

Wireless NO2 Sensor

R718PA5 User Manual

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1. Introduction

R718PA5 is a Class A device based on the LoRaWