

LoRaWAN NH₃ Temperature and Humidity User Manual



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1. Overview

Based on LoRa™ spread spectrum modulation technology, terminals are capable of ultra long distance communication. LoRaWAN ammonia gas sensor that integrates data collection and monitoring. This product has a built-in NH₃ sensor and a temperature and humidity sensor in one. Adopting an electrochemical ammonia gas sensor module. Capable of emergency reporting of data anomalies, able to proactively report anomalies based on pre-set threshold values according to the on-site environment. It supports standard LoRaWAN protocol and TDMA networking protocol for ad hoc networks. Supports LoRa TDMA ad hoc networks and standard LoRaWAN protocols.

2. Technical Parameters

Power Supply	5~28VDC
Weight	120g
Operating Emperature	-20℃~60℃
Measuring Principle	Electrochemistry
Measuring Range	NH ₃ :0 ~ 50 ppm
	Temp:-40~+80 ℃
	Humi:0~99.9 %RH
Resolution Ratio	NH3:0.01ppm
Lifespan	<2 years
Frequency	CN470/IN865/EU868/RU864/US915/AU915/ KR920/AS923-1&2&3&4
Mode	OTAA Class A/C(Default: Class C)
Reporting cycle	External power supply:5min(Default reporting cycle) Report after preheating for 3 minutes when powered on
Communication Protocol	LoRaWAN,LoRa TDMA Networking

Equipment information (Reference)	AppEUI: 0000000000000001 DevEUI: aaaa202404150001 AppKey: 00001111222233334444555566667777 MAC Version: LoRaWAN 1.0.3
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2.1 Product List

- LoRaWAN NH₃ Temperature and Humidity Sensor 1 piece
- TYPE-C data cable 1 piece

3. Configuration and Installation

3.1 LW300 Interface Description



- 1. TYPE-C Interface:**
Used for device serial port configuration. It can also serve as a power supply interface.
- 2. Temperature and humidity sensor probe:**
Used for monitoring environmental temperature and humidity values
- 3. DC Power Interface:**
DC5.5 * 2.1 female socket, power supply interface, DC5-28V.

3.2 LW300 Parameter Configuration Instructions

Configuration preparation:

- ◆ USB Type-C data cable
- ◆ Computer (Windows system)
- ◆ Configuration Tool Toolbox

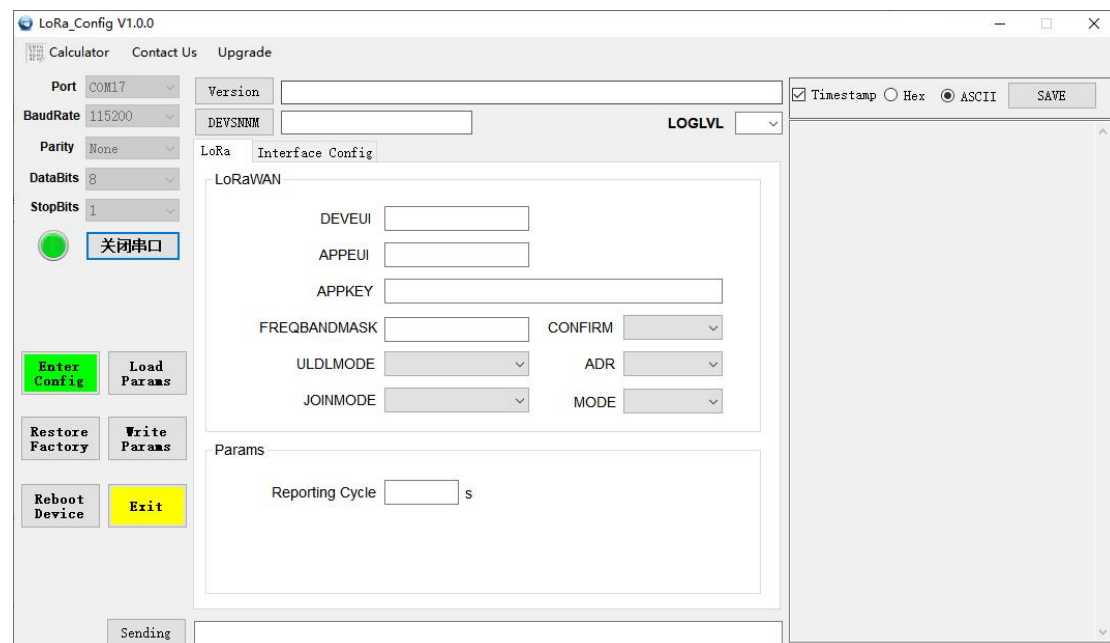
Download: <http://www.zonewu.com/en/Configuration-Tools.html>

