery level notification;

Soft Reboot

- Supported;

OTA and J-Link

- Upgrade via Over-The-Air not supported;
- Reserved J-Link port on the board for programming;

Configurable Parameters

- Advertise interval, Measure interval, Measure window, TX power, Decibel calculator parameters.

Transmission Power Levels

- Support 8 levels: -20, -16, -12, -8, -4, 0, 4dBm.

Measuring ability:

- Range:45~90db.
- Resolution:1db.

Security

- Need password while configure parameters(empty password by default)
- AES HW encryption

Installation method

- Key chain
- Adhesive tape
- Screw

Connection Mode

- Advertising, connectable;
- Connected, support configure working parameters. Can NOT be scanned by other devices when it is connected.

Decibel Specification

Items	Conditions	Value	Unit
Accuracy tolerance	Typical		dB
	Max		dB
Repeatability	Low		dB
	Mid		dB
	High		dB
Resolution	Typical	1	dB
Hysteresis	@25°C		dB
Specified range	Measure range	45-90	dB
Response time	$\tau_{63\%}$		Seconds
Long-term drift	Typical		dB/Year

ACTIVATE DEVICE

- Device activates once battery is installed.
- To reboot, you have to reinstall battery or connect and disconnect it.

WORKING PARAMETERS

Item	Description	Default value
Transmitting Power	Range: -20, -16, -12, -8, -4, 0, +4dBm. -20 is the most weak signal. +4 is the strongest signal.	0 dBm
Advertising Interval	Supported parameters: 50 ~ 10000 milliseconds.	1000 ms
Measuring Interval	Supported parameters: 1000 ~ 65535 milliseconds.	60000 ms
Measuring Window	Supported parameters: 1000 ~ 65535 milliseconds. (Should be less than 'Measuring Interval -100ms')	1000 ms

Decibel parameter Adjust voltage	It effects the sound measure results for 40~60db range. You will get bigger result if increase it. Range: -128~+127.	0 mV
Decibel parameter Log base	It effects the sound measure results for 60~100db range. You will get bigger result if decrease it. Range: 1.13~1.145.	1.141
Decibel parameter Adjust volume	It effects the sound measure results for 40~100db range. You will get bigger result if increase it. Range: 20-50.	31 dB

CONFIGURE WORKING PARAMETERS

1, Connect device by mobile app '[JoywayBeacon.apk](#)'.

(1) Input 'dm' in Name filter, Click 'SCAN' button to scan nearby BLE devices which name contains 'dm'. Click 'STOP' button and 'CONNECT' to open device details page. Default password is empty, so no need to input password, just click OK to connect.

(2) Click FWPID value to update firmware. Note: if it always says new firmware is available even if you already update it, please do not update again, because we do not upgrade version number if there is only a minor change in firmware, or current version is a alpha version.

2, Service UUID:

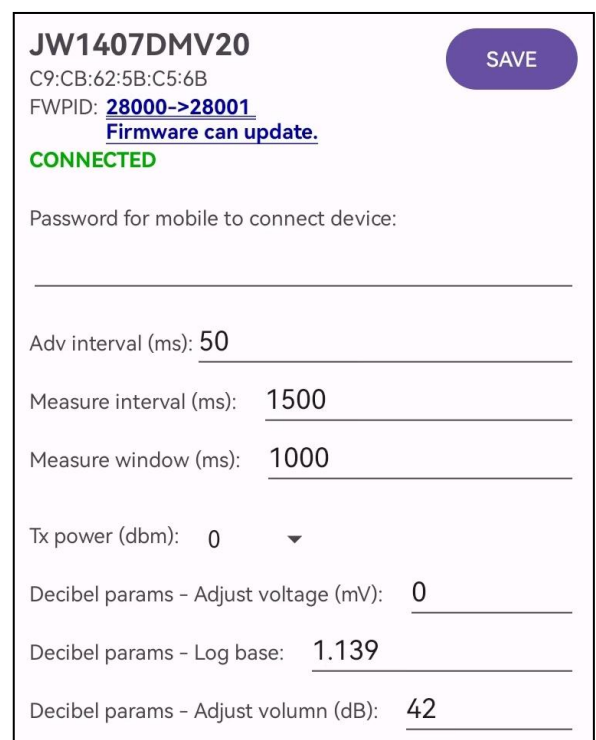
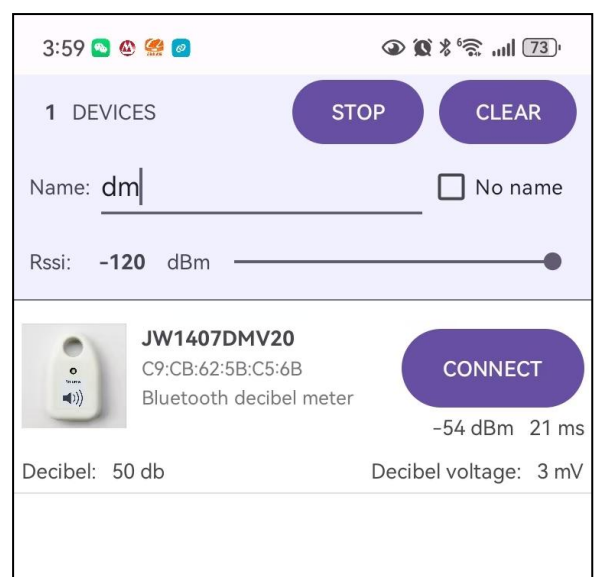
6e400001-b5a3-f393-e0a9-e50e24dcca9e. You can communicate with device via this service.

TX Characteristic UUID:

6e400003-b5a3-f393-e0a9-e50e24dcca9e, you should enable its NOTIFY feature, otherwise mobile app can not receive data from sensor device.

RX Characteristic UUID:

6e400002-b5a3-f393-e0a9-e50e24dcca9e, you can write data/command to sensor device via this characteristic.



DATA FORMAT

You only need to parse the last 8 bytes of advertisement for decibel value, battery level, and decibel voltage.

Bytes	Meaning	Value & Calculation
0x07	Following Data Length	7 (bytes)
0xFF	Data Type	0xFF means manufacture data.
0xAA, 0xBB	FWPID	$0xAA * 256 + 0xBB$
0x64	Battery Level	Decimal Value of 0x64 = 100%
0x32	Decibel	Decimal Value of 0x32 = 50 (dB)
0xCC, 0xDD	Decibel Voltage	$0xCC * 256 + 0xDD$ (mV)

ELECTRONIC PARAMETERS

Item	Value	Remarks
Case Color	Black/White	Customize color if ≥ 3000 pcs
Battery Model	1 x CR2477	Coin battery, 3.0V
Operation Voltage	2.2~3.3V	DC
Transmission Current	15mA	Test at 0dBm transmission power
Transmission Range	50 meters	Maximum
Antenna	50ohm	On board / PCB Antenna
Net Weight		With battery
Size	49.5x30x13.5 mm	

TECHNICAL SUPPORT

Item	File Name
Datasheet	JW1407DM_Datasheet_V1.0.pdf
SDK-Android	JoywayLib.Android.zip
SDK-iOS	JoywayLib.iOS.zip
App (Android)	JoywayBeacon.apk

PACKING INFORMATION

Details	Qty/PP Bag	Qty/Carton
Quantity	1 pc	200 pcs
Net Weight		
Gross Weight		
Size	60x90x13.8 mm	260x150x180 mm

DECLARATION

The contents of this datasheet are subject to change without prior notice for further improvement. Joyway team reserves the right to explain all the terms of this datasheet.

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