NDS03A - Outdoor NB-IoT Open/Close Door Sensor User Manual

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1. Introduction

1.1 What is NDS03A NB-IoT Open/Close Door Sensor

The Dragino NDS03A is an **Open/Close NB-IoT Door Sensor**. It detects door **open/close status** and **uplinks** to IoT server via NB-IoT network. NDS03A can connect tw status, open duration, open counts in the IoT Server.

The NDS03A will send periodically data **every 4 hours** as well as for each door open/close action. It also counts the door open times and calculates the last door open du for each open/close event, instead, NDS03A can count each open event and uplink periodically.

NDS03A has a **Datalog feature**, it will record the open/close event and the user can retrieve the history from NB-IoT.

NDS03A has the **open alarm feature**, user can set this feature so the device will send an alarm if the door has been open for a certain time.

NDS03A is designed for outdoor use. It has a weatherproof enclosure and industrial level battery to work in low to high temperatures.

NarrowBand-Internet of Things (NB-IoT) is a **standards-based low power wide area (LPWA) technology** developed to enable a wide range of new IoT devices and ser power consumption of user devices, system capacity, and spectrum efficiency, especially in deep coverage.

NDS03A supports different uplink methods including **TCP, MQTT, UDP, and CoAP** for different application requirements.

NDS03A is powered by **8500mAh Li-SOCl2 battery**, It is designed for long-term use of up to 5 years. (Actually Battery life depends on the use environment, update perio

To use NDS03A, user needs to check if there is NB-IoT coverage in the field and with the Nb-IoT bands that NDS03A supports. If local operator support it, user needs to g and install into NDS03A to get NB-IoT network connection.

1.2 Features

- NB-IoT Bands: B1/B3/B8/B5/B20/B28 @H-FDD
- Open/Close detect
- Open/Close statistics
- Monitor Battery Level
- connect two door sensors
- Datalog feature
- Uplink periodically
- Downlink to change configure
- Wall Mountable
- Outdoor Use
- Ultra-Low Power consumption
- AT Commands to change parameters
- Micro SIM card slot for NB-IoT SIM
- 8500mAh Battery for long-term use

1.3 Storage & Operation

Temperature -40°C to +85°C

1.4 Mechanical
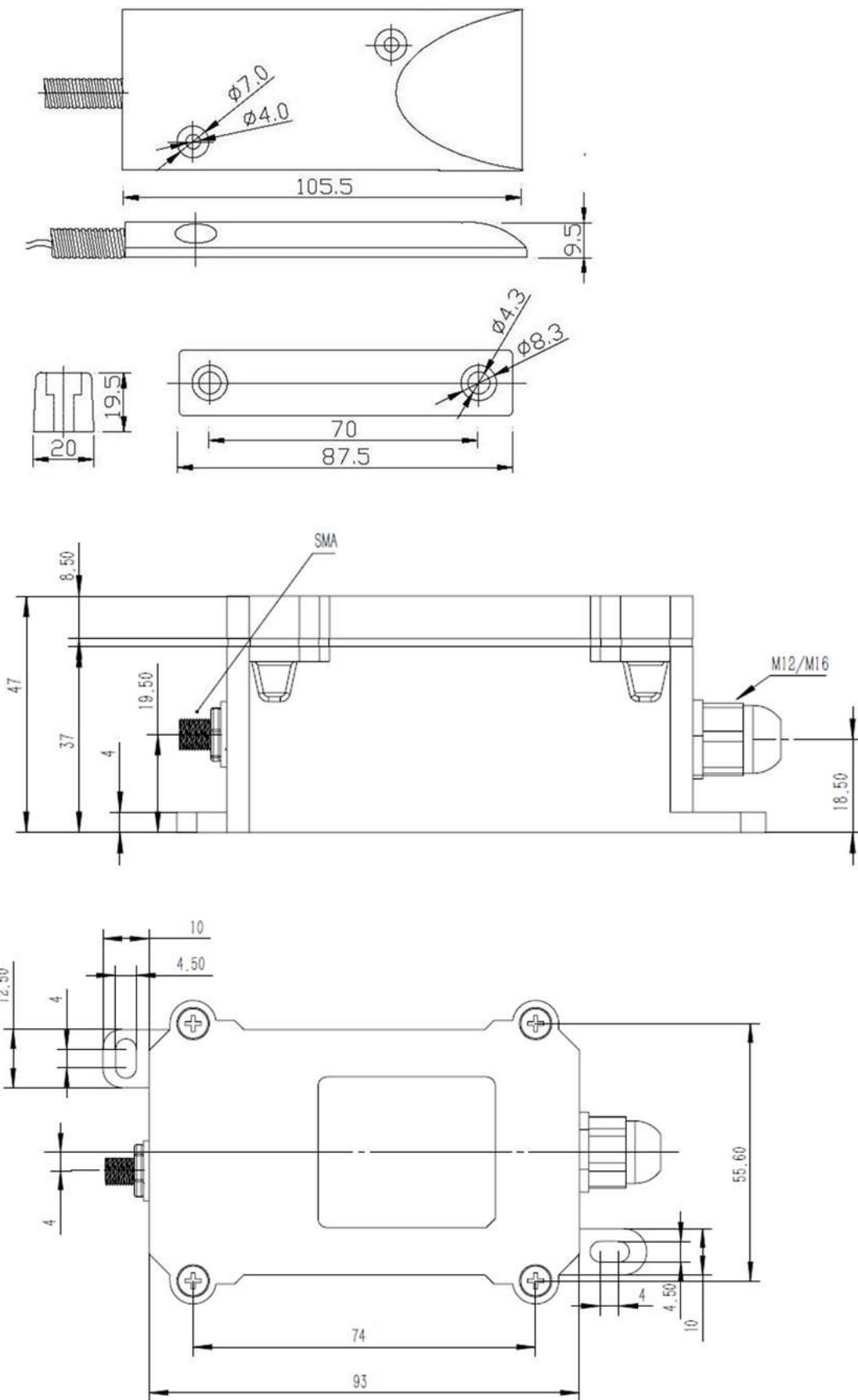
1.5 Applications
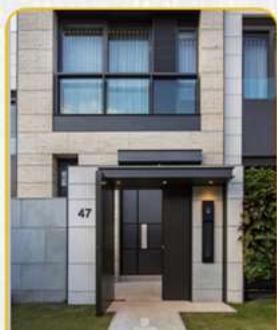
1.6 Specification

