BROWAN

Door & Window Sensor

Reference Manual

TBDW100-915
TBDW100-868

Table of Contents

1. Description

The Door & Window sensor utilizes LoRaWAN connectivity to communicate the proximity or not of a magnet. The intended use is to place the sensor and magnet on separate elements of a door or window to determine if the door or window is open or closed.

The sensor is composed of two parts. The main body contains the active electronics to measure magnetic fields and transmit any changes to a LoRaWAN network. The second part is a permanent magnet of sufficient field strength to be detected by the Hall Effect sensor on the main body.

2. Specifications

2.1 Mechanical
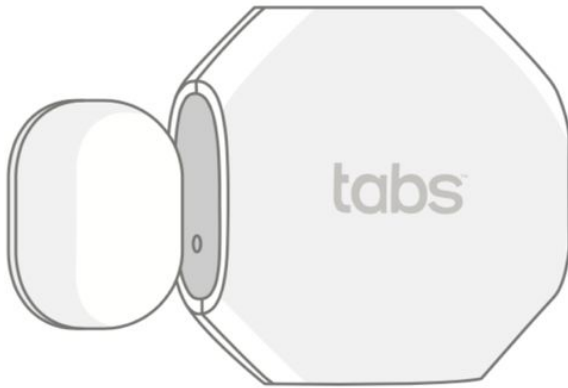
2.1.1 Sensor

Length x Width x Height	50mm x 20mm x 50mm
Weight	30g without battery 40g with battery

2.1.2 Magnet

Length x Width x Height	31mm x 20mm x 20mm
Weight	12g

2.2 Environmental

Temperature	0°C to +50°C
IP Rating	IP 50 equivalent

2.3 Radio

Frequency	• 863–870MHz for EU • 902–928MHz for North America
Tx Power	US: +19dBm EU: +17dBm
Rx Sensitivity	-135dBm
Antenna Gain	-2dBi Peak, -5dBi Avg

2.4 Certifications and Conformity

FCC ID: 2AMUGTBSP100

IC: 22980-TBSP100

CE

ROHS REACH

2.5 Power

Source	3.6V 1⁄2 AA Li-SOCl2 1200mAh battery
Maximum Voltage	3.6V
Minimum Voltage	3.1V
Current	135mA maximum/ 100uA minimum

2.6 User Interface

LEDs	One blue LED
Sensors	Hall Effect 14 Gauss trigger typical

2.7 Additional Features

PCB Temperature

Battery Monitoring

3. Operation

3.1 Transport Mode

Sensors are shipped with a plastic battery insulating pull tab that must be removed before the operation.

3.2 Default Operation

While in default operation the device will immediately send a message any time once there is a transition from Open to Close or vice-versa. Additionally, the device will send a message when it has been inactive for 6 hours.

4. Messages

LoRaWAN Packets for this device use port 100.

4.1 Status

4.1.1 Triggers

Packet Triggers: 360 minutes inactivity, Switch Open, Switch Close.

4.1.2 Payload

Port	100
Payload Length	8 bytes

Bytes	0	1	2	3	4	5	6	7
Field	Status	Battery	Temp (PCB)	Time		Count		

4.1.2 Payload (continue)

Status	**Sensors status**	
	Bit [0]	1 – open, 0 – closed
	Bits [7:1]	RFU
Battery	**Battery level**	
	Bits [3:0]	unsigned value v, range 1 – 14; battery voltage in V = (25 + v) ÷ 10.
	Bits [7:4]	RFU
Temp(PCB)	**Temperature as measured by on-board NTC**	
	Bits [6:0]	unsigned value т, range 0 – 127; temperature in °C = т - 32.
	Bit [7]	RFU measurement range: -32° to 95°C
Time	**Time elapsed since the last event-triggered**	
	Bits [15:0]	unsigned value in minutes, range 0 – 65,535. *Note: little-endian format.
Count	**Total count of event-triggered**	
	Bits [23:0]	unsigned value, range 0 – 16,777,215. *Note: little-endian format.
	Note: This value is not stored persistently on the device, and may reset whenever the device is power-cycled or rebooted.	

