UnaSensors Device Documentation

Version	Date	Author	Description
1.0	18/09/26	Sandy TING	First Hardware documentation for training
1.1	19/03/25	Chloe JIANG	Update UnaSensors Device Data Reference

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1. Unasensors Device User Manual

1.1. Start Using UnaSensors

Step1. Reboot the device

Putting in 2 AAA batteries (**Alkaline** battery is recommended)

Step2. Start using our UnaSensors devices

After seeing the LED action of your device changing from blinking GREEN to fixed GREEN, meaning your UnaSensor device is ready to use, you can place them in the ideal location.

2. UnaSensors Devices Operation Reference

2.1. Sensor modes: Timer and Event

Every UnaSensor device has 2 modes: Timer and Event mode. For 2 different usages.

- **Event Mode**

Event mode means to get instant notification when an action* is happening and got detective by the device.

***UnaSensors actions**
Bell: button pressed
Sense: over temperature or humidity threshold
Protect: door opened or closed
Motion: human movement
Beacon: device movement

- **Timer Mode**

Timer mode means to get total action count or summarized value* in a certain period*.

***UnaSensors timer value**
Bell: total button pressed count (for short pressed and long pressed)
Sense: temperature/humidity value during the defined period of time
Protect: total door opened count
Motion: total human movement count
Beacon: total device movement count

*Certain period
Certain period is calculated by the defined # of reports per day, default as the maximum 139* (every 10m21s per message). This can be modified in the application or web platform.

***Maximum 139 reports per day**
The standard message is an uplink sent daily that includes various info regarding the sensor (battery, type, current configuration, etc.) and also requesting the downlink. This is why in the event mode setting, the default number of message is 139 instead of 140 as Sigfox's platinum subscription.

2.2. Device Behavior

2.2.1. Trigger downlink (update configuration)

If you have done some changes to your configuration, the configuration would not update instantly to your devices. Configuration would only be updated once the downlink is completed.

3 ways to trigger downlink:

Function	Action	LED behavior
Reboot device	Reinstall the batteries (AAA battery*2) in the device	LED will blink in **GREEN** → fixed **GREEN** for success, **RED** for failure
Button pressed	Pressed the button for 10s until LED show **RED** then release the button	LED will blink in RED → blinking **GREEN** → fixed **GREEN** for success, **RED** for failure
Daily auto trigger	24h after your last downlink triggered, devices would auto trigger downlink to check the device configuration.	LED will blink in **GREEN** → fixed **GREEN** for success, **RED** for failure

*According to Sigfox's platinum subscription, downlink can only be triggered maximum 4 times per day

2.2.2. Change Operation Mode

Different mode (timer and event) can be used in different scenarios, while we provide 2 ways to change mode:

Function	Action	LED behavior
Button pressed	1. Pressed the button for 10s until LED show **RED** then release the button 2. Do a second press while blink **RED**	LED will blink in **RED** → Second pressed fixed **GREEN** for change to event mode fixed **ORANGE** for change to timer mode
Daily auto trigger	1. Do your change on the app or platform 2. 24h after your last downlink triggered, devices would auto trigger downlink to check the device configuration.	LED will blink in **GREEN** → fixed **GREEN** for success, **RED** for failure

2.2.3. Send Event message

According to different sensors action you can see different device LED reaction.

Bell

Function	Action	LED behavior
Short pressed message sent	Instant click and release	Blink in **GREEN** then turn fixed **GREEN**
Cancel short pressed message	Second click when the LED is blinking **GREEN**	Stop blinking in **GREEN** then turn fixed **RED**
Long pressed message sent	Long press the button for 2s until turn **ORANGE** and release	Blink in **ORANGE** then turn fixed **ORANGE**
Cancel long pressed message	Second click when the LED is blinking **ORANGE**	Stop blinking in **ORANGE** then turn fixed **RED**

Sense

Function	Action	LED behavior
Unusual temp/humi trigger notification	When temp / humi out of the normal range (defined threshold)	Fixed **GREEN** for 1s
Manual receiving current temp/humi	Press button for 3s then release	Fixed **GREEN** for 1s

Protect

Function	Action	LED behavior
Open/Close action trigger notification	Open/ close the door	Fixed **GREEN** for 1s

Motion

Function	Action	LED behavior
Human movement trigger notification	Human movement within 120° and up to 10 meters in front of the device	Fixed **GREEN** for 1s

Beacon

Function	Action	LED behavior
Device movement trigger notification	The device will send the alert when beacon being moved.	Fixed **GREEN** for 1s

2.2.4. Send Timer message

According to different sensors you can see different device LED reaction.

Bell

Function	Action	LED behavior
Short pressed detect	Instant press and release detected	Flash **GREEN**
Long pressed detect	Long press the button for 2s until turn **ORANGE** and release detected	Flash **ORANGE**
Message sending	Auto message sending during time interval set	Fixed **GREEN** for 1s

Sense

Function	Action	LED behavior
Message sending	Auto send Humidity and Temperature data every time period	Fixed **GREEN** for 1s

Protect

Function	Action	LED behavior
Door open detection	Detect the door open action and add it to the count number	Flash **ORANGE**
Message sending	Auto message sending during time interval set	fixed **GREEN** for 1s

Motion

Function	Action	LED behavior
Human motion detection	Detect human motion and add it to the count number	Flash **ORANGE**
Message sending	Auto message sending during time interval set	fixed **GREEN** for 1s

Beacon

Function	Action	LED behavior
Device movement detection	Detect device movement and add it to the count number	Flash **ORANGE**
Message sending	Auto message sending during time interval set	fixed **GREEN** for 1s

3. UnaSensors Device Data Reference

3.1. UnaSensor Bell

- **Timer**

Field	Format	Description
device_id	string	Device unique ID
timestamp	number	Message sent time in timestamp format
_raw	object	Sigfox raw data
data	string	Sigfox payload
device_name	string	Device given name
fw_version	string	Firmware current version
hw_version	string	Hardware current version
long_count	string	Count of the long press in a certain of period
mode	string	Device current operation mode (1 for timer 2 for event)
short_count	string	Count of the short press in a certain period

Timer Example

```
{
  'mode': '1',
  'device_name': 'Water Dispenser test',
  'hw_version': '1.2',
  'long_count': '2',
  'data': '018b0b02',
  'device_id': '416A7B',
  '_raw': {
    'rssi': '-133.00',
    'data': '018b0b02',
    'lng': '122.0',
    'ack': 'false',
    'duplicate': 'false',
    'avgSnr': '25.99',
    'longPolling': 'false',
    'snr': '6.00',
    'station': '77EA',
    'seqNumber': '368',
    'time': '1553496100',
    'device': '416A7B',
    'lat': '25.0'
  },
  'short_count': '11',
```

```
    'fw_version': '0.3',
    'timestamp': 1553496100
}
```

- **Event**

Field	Format	Description
device_id	string	Device unique ID
timestamp	number	Message sent time in timestamp format
_raw	object	Sigfox raw data
data	string	Sigfox payload
device_name	string	Device given name
fw_version	string	Firmware current version
long_count	string	Long press message
short_count	string	Short press message
hw_version	string	Hardware current version
mode	string	Device current operation mode (1 for timer 2 for event)

Event Example

```
{
  'mode': '2',
  'device_name': 'Water Dispenser test',
  'hw_version': '1.2',
  'long_count': 0,
  'data': '020100',
  'device_id': '416A7B',
  '_raw': {
    'rssi': '-118.00',
    'data': '020100',
    'lng': '122.0',
    'ack': 'false',
    'duplicate': 'false',
    'avgSnr': '26.60',
    'longPolling': 'false',
    'snr': '19.37',
    'station': '7E6C',
    'seqNumber': '363',
    'time': '1553494635',
    'device': '416A7B',
    'lat': '25.0'
  },
  'low_battery': '1',
  'short_count': 1,
  'fw_version': '0.3',
  'timestamp': 1553494635
}
```

3.2. UnaSensor Sense

- **Timer / Event**

Field	Format	Description
device_id	string	Device unique ID
timestamp	number	Message sent time in timestamp format
_raw	object	Sigfox raw data
data	string	Sigfox payload
device_name	string	Device given name
fw_version	string	Firmware current version
hw_version	string	Hardware current version
humidity	string	Detected humidity data
mode	string	Device current operation mode (1 for timer 2 for event)
temperature	string	Detected temperature data
trigger	string	Whether event is triggered (ISNULL: Timer or Manually triggered) MAX1: over maximum temperature threshold MAX2: over maximum humidity threshold LOW1: lower maximum temperature threshold LOW2: lower maximum humidity threshold)

Timer Example


```
{
    "device_id ": "410E1B",
    "timestamp ": 1533722638,
    "_raw ": {
        "ack": "false",
        "avgSnr": "20.21",
        "data": "0117243130",
        "device": "410E1B",
        "duplicate": "false",
        "lat": "25.0",
        "lng": "122.0",
        "longPolling": "false",
        "rssi": "-128.00",
        "seqNumber": "38",
        "snr": "8.08",
        "station": "7E6C",
        "time": "1533722638"
    },
    "data ": "0117243130",
    "device_name ": "Sense v0.1",
    "fw_version ": 0.1,
```

```
    "humidity ": 49.48,
    "hw_version ": 2,
    "mode ": 1,
    "temperature ": 23.36,
    "trigger ": "____ISNULL____"
}
```


3.3. UnaSensor Protect

- **Timer**

Field	Format	Description
device_id	string	Device unique ID
timestamp	number	Message sent time in timestamp format
_raw	object	Sigfox raw data
data	string	Sigfox payload
device_name	string	Device given name
fw_version	string	Firmware current version
hw_version	string	Hardware current version
mode	string	Device current operation mode (1 for timer 2 for event)
count_close	string	Count of the close action detected in a certain period
count_open	string	Count of the open action detected in a certain period

Timer Example


```
{
    "device_id ": 410902,
    "timestamp ": 1533719766,
    "_raw ": {
        "ack": "false",
        "avgSnr": "23.72",
        "data": "01000b000a",
        "device": "410902",
        "duplicate": "false",
        "lat": "25.0",
        "lng": "122.0",
        "longPolling": "false",
        "rssi": "-117.00",
        "seqNumber": "19",
        "snr": "20.86",
        "station": "6D63",
        "time": "1533719766"
    },
    "data ": "01000b000a",
    "device_name ": "Protect v0.1",
```

```
    "fw_version ": 0.1,
    "hw_version ": 4,
    "mode ": 1,
    "count_close ": 10,
    "count_open ": 11,
}
```

- **Event**

Field	Format	Description
device_id	string	Device unique ID
timestamp	number	Message sent time in timestamp format
_raw	object	Sigfox raw data
data	string	Sigfox payload
device_name	string	Device given name
fw_version	string	Firmware current version
hw_version	string	Hardware current version
mode	string	Device current operation mode (1 for timer 2 for event)
state	string	Object current status: open or closed

Event Example

```
{
    "device_id ": 410902,
    "timestamp ": 1533719939,
    "_raw ": {
        "ack": "false",
        "avgSnr": "23.50",
        "data": "0201",
        "device": "410902",
        "duplicate": "false",
        "lat": "25.0",
        "lng": "122.0",
        "longPolling": "false",
        "rssi": "-132.00",
        "seqNumber": "20",
        "snr": "7.49",
        "station": "7B11",
        "time": "1533719939"
    },
    "data ": "0201",
    "device_name ": "Protect v0.1",
    "fw_version ": 0.1,
```

```
    "hw_version ": 4,
    "mode ": 2,
    "state ": "closed"
}
```


3.4. UnaSensor Motion

- **Timer**

Field	Format	Description
device_id	string	Device unique ID
timestamp	number	Message sent time in timestamp format
_raw	object	Sigfox raw data
data	string	Sigfox payload
device_name	string	Device given name
fw_version	string	Firmware current version
hw_version	string	Hardware current version
mode	string	Device current operation mode (1 for timer 2 for event)
state	string	Moved status
motion_count	string	Count of the motion detected in a certain period