Common DC Characteristics:

- Supply Voltage: 2.1v ~ 3.6v
- Operating Temperature: -40 ~ 85°C

NB-IoT Spec:

- B1 @H-FDD: 2100MHz
- B3 @H-FDD: 1800MHz
- B8 @H-FDD: 900MHz
- B5 @H-FDD: 850MHz
- B20 @H-FDD: 800MHz
- B28 @H-FDD: 700MHz

1.7 Pin Definitions and Switch
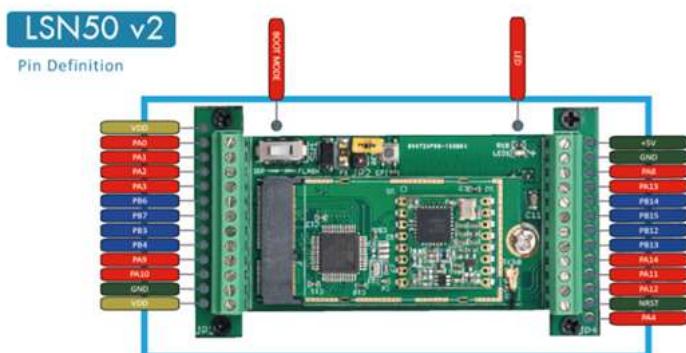
1.7.1 Pin Definition

The device is pre-configured to connect to a door sensor. The other pins are not used. If user wants to know more about other pins, please refer to the user manual of LSN at: https://www.dropbox.com/sh/djkxs7mr17y94mi/AABVlWbM9uzK9OA3mXyAT10Za?dl=0 (https://www.dropbox.com/sh/djkxs7mr17y94mi/AABVlWbM9uzK9OA3mXyAT

1.7.2 Jumper JP2(Power ON/OFF)

Power on Device when putting this jumper.

1.7.3 BOOT MODE / SW1

1) ISP: upgrade mode, device won't have any signal in this mode. but ready for upgrade firmware. LED won't work. The firmware won't run.

2) Flash: working mode, the device starts to work for NB-IoT connection and sends out console output for further debugging.

1.7.4 Reset Button

Press to reboot the device.

1.7.5 LED

The LED will blink when :

1. Boot the device in flash mode

2. Send an uplink packet

1.8 Magnet Distance

Wood Door: 10 ~ 30mm

Iron Door: 30 ~ 45mm

2. Use NDS03A to communicate with IoT Server

2.1 How it works

In this user case, the NDS03A is installed on the door edge to detect the open/close event and send the status to the NB-IoT server. The NB-IoT network will forward this
defined by NDS03A.

The diagram below shows the working flow in the default firmware of NDS03A:
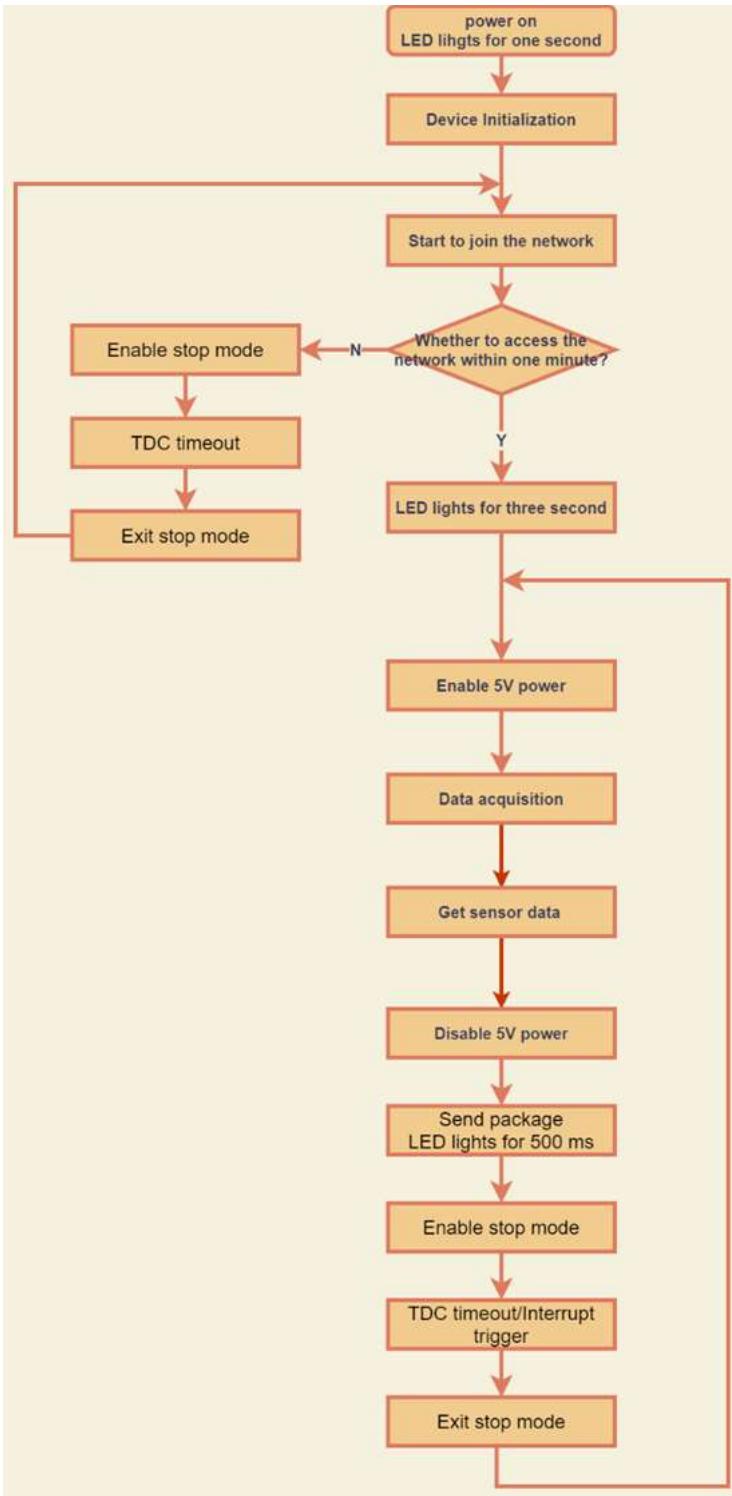
2.2 Configure NDS03A