1. Install serial port driver program.CH340 USB to serial port .
2. Connect the LW101 to the PC using a USB cable and check if there is a COM port. If not, please recheck the equipment wiring and driver installation.
3. Open the configuration tool LoRa_config  LoRa_config V1.0.0 .open the corresponding COM port .

Port default parameters:

BaudRate	115200bit/s
Parity	None
DataBits	8
StopBits	1

As follows:



4. 1.Enter Config → 2.Load Params → 3.LoRaWAN → 4.Write Params → 5.Reboot Device

LoRa_Config V1.0.0

Calculator Contact Us Upgrade

Port COM17 Version ☒ Timestamp ☐ Hex ☒ ASCII SAVE

BaudRate 115200 DEVSNM LOGLV

Parity None DataBits 8 StopBits 1

1 Enter Config 2 Load Params

Restore Factory Write Params 4 Params

Reboot Device Exit

5

LoRa Interface Config

LoRaWAN

DEVEUI

APPEUI

APPKEY

FREQBANDMASK CONFIRM

ULDLMODE ADR

JOINMODE MODE

Reporting Cycle s

Sending

LoRa Interface Config

LoRaWAN

DEVEUI BF01240726D00001

APPEUI 331341E186891989

APPKEY 5572404c696e6b4c6f52613230313823

FREQBANDMASK 0002 CONFIRM Close ACK

ULDLMODE Abnormal Freq Mo ADR Close

MODE ClassC

Params

Reporting Cycle 600 s

LoRaWAN Interface:

Item	Describe	Notes
DevEUI	Node's globally unique identifier code	64bit
AppEUI	Node's application identifier code	64bit
AppKey	Assigned to the terminal by the application owner.	128bit

FREQBANDMASK	Set frequency group mask	
UPLDMODE	Set up uplink and downlink same frequency but different frequency	
CONFIRM	Set uplink transmission type	
ADR	Set adaptive speed	
MODE	Set device working mode	

The device will be configured with ternary parameters by default when it leaves the factory:

DevEUI: BF01240726D00001

AppEUI: 331341E186891989

AppKey: 5572404c696e6b4c6f52613230313823

NOTE: All sensors are shipped with AppEUI and AppKey default to 331341E186891989 and 5572404c696e6b4c6f52613230313823.

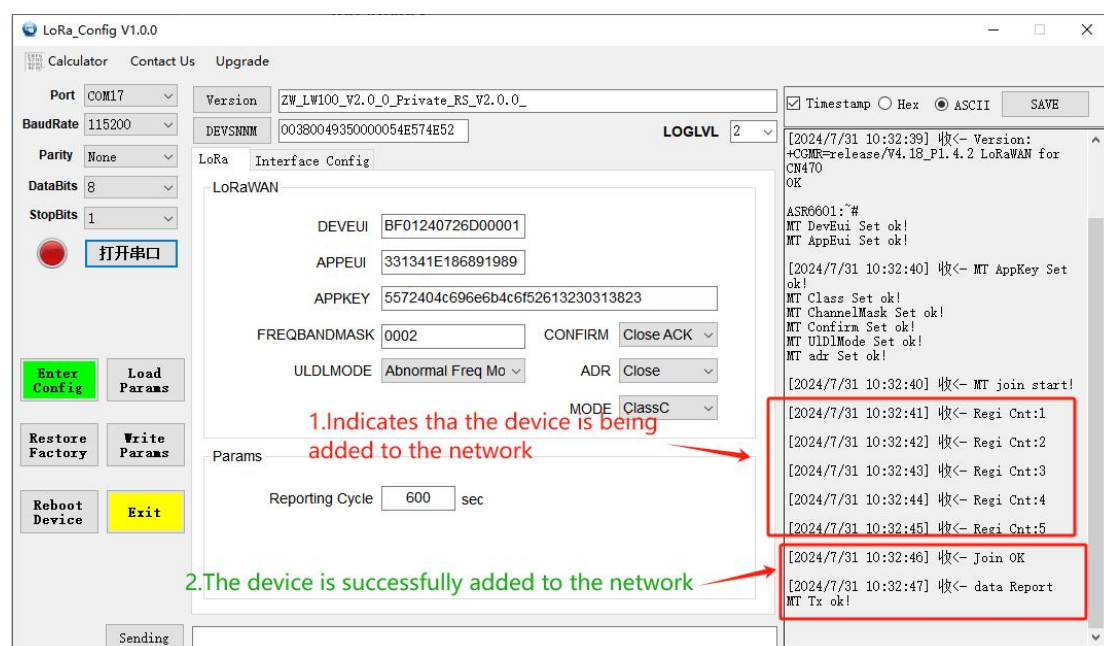
Users can customize according to their own applications