Timer Example


```
{
    "device_id ": "41DAD4",
    "timestamp ": 1533205495,
    "_raw ": {
        "ack": "false",
        "avgSnr": "22.12",
        "data": "010505070705060506010 2",
        "device": "41DAD4",
        "duplicate": "false",
        "lat": "25.0",
        "lng": "122.0",
        "longPolling": "false",
        "rssi": "-125.00",
        "seqNumber": "3279",
        "snr": "11.23",
        "station": "6D63",
        "time": "1533205495"
    },
```

```
    "data ": "0105050707050605060102",
    "device_name ": "____ISNULL____",
    "fw_version ": 0.1,
    "hw_version ":  3.0,
    "mode ": 1,
    "motion_count ": 1285
}
```


- **Event**

Field	Format	Description
device_id	string	Device unique ID
timestamp	number	Message sent time in timestamp format
_raw	object	Sigfox raw data
data	string	Sigfox payload
device_name	string	Device given name
fw_version	string	Firmware current version
hw_version	string	Hardware current version
mode	string	Device current operation mode (1 for timer 2 for event)
state	string	Moved status

Event Example


```
{
    "device_id ": "41DAD4",
    "timestamp ": 1533205619,
    "_raw ": {
        "ack": "false",
        "avgSnr": "22.18",
        "data": "0201",
        "device": "41DAD4",
        "duplicate": "false",
        "lat": "25.0",
        "lng": "122.0",
        "longPolling": "false",
        "rssi": "-118.00",
        "seqNumber": "3282",
        "snr": "19.44",
        "station": "7B11",
        "time": "1533205619"
    },
```

```
    "data ": "0201",
    "device_name ": "____ISNULL____",
    "fw_version ": 0.1,
    "hw_version ":  3.0,
    "mode ": 2,
    "state ": "moved"
}
```


3.5. UnaSensor Beacon

- **Timer**

Field	Format	Description
device_id	string	Device unique ID
timestamp	number	Message sent time in timestamp format
_raw	object	Sigfox raw data
data	string	Sigfox payload
device_name	string	Device given name
fw_version	string	Firmware current version
hw_version	string	Hardware current version
mode	string	Device current operation mode (1 for timer 2 for event)
motion_count	string	Count of the motion detected in a certain period

Timer Example


```
{
    "device_id": "410F17",
    "timestamp": 1533707697,
    "_raw": {
        "ack": "false",
        "avgSnr": "17.82",
        "data": "01000000000000000000000",
        "device": "410F17",
        "duplicate": "false",
        "lat": "25.0",
        "lng": "122.0",
        "longPolling": "false",
        "rssi": "-132.00",
        "seqNumber": "3278",
        "snr": "6.00",
        "station": "7B11",
        "time": "1533707697"
    },
```

```
    "data": "01000000000000000000000",
    "device_name": "UnaBeacon",
    "fw_version": "0.1",
    "hw_version": "5",
    "mode": "1"
}
```


- **Event**

Field	Format	Description
device_id	string	Device unique ID
timestamp	number	Message sent time in timestamp format
_raw	object	Sigfox raw data
data	string	Sigfox payload
device_name	string	Device given name
fw_version	string	Firmware current version
hw_version	string	Hardware current version
mode	string	Device current operation mode (1 for timer 2 for event)
state	string	Object moved status

Event Example


```
{
    "device_id": "410F17",
    "timestamp": 1533707697,
    "_raw": {
        "ack": "false",
        "avgSnr": "17.82",
        "data": "01000000000000000000000",
        "device": "410F17",
        "duplicate": "false",
        "lat": "25.0",
        "lng": "122.0",
        "longPolling": "false",
        "rssi": "-132.00",
        "seqNumber": "3278",
        "snr": "6.00",
        "station": "7B11",
        "time": "1533707697"
    },
    "data": "01000000000000000000000",
```

```
    "device_name": "UnaBeacon",
    "fw_version": “0.1”,
    "hw_version": “5”,
    "mode": “2”,
    "state": “moved”
}
```