2.2.1 Test Requirement

To use NDS03A in your city, make sure to meet below requirements:

- Your local operator has already distributed an NB-IoT Network.
- The local NB-IoT network used the band that NDS03A supports.
- Your operator is able to distribute the data received in their NB-IoT network to your IoT server.

Below figure shows our testing structure. Here we have NB-IoT network coverage by China Mobile, the band they use is B8. The NDS03A will use **CoAP(120.24.4.116:5(** **MQTT(120.24.4.116:1883)** or **TCP(120.24.4.116:5600)protocol** to send data to the test server.

2.2.2 Insert NB-IoT SIM card

Insert the NB-IoT Card get from your provider.

User needs to take out the NB-IoT module and insert the SIM card like below:

2.2.3 Connect USB – TTL to NDS03A and configure it

User need to configure NDS03A via serial port to set the **Server Address** / **Uplink Topic** to define where and how-to uplink packets. NDS03A support AT Commands, use connect to NDS03A and use AT Commands to configure it, as below.

Connection:

 USB TTL GND <----> GND

 USB TTL TXD <----> UART_RXD

 USB TTL RXD <----> UART_TXD

In the PC, use below serial tool settings:

- Baud: **9600**
- Data bits: **8**
- Stop bits: **1**
- Parity: **None**
- Flow Control: **None**

Make sure the switch is in FLASH position, then power on NDS03A by connecting the **Yellow Jumper**.

Put the Jumper to power on device
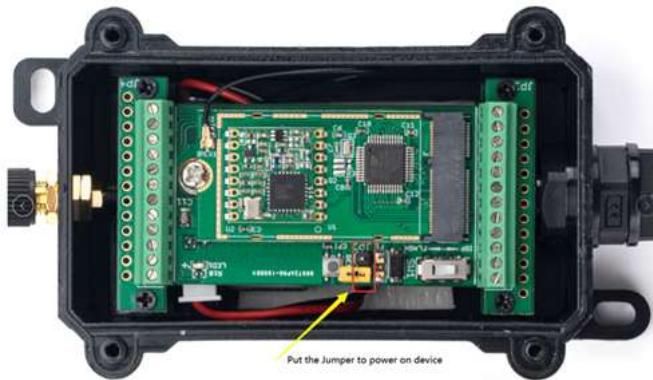
NDS03A will output system info once powered on as below, we can enter the **password: 12345678** to access AT Command input.

Note: the valid AT Commands can be found at: https://www.dropbox.com/sh/351dwor6joz8nwh/AADn1BQaAAxLF_QMyU8NkW47a?dl=0
(https://www.dropbox.com/sh/351dwor6joz8nwh/AADn1BQaAAxLF_QMyU8NkW47a?dl=0)

2.2.4 Use CoAP protocol to uplink data

Note: if you don't have a CoAP server, you can refer this link to set up a CoAP server: http://wiki.dragino.com/xwiki/bin/view/Main/Set%20up%20CoAP%20Serv
(http://wiki.dragino.com/xwiki/bin/view/Main/Set%20up%20CoAP%20Server/)

Use below commands in NDS03A:

- **AT+PRO=1**   // Set to use CoAP protocol to uplink

- **AT+SERVADDR=120.24.4.116,5683**   // Set CoAP server address and port

- **AT+URI=0,0,11,2,"mqtt"**   // Set CoAP resource path

For parameter description, please refer to AT command set

After configuring the server address and **reset NDS03A** (via AT+ATZ), NDS03A will start to uplink sensor values to the CoAP server.

2.2.5 Use UDP protocol to uplink data(Default protocol)

AT Commands:

- **AT+PRO=2**   // Set to use UDP protocol to uplink

- **AT+SERVADDR=120.24.4.116,5601**   // Set UDP server address and port

- **AT+CFM=1**   // If the server does not respond, this command is unnecessary

```
DRAGINO NDS03A NB-IoT Sensor
Image Version: v1.0.0
NB-IoT Stack : D-BC95-003
Protocol in Used: UDP
[6578]NBIOT has responded.
[7908]Echo mode turned off successfully.
[9853]Model information:BC95-GV.
[11190]The IMEI number is:867787050213317.
[12538]The IMSI number is:460080049309796.
Currently set frequency band:1,3,5,8,20,28
[16234]Set automatic network access successfully.
[17589]Signal Strength:26
[22623]PSM mode configured
[23955]DNS configuration is successful
[24998]No DNS resolution required
[26036]*****Upload start:0*****
[26071]remaining battery =3292 mv
[31631]Open UDP port successfully
[36674]Datagram is sent by RF
[37708]Send complete
[38732]*****End of upload*****
```

2.2.6 Use MQTT protocol to uplink data

AT Commands:

- **AT+PRO=3**   // Set to use MQTT protocol to uplink
- **AT+SERVADDR=120.24.4.116,1883**   // Set MQTT server address and port
- **AT+CLIENT=CLIENT**   // Set up the CLIENT of MQTT
- **AT+UNAME=UNAME**   // Set the username of MQTT
- **AT+PWD=PWD**   // Set the password of MQTT
- **AT+PUBTOPIC=NSE01_PUB**   // Set the sending topic of MQTT
- **AT+SUBTOPIC=NSE01_SUB**   // Set the subscription topic of MQTT


```
DRAGINO NDS03A NB-IoT Sensor
Image Version: v1.0.0
NB-IoT Stack : D-BC95-003
Protocol in Used: MQTT
[6579]NBIOT has responded.
[7909]Echo mode turned off successfully.
[9854]Model information:BC95-GV.
[11191]The IMEI number is:867787050213317.
[12539]The IMSI number is:460080049309796.
Currently set frequency band:1,3,5,8,20,28
[16235]Set automatic network access successfully.
[17590]Signal Strength:25
[22624]PSM mode configured
[23956]DNS configuration is successful
[24999]No DNS resolution required
[26037]*****Upload start:0*****
[26072]remaining battery =3314 mv
[30816]Opened the MQTT client network successfully
[34374]Successfully connected to the server
[38925]Upload data successfully
[42463]Subscribe to topic successfully
[47010]Close the port successfully
[48049]Send complete
[49073]*****End of upload*****
```
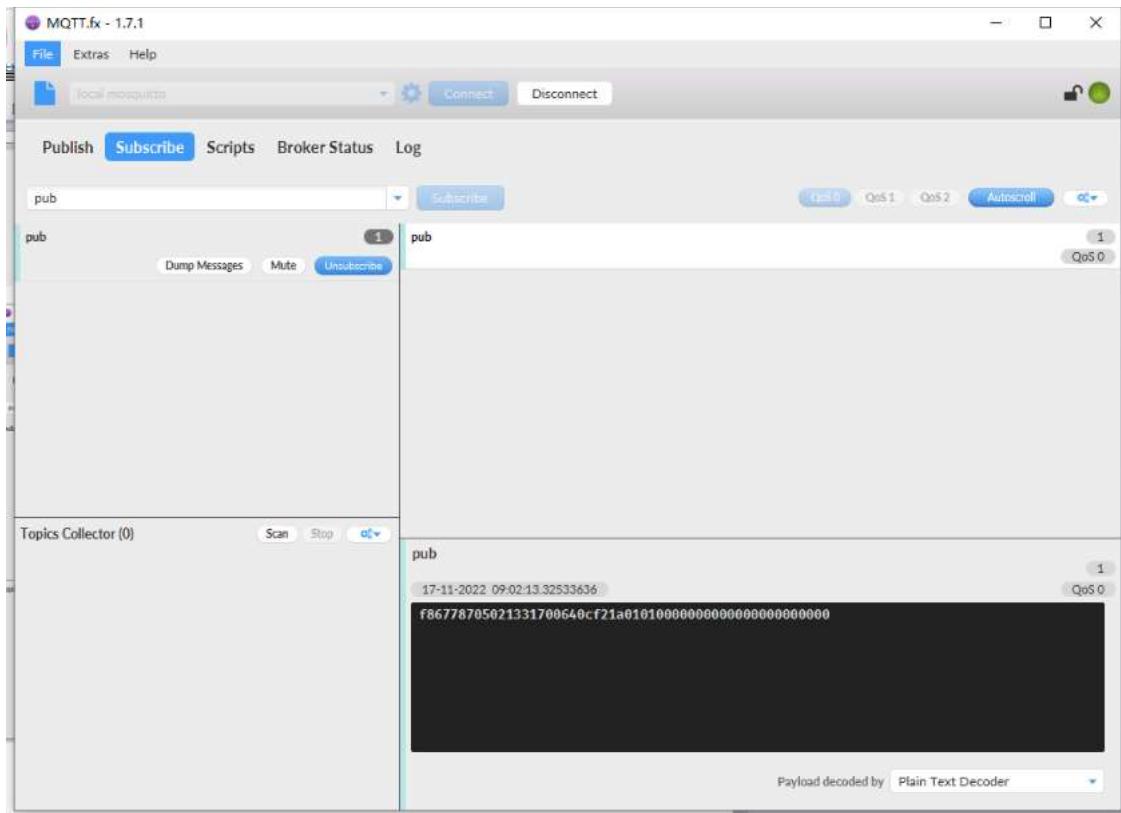
MQTT protocol has a much higher power consumption compare with UDP / CoAP protocol. Please check the power analyze document and adjust the uplink period to a su

2.2.7 Use TCP protocol to uplink data

AT Commands:

- **AT+PRO=4**   // Set to use TCP protocol to uplink

- **AT+SERVADDR=120.24.4.116,5600**   // Set TCP server address and port

```
DRAGINO NDS03A NB-IoT Sensor
Image Version: v1.0.0
NB-IoT Stack : D-BC95-003
Protocol in Used: TCP
[6578]NBIOT has responded.
[7908]Echo mode turned off successfully.
[9853]Model information:BC95-GV.
[11190]The IMEI number is:867787050213317.
[12538]The IMSI number is:460080049309796.
Currently set frequency band:1,3,5,8,20,28
[16234]Set automatic network access successfully.
[17589]Signal Strength:27
[22623]PSM mode configured
[23955]DNS configuration is successful
[24998]No DNS resolution required
[26036]*****Upload start:0*****
[26071]remaining battery =3316 mv
[27627]Open TCP port successfully
[29165]Connect to the server
[33201]Datagram has been confirmed to be received by the server
[34771]Close the port successfully
[35810]Send complete
[36834]*****End of upload*****
```


2.2.8 Change Update Interval

User can use below command to change the **uplink interval**.

- **AT+TDC=14400**   // Set Update Interval to 14400s (4 hours)

NOTE:

1. By default, the device will send an uplink message every 4 hour.

2.3 Uplink Payload

The uplink payload includes 26 bytes in total by default.

Each time the device uploads a data package. The user can use the AT+NOUD command to upload the recorded data.Up to 32 sets of recorded data can be uploaded.

When AT+TTRCHANNEL=1:

Size(bytes)	8	2	2	1	1	1	1	3	3
Value	Device ID	Ver	BAT	Signal Strength	MOD	Door Status	Alarm Status	door open num(pb14)	last open time(pb14)

4	1	3	3	4	1-32 group
Time stamp	Door Status(pb14)	door open num(pb14)	last open time(pb14)	Time stamp	...

When AT+TTRCHANNEL=2:

Size(bytes)	8	2	2	1	1	1	1	3	3
Value	Device ID	Ver	BAT	Signal Strength	MOD	Door Status(pb14)	Alarm Status(pb14)	door open num(pb14)	last open time(pb14)

1	1	3	3	4	1	3
Door Status(pb15)	Alarm Status(pb15)	door open num(pb15)	last open time(pb15)	Time stamp	Door Status(pb14)	door open num(pb14)

3	1	3	3	4	1-32 group
last open time(pb14)	Door Status(pb15)	door open num(pb15)	last open time(pb15)	Time stamp	......

If we use the MQTT client to subscribe to this MQTT topic, we can see the following information when the NDS03A uplink data.
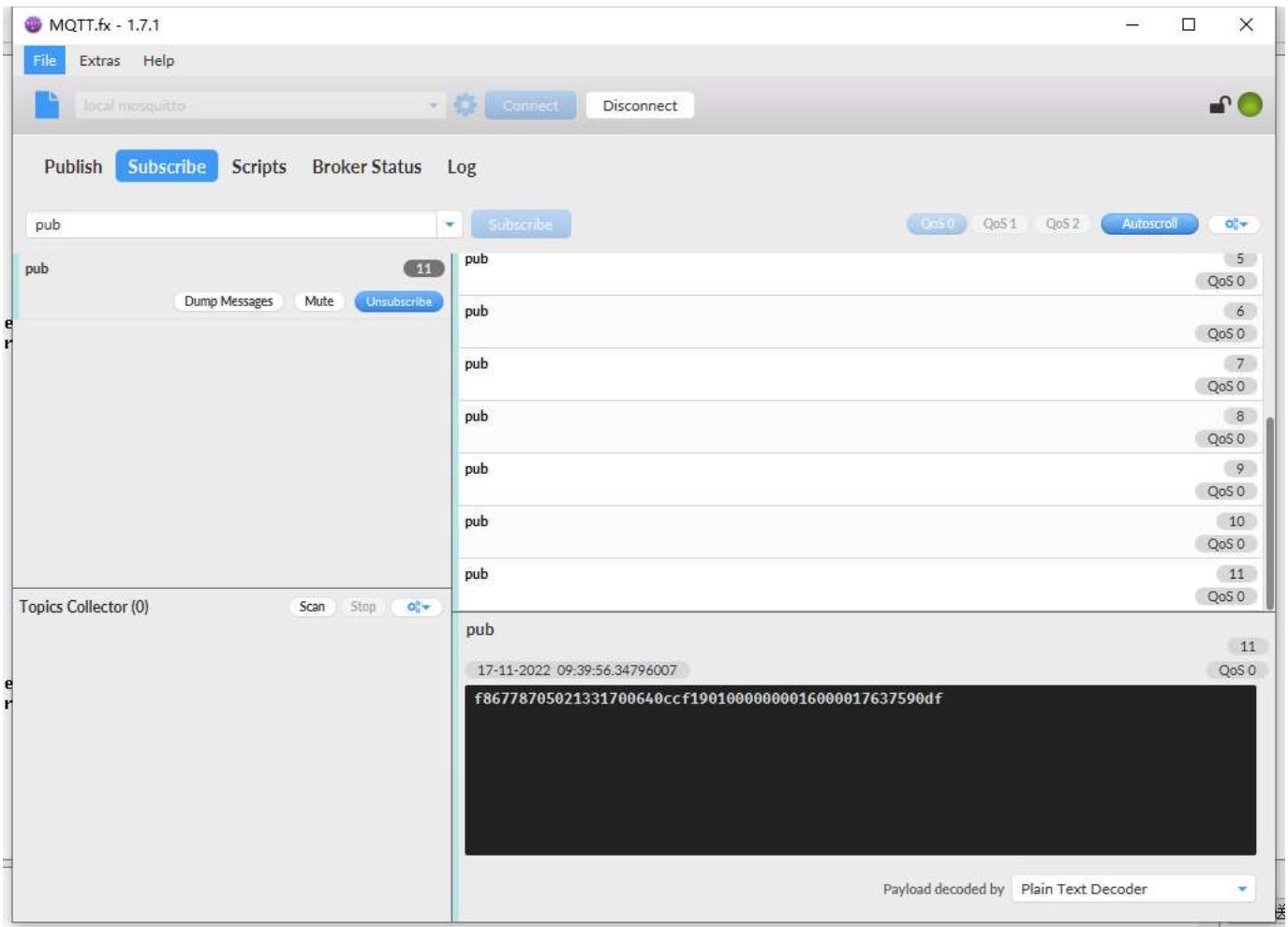
The payload is ASCII string, representative same HEX:

0x <u>f867787050213317</u> <u>0064</u> <u>0ccf</u> <u>19</u> <u>01</u> <u>00</u> <u>00</u> <u>000016</u> <u>000017</u> <u>637590df</u>

where:

- **Device ID:** 0x f867787050213317 = f867787050213317

- **Version:**   0x0064=100=1.0.0

- **BAT :**   0x0ccf = 3279 mV = 3.279V

- **Singal:** 0x19 = 25

- **Mod:**   0x01 = 1

- **Door Status:**   0x00=0

- **Alarm Status:** 0x00 =0

- **door open num:** 0x000016 =22

- **last open time:**   0x000017 =23

- **Timestamp:** 0x637590df =1668649183 (Unix Time)

2.4 Payload Explanation and Sensor Interface

2.4.1 Device ID

By default, the Device ID is equal to the last 15 bits of IMEI.

User can use **AT+DEUI** to set Device ID

Example:

AT+DEUI=868411056754138

The Device ID is stored in a non-erase area, Upgrade the firmware or run AT+FDR won't erase the Device ID.

2.4.2 Version Info

Specify the software version: 0x64=100, which means firmware version 1.00.

For example 0x00 64 : This device is NDS03A 1 with firmware version 1.0.0.

2.4.3 Battery Info

Check the battery voltage for NDS03A.

Ex1: 0x0B45 = 2885mV

Ex2: 0x0B49 = 2889mV

2.4.4 Signal Strength

NB-IoT Network signal Strength.

Ex1: 0x1d = 29

0   -113dBm or less

1   -111dBm

2...30 -109dBm... -53dBm

31   -51dBm or greater

99   Not known or not detectable

2.4.5 Disalarm: (default: 0)

If Disalarm = 1, NDS03A will only send uplink at every TDC periodically. This is normally use for pulse meter application, in this application, there are many open/close ev number of pulse.

If Disalarm = 0, NDS03A will send uplink at every TDC periodically and send data on each open/close event. This is useful for the application user need to monitor the op

Note: When Disalarm=0, a high frequently open/close event will cause lots of uplink and drain battery very fast.

2.4.6 Keep Status & Keep Time

Shows the configure value of Alarm Base on Timeout Feature

2.4.7 Timestamp

Timestamp : 0x6315537b =1662342011

2.4.8 Switch Dual Channel Mode

NDS03A can connect two door sensors. Another door sensor can be connected to PB15 pin. Both channels support alarm function.

2.5 Downlink Payload

By default, NDS03A prints the downlink payload to console port.

Downlink Control Type	FPort	Type Code	Downlink payload size(bytes)
TDC (Transmit Time Interval)	Any	01	4
RESET	Any	04	2
INTMOD	Any	06	4

Examples:

- **Set TDC**

If the payload=0100003C, it means set the END Node's TDC to 0x00003C=60(S), while type code is 01.

Payload: 01 00 00 1E   TDC=30S

Payload: 01 00 00 3C   TDC=60S

- **Reset**

If payload = 0x04FF, it will reset the NDS03A

- **INTMOD**

2.6 LED Indicator

The NDS03A has an internal LED which is to show the status of different states.

- When the device starts normally, the LED will light up for 1 second.
- After NDS03A join NB-IoT network. The LED will be ON for 3 seconds.
- For each uplink probe, LED will be on for 500ms.

2.7 Alarm Base on Timeout

NDS03A can monitor the timeout for a status change, this feature can be used to monitor some events such as door opening too long etc. Related Parameters are:

1. Keep Status: Status to be monitor

Keep Status = 1: Monitor Close to Open event

Keep Status = 0: Monitor Open to Close event

2. Keep Time: Timeout to send an Alarm

Range 0 ~ 65535(0xFFFF) seconds.

If keep time = 0, Disable Alarm Base on Timeout feature.

If keep time > 0, device will monitor the keep status event and send an alarm when status doesn't change after timeout.

AT Command to configure:

PB14 PIN:

AT+TTRIG=1,30   --> When the **Keep Status** change from connected to disconnect, and device remains in disconnect status for more than 30 seconds. NDS03A will ser (http://wiki.dragino.com/xwiki/bin/view/Main/User%20Manual%20for%20LoRaWAN%20End%20Nodes/CPL01%20LoRaWAN%20Outdoor%20PulseContact%20%20Sens TimeOpen2FCloseStatus2CUplinkFPORT3D2)   (the second bit of 1st byte of payload) on this uplink packet is set to 1.

AT+TTRIG=0,0   --> Default Value, disable timeout Alarm.

PB15 PIN:

AT+TTRIG2=1,30

AT+TTRIG2=0,0

2.8 Set debug mode

Feature: Enable or Disable debug mode

AT Command: AT+DEBUG

Command Example	Function	Response
AT+DEBUG=0	Disable debug mode to 0	OK
AT+DEBUG=1	Enable debug mode to 1	OK

2.9 Clear Flash Record

Feature: Clear flash storage for data log feature.

AT Command: AT+CLRDTA

Command Example	Function	Response
AT+CLRDTA	Clear flash storage for data log feature.	Clear all stored sensor data… OK

2.10 Count Mod

AT Command: AT+COUNTMOD

Command Example	Function	Response

AT+COUNTMOD=0	the count value keeps accumulating mode	OK
AT+COUNTMOD=1	the count value will be reset after each TDC time（Last Close Duration Reset after each uplink）	OK

2.11 Interrupt Pin Channel Mod

AT Command: AT+TTRCHANNEL

Command Example	Function	Response
AT+TTRCHANNEL=1	set as single channel, only use PB14 pin as interrupt pin.	OK
AT+TTRCHANNEL=2	is set as dual channel, use PB14 pin and PB15 pin as interrupt pin.	OK

2.12 TTRIG1/2 timeout status alarm

It needs to be used with AT+TTRIG1 or AT+TTRIG2. When TTRIG1 or TTRIG2 times out and causes an alarm, and the status does not change subsequently, an alarm pa

AT Command: AT+TTRALARM

Command Example	Function	Response
AT+TTRALARM=0	disable continuous alarm	OK
AT+TTRALARM=60	The alarm interval is 60 minutes (unit: minutes)	OK

2.13 Select counting mode

AT Command: AT+TTRMODx=a,b

When **a=0**, the door is opened to count, and when **a=1**,the closed door is counted.

When **b=0**, it is the last door open duration, and when **b=1**,the last door close duration.

Command Example	Function	Response
AT+TTRMODx=1,0	Door closed count and record the last door opened duration	OK
AT+TTRMODx=0,1	Door opened count and record the last door Door Door open closed duration	OK

2.14 Set the number of data to be uploaded and the recording time

AT Command:

AT+TR=900   // The unit is seconds, and the default is to record data once every 900 seconds.(The minimum can be set to 180 seconds)

AT+NOUD=8   // The device uploads 0 sets of recorded data by default. Up to 32 sets of record data can be uploaded.

2.15 Read or Clear cached data

AT Command:

AT+CDP   // Read cached data

AT+CDP=0   // Clear cached data

```
pb14door_open_status:1      pb14_door_open_num:11   pb14_last_open_time:0    Wed Nov 16 06:32:18 2022
pb14door_open_status:1      pb14_door_open_num:16   pb14_last_open_time:0    Wed Nov 16 06:35:18 2022
pb14door_open_status:1      pb14_door_open_num:17   pb14_last_open_time:3    Wed Nov 16 06:38:18 2022
pb14door_open_status:1      pb14_door_open_num:20   pb14_last_open_time:1    Wed Nov 16 06:41:18 2022
pb14door_open_status:1      pb14_door_open_num:20   pb14_last_open_time:1    Wed Nov 16 06:44:18 2022
pb14door_open_status:1      pb14_door_open_num:20   pb14_last_open_time:1    Wed Nov 16 06:47:18 2022
pb14door_open_status:1      pb14_door_open_num:20   pb14_last_open_time:1    Wed Nov 16 06:50:18 2022
pb14door_open_status:1      pb14_door_open_num:21   pb14_last_open_time:11   Wed Nov 16 06:53:18 2022
pb14door_open_status:1      pb14_door_open_num:21   pb14_last_open_time:11   Wed Nov 16 06:56:18 2022
pb14door_open_status:1      pb14_door_open_num:21   pb14_last_open_time:11   Wed Nov 16 06:59:18 2022
pb14door_open_status:1      pb14_door_open_num:0    pb14_last_open_time:11   Wed Nov 16 07:02:18 2022
pb14door_open_status:1      pb14_door_open_num:1    pb14_last_open_time:13   Wed Nov 16 07:05:18 2022
pb14door_open_status:1      pb14_door_open_num:2    pb14_last_open_time:3    Wed Nov 16 07:08:18 2022
pb14door_open_status:1      pb14_door_open_num:2    pb14_last_open_time:3    Wed Nov 16 07:11:18 2022
pb14door_open_status:1      pb14_door_open_num:3    pb14_last_open_time:6    Wed Nov 16 07:14:18 2022
pb14door_open_status:1      pb14_door_open_num:3    pb14_last_open_time:6    Wed Nov 16 07:17:18 2022
pb14door_open_status:1      pb14_door_open_num:3    pb14_last_open_time:6    Wed Nov 16 07:20:18 2022
pb14door_open_status:1      pb14_door_open_num:3    pb14_last_open_time:6    Wed Nov 16 07:23:18 2022
pb14door_open_status:1      pb14_door_open_num:2    pb14_last_open_time:8    Wed Nov 16 08:01:44 2022
pb14door_open_status:1      pb14_door_open_num:22   pb14_last_open_time:0    Thu Nov 17 01:22:31 2022
pb14door_open_status:1      pb14_door_open_num:22   pb14_last_open_time:0    Thu Nov 17 01:37:31 2022

OK


AT+CDP
```

2.16 Firmware Change Log

Download URL & Firmware Change log: https://www.dropbox.com/sh/hacq385w6qgnonr/AAC3D79GFGF1JdZUIzNegn2Ha?dl=0 (https://www.dropbox.com/sh/hacq385w6qgnonr/AAC3D79GFGF1JdZUIzNegn2Ha?dl=0)

Upgrade Instruction: Upgrade Firmware

2.17 Battery & Power Consumption

NDS03A uses ER26500 + SPC1520 battery pack. See below link for detail information about the battery info and how to replace.

Battery Info & Power Consumption Analyze (http://wiki.dragino.com/xwiki/bin/view/Main/How%20to%20calculate%20the%20battery%20life%20of%20Dragino%20sens

4. Using the AT Commands

4.1 Access AT Commands

See this link for detail: https://www.dropbox.com/sh/351dwor6joz8nwh/AADn1BQaAAxLF_QMyU8NkW47a?dl=0 (https://www.dropbox.com/sh/351dwor1

AT+<CMD>?   : Help on <CMD>

AT+<CMD>   : Run <CMD>

AT+<CMD>=<value>   : Set the value

AT+<CMD>=?   : Get the value

General Commands

AT   : Attention

AT?   : Short Help

ATZ   : MCU Reset

AT+TDC   : Application Data Transmission Interval

AT+CFG   : Print all configurations

AT+CFGMOD   : Working mode selection

AT+INTMOD   : Set the trigger interrupt mode

AT+5VT   : Set extend the time of 5V power

AT+PRO   : Choose agreement

AT+RXDL   : Extend the sending and receiving time

AT+SERVADDR   : Server Address

AT+TR   :   Get or Set record time

AT+NOUD   : Get or Set the number of data to be uploaded

AT+CDP   :   Read or Clear cached data

AT+ DEBUG   : Enable or Disable debug mode

AT+ TTRIG1   : Get or Set PB14 PIN Alarm Base on Timeout

AT+ TTRIG2   : Get or Set PB15 PIN Alarm Base on Timeout

AT+COUNTMOD :   Get or Set the count mode

AT+TTRCHANNEL : Get or Set the number of interrupt channels

AT+TTRALARM : Get or Set TTRIG1 of Alarm interval (unit: minute)

AT+DISALARM : Enable/Disable Alarm for door open/close or water leak event

AT+ CLRC   :   Clear current door open count

COAP Management

AT+URI   : Resource parameters

UDP Management

AT+CFM   : Upload confirmation mode (only valid for UDP)

MQTT Management

AT+CLIENT   : Get or Set MQTT client

AT+UNAME   : Get or Set MQTT Username

AT+PWD   : Get or Set MQTT password

AT+PUBTOPIC   : Get or Set MQTT publish topic

AT+SUBTOPIC   : Get or Set MQTT subscription topic

Information

AT+FDR   : Factory Data Reset

AT+PWORD   : Serial Access Password

5. FAQ

5.1 How to Upgrade Firmware

User can upgrade the firmware for 1) bug fix, 2) new feature release.

Please see this link for how to upgrade: http://wiki.dragino.com/xwiki/bin/view/Main/Firmware%20Upgrade%20Instruction%20for%20STM32%20base%20products/#H2.H
(http://wiki.dragino.com/xwiki/bin/view/Main/Firmware%20Upgrade%20Instruction%20for%20STM32%20base%20products/#H2.HardwareUpgradeMethodSupportList)

Notice: NDS03A and LDS03A share the same mother board. They use the same connection and method to update.

6. Trouble Shooting

6.1 Connection problem when uploading firmware

Please see: http://wiki.dragino.com/xwiki/bin/view/Main/Firmware%20Upgrade%20Instruction%20for%20STM32%20base%20products/#H3.3Troubleshooting
(http://wiki.dragino.com/xwiki/bin/view/Main/Firmware%20Upgrade%20Instruction%20for%20STM32%20base%20products/#H3.3Troubleshooting)

6.2 AT Command input doesn't work

In the case if user can see the console output but can't type input to the device. Please check if you already include the **ENTER** while sending out the command. Some se
the send key, user need to add ENTER in their string.

6.3 Not able to connect to NB-IoT network and keep showing "Signal Strength:99".

This means sensor is trying to join the NB-IoT network but fail. Please see this link for ***trouble shooting for signal strenght:99 (/xwiki/bin/view/Main/CSQ%3A99%2C9***

7. Order Info

Part Number: NDS03A

8. Packing Info

Package Includes:

- NDS03A Open/Close Door Sensor x 1

9. Support

- Support is provided Monday to Friday, from 09:00 to 18:00 GMT+8. Due to different timezones we cannot offer live support. However, your questions will be answer mentioned schedule.

- Provide as much information as possible regarding your enquiry (product models, accurately describe your problem and steps to replicate it etc) and send a mail to (http://../../../../../../../D:%5C%E5%B8%82%E5%9C%BA%E8%B5%84%E6%96%99%5C%E8%AF%B4%E6%98%8E%E4%B9%A6%5CLoRa%5CLT%E7%B3%BB%

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