FREQBANDMASK: The frequency group mask for LoRaWAN operation, with 16 bits corresponding to 16 frequency groups. Default is 0001. Users need to configure it according to the actual application region.

Params Interface:

Item	Describe	Notes
Reporting cycle	adjustable range 1-65535, default is 600s (10min)	

Printing logs of device startup and network connection:

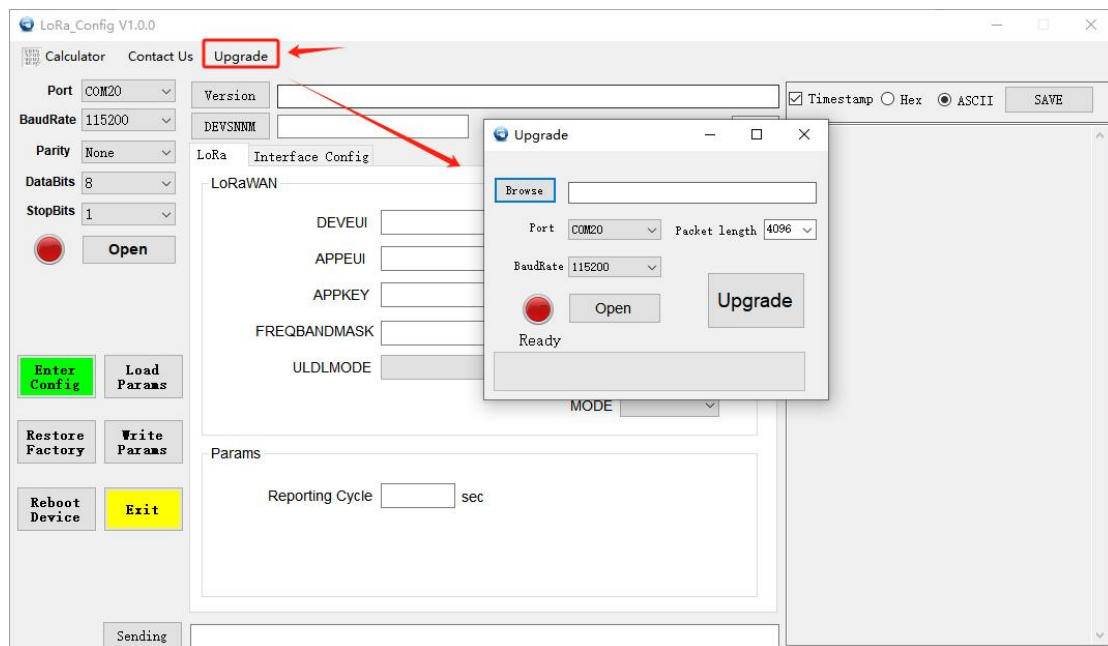


The device is equipped with a built-in LED indicator light, which is located next

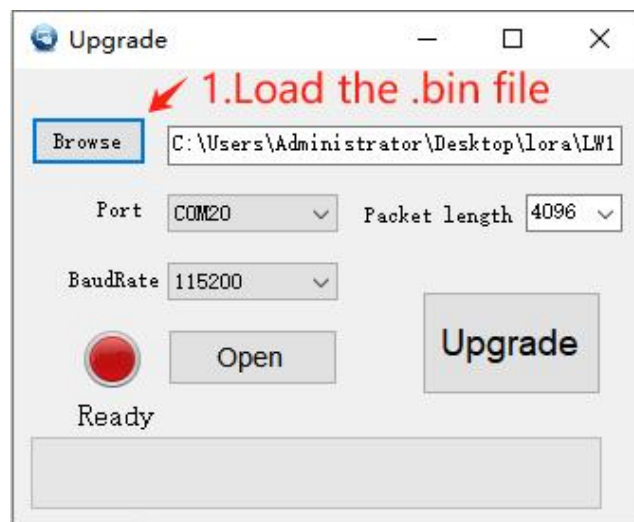
to the antenna interface and can be seen as a green light through the casing.