5. Battery

5.1 Replacement

Use ER14250 or equivalent.
Remove the upper cap and replace the battery.

5.2 Cautions

CAUTION: Disposal of a battery (or battery pack) into a fire or a hot oven, or mechanically crushing or cutting of a battery (or battery pack) can result in an EXPLOSION!

Leaving a battery (or battery pack) in an extremely high temperature surrounding environment that can result in an EXPLOSION or leakage of flammable liquid or gas.

A battery (or battery pack) subjected to extremely low air pressure may also result in an EXPLOSION or leakage of flammable liquid or gas.

Discard used batteries according to the manufacturer's instructions.

CAUTION: The unit is provided with a battery-powered circuit.

There is a danger of explosion if the battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions.

6. Label format information

6.1 Round label

58A0CB0000210000:
58A0CB00001YYYYY:
TBDW100915:XXXXXXX
MODEL:TBDW100

6.1.1 All QR code

URN:LWDP:58A0CB0000210000:58A0CBFFFFFEFFFF:TBMS100915:4D4483B1.

The total maximum resulting character sentence is 72 alphanumeric characters long.

6.1.2 JoinEUI

900MHz: 58A0CB0000210000. (US/AU/AS923/BR)
800MHz: 58A0CB0001500000. (EU/IN/RU)

Uses a hexadecimal representation resulting in 16 characters.

6.1.3 DevEUI

58A0CBFFFFFEFFFF.

Uses a hexadecimal representation resulting in 16 characters

6.1.4 Model number

TBDW100915

Sensor's model name

915 for US/AU/AS923/BR
868 for EU/IN/RU

Non-reserved characters(except ":" and space) with a maximum length of 20 characters.
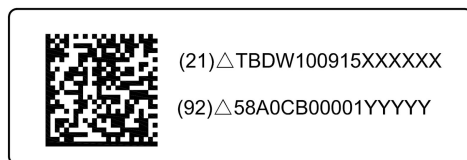
6.1.5 Factory check code

4D4483B1.

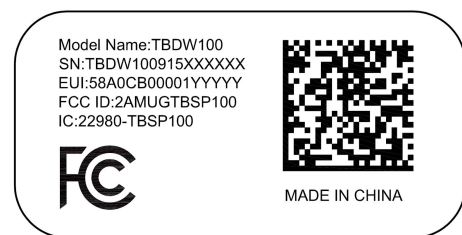Checksum of the factory production line.

6.1.6 Model Name

MODEL:TBDW100.

Fixed code, not including in QR code.

6.2 PE Bag & Back Label Label Barcode

<table>
<tr>
<td>
(21)△TBDW100915XXXXXX

(92)△58A0CB00001YYYYY
</td>
<td>
Model Name:TBDW100
SN:TBDW100915XXXXXX
EUI:58A0CB00001YYYYY
FCC ID:2AMUGTBSP100
IC:22980-TBSP100

FC

MADE IN CHINA
</td>
</tr>
<tr>
<td align="center">PE Bag Label</td>
<td align="center">Back Label</td>
</tr>
</table>

Definition of Back Label and PE Bag Barcode Label:

GS1 DataMatrix

- The GS1 Application Identifier (21) indicates that the GS1 Application Identifier data field contains a serial number.
- The GS1 Application Identifier (92) assigned to the company's internal information is DevEUI.

7. Important Product & Safety Instructions

For the most current and more detailed information about Tabs features and settings as well as safety instructions, please download the user manual for the products online at www.browan.com before the use of any Tabs products or services.

Certain sensors contain magnets. **Keep away from ALL Children!** Do not put in nose or mouth. Swallowed magnets can stick to intestines causing serious injury or death. Seek immediate medical attention if magnets are swallowed.

These products are not toys and contain small parts that can be dangerous to children under 3 years old. Do not allow children or pets to play with products.

Observe proper precautions when handling batteries. Batteries may leak or explode if improperly handled.