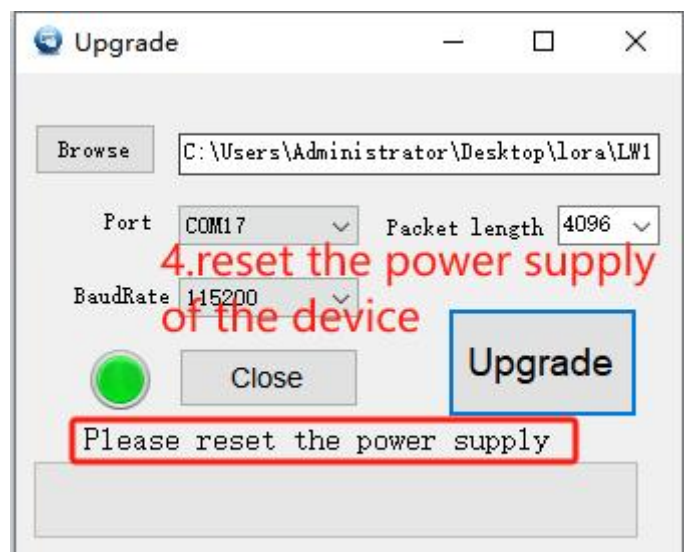
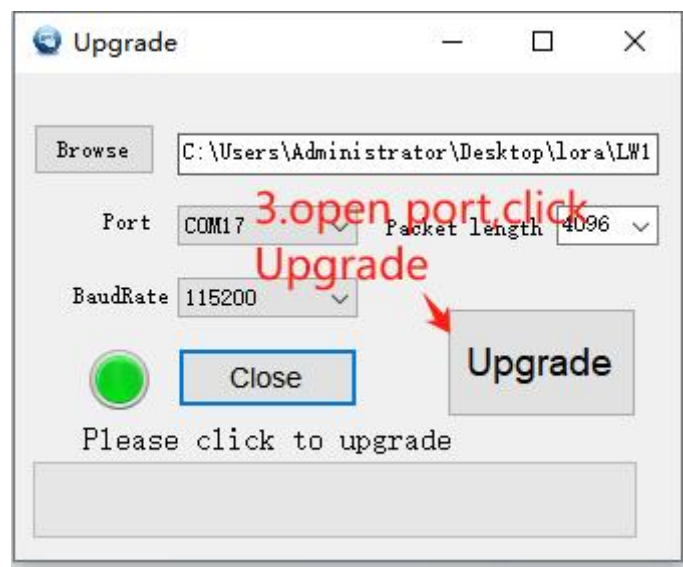
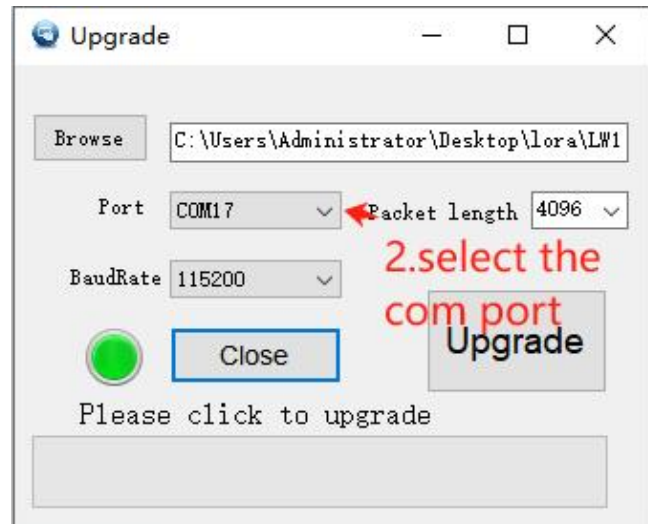
LED	Status	Describe
Green indicator light	Flicker	Add to the network
	Light	Successfully added to the network