Observe the following precautions to avoid a sensor explosion or fire:

- Do not drop, disassemble, open, crush, bend, deform, puncture, shred, microwave, incinerate or paint the sensors, Hub or other hardware.
- Do not insert foreign objects into any opening on the sensors or Hub, such as the USB port.
- Do not use the hardware if it has been damaged—for example, if cracked, punctured or harmed by water. Disassembling or puncturing the battery (whether integrated or removable) can cause an explosion or fire.
- Do not dry the sensors or battery with an external heat source such as a microwave oven or hairdryer.

8. Warnings

- Do not place naked flame sources, such as lighted candles, on or near the equipment.
- The battery shall not be exposed to excessive heat such as sunshine, fire or the like.
- Do not dismantle, open or shred battery pack or cells.
- Do not expose batteries to heat or fire. Avoid storage in direct sunlight.
- Do not short-circuit the battery. Do not store batteries in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.
- Do not remove a battery from its original packaging until required for use.
- Do not subject batteries to mechanical shock.
- In the event of a battery leaking, do not allow the liquid to come in contact with the skin or eyes. If contact has been made, wash the affected area with copious amounts of water and seek medical advice.
- Do not use any charger other than that specifically provided for use with the equipment.
- Observe the plus (+) and minus (-) marks on the battery and equipment and ensure correct use.
- Do not use any which is not designed for use with the product.
- Do not mix cells of different manufacture, capacity, size or type within a device.
- Keep batteries out of the reach of children.
- Seek medical advice immediately if a battery has been swallowed.
- Always purchase the correct battery for the equipment.
- Keep batteries clean and dry.
- Wipe the battery terminals with a clean dry cloth if they become dirty.

9. Notices

- Avoid exposing your sensors or batteries to very cold or very hot temperatures. Low or high temperature conditions may temporarily shorten the battery life or cause the sensors to temporarily stop working.
- Take care in setting up the Hub Gateway and other hardware. Follow all installation instructions in the User Guide. Failure to do so may result in injury.
- Do not install hardware equipment while standing in water or with wet hands. Failure to do so can result in electric shock or death. Use caution when setting up all electronic equipment.
- When charging the sensors, do not handle the sensors with wet hands. Failure to observe this precaution could result in electric shock.

- PROP 65 WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm
- Cleaning Tabs Products: Use a clean dry cloth or wipe to clean Tabs products. Do not use detergent or abrasive materials to clean the Tabs products, as this may damage the sensors.

10. Cautions

CAUTION: Disposal of a battery (or battery pack) into a fire or a hot oven, or mechanically crushing or cutting of a battery (or battery pack) can result in an **EXPLOSION!**
Leaving a battery (or battery pack) in an extremely high temperature surrounding environment that can result in an **EXPLOSION** or leakage of flammable liquid or gas.
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11. Regulatory

CE FCC	Hereby, Browan Communications Inc. declares that the radio equipment for Tabs products is in compliance with Directive 2014/53/EU. This device complies with Part 15 of the FCC Rules and RSS Standards of Industry Canada. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. For the full FCC/IC Compliance Statements and EU declaration of conformity, visit www.browan.com/#/Contact
	This symbol means that according to local laws and regulations your product should be disposed of separately from household waste. When this product reaches its end of life, take it to a collection point designated by local authorities. Some collection points accept products for free. The separate collection and recycling of your product at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

Appendix. Configuration downlink Command

Port	204
Payload Length	3 bytes

Appx. 1 Payload

Bytes	0	1	2
Field	Cmd	Config	

Cmd	**Command** (1 byte)
	Bit [3:0] **0x00 – Set keep alive interval.** default : 21600 sec. (min: 15 sec)
Config	**Configuration** (1 or 2 bytes) See the table as follows:

Command	Command Description	Data Length
0x00(1byte)	Get Sensor Configuration **(Only for unconfirmed downlink)**	0 byte
0x00(1byte)	Set keep-alive value.	1 byte

Payload Content	**Command content** Ex: 00100E 00 100E => Keep alive interval : 0x0E10 -> 3600 (sec)

Appx. 2 Response Content

(Only for unconfirmed downlink)

Port	204
Payload Length	5 bytes
Payload Content	Response content Example: 00100E 8064 00 100E => Keep alive interval : 0x0E10 -> 3600 (sec) 8064 => Payload check byte: RFU