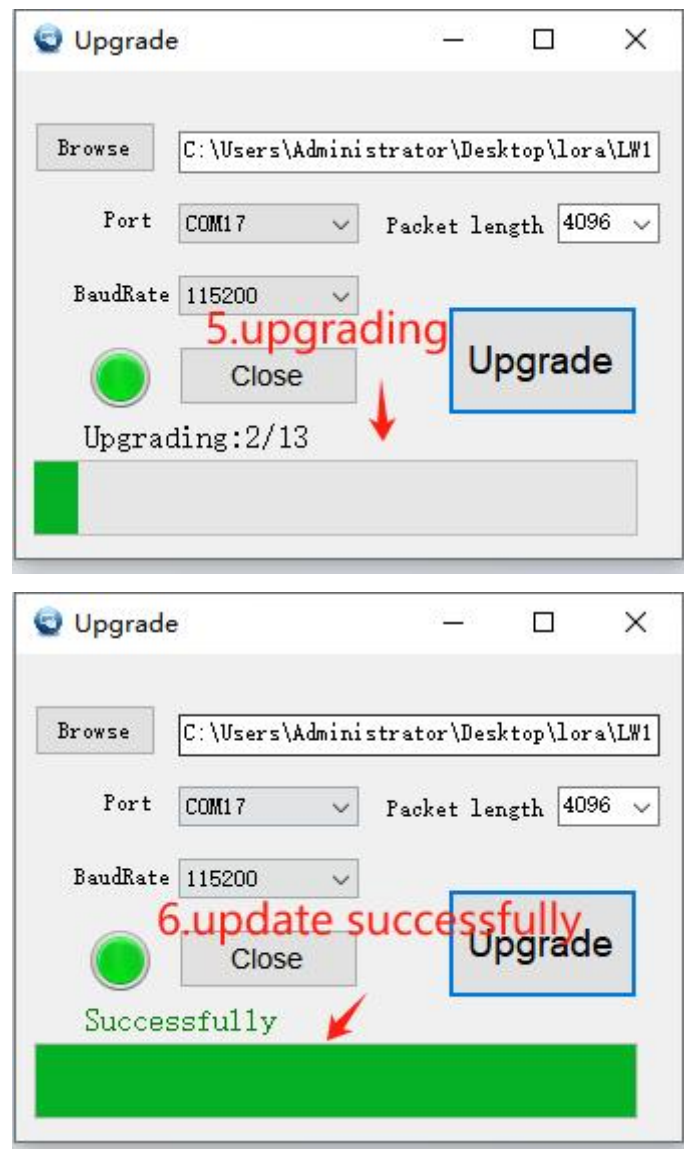
Firmware upgrade:



Click to upgrade → Pop up upgrade window

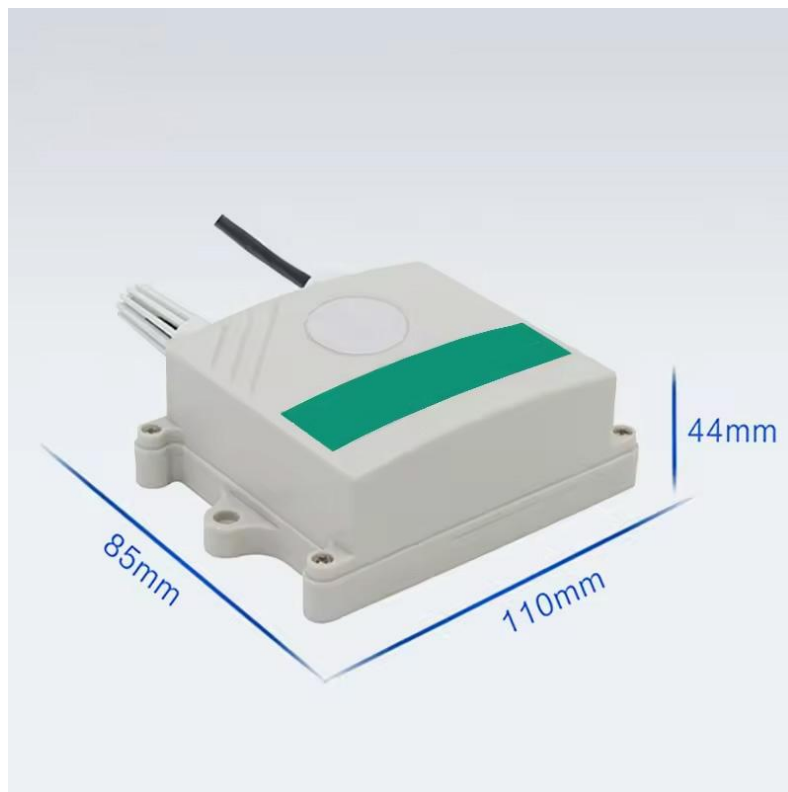






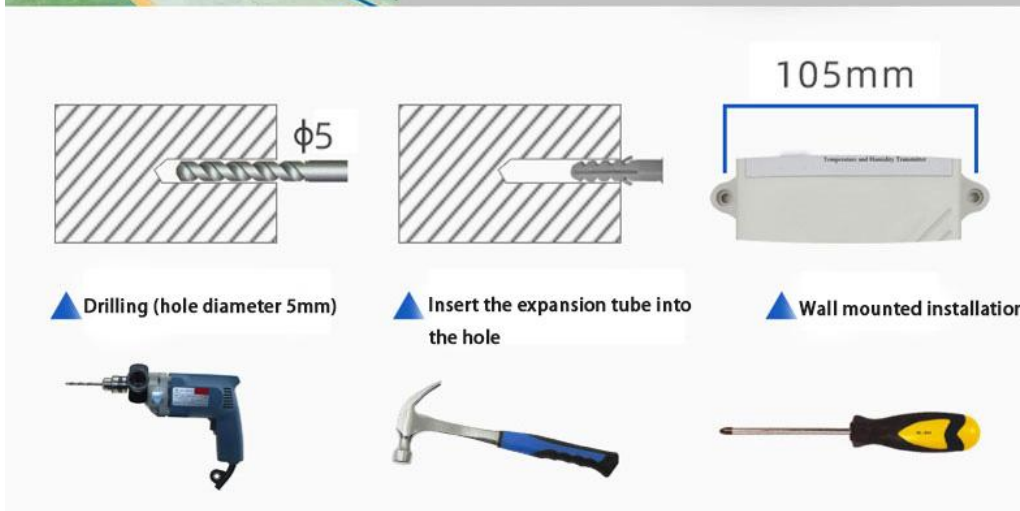
If there is an upgrade error during the upgrade process, you can close and reopen the upgrade window and follow the instructions to upgrade again.

3.3 LW300 Size and Installation



Product size

INSTALLATION INSTRUCTIONS



Installation instructions

4. Protocol Description

4.1 Data Format

The up/down data of the device is based on hexadecimal format. High position in front, low position in back.

address	code	length	data		
1 byte	1 byte	1 byte	2 byte	2 byte	2 byte

4.2 Upward Data

The device information is reported once during network access or restart.

Sensor address	Instruction type	Data Length	Data		
			NH ₃	Temp.	Humi.
01	00	06	001E	0109	0207
1	0	6	0.3	26.5℃	51.9

Note:

1.If the received data is FFFF FFFF, it indicates that the sensor is not connected or the sensor is abnormal.

2.When the temperature is below 0 ℃, The temperature data is uploaded in the form of a supplementary code.

Temperature: FF9B H (hexadecimal)= -101=>Temperature= -10.1 ℃

4.2.1 Register Address Description

Register address	0001H	0002H	0003H
Parameter	NH3	Temperature	humidity
Unit	ppm	℃	%
Range	0~50	-40~+80 ℃	0~99.9 %RH
Data Type	uint16	int16	uint16
Sample Value	/100	/10	/10
Operate	Read	Read	Read

4.3 Downward data

Support configuring devices through downstream commands. When the downlink command is in confirmation packet mode, the device will immediately send a reply packet after executing the command.

4.3.1 Restart the device

Starting byte (1byte)	Instruction type (1byte)	Trail byte (1byte)
0xFE	01	0xEF

Response:

Starting byte (1byte)	Instruction type (1byte)	Trail byte (1byte)
0xEF	01	0xFE

4.3.2 Set Reporting cycle

Starting byte (1byte)	Instruction type (1byte)	Reporting cycle (2byte)	Trail byte (1byte)
0xFE	02	X	0xEF

Response:

Starting byte (1byte)	Instruction type (1byte)	Reporting cycle (2byte)	Trail byte (1byte)
0xEF	02	X	0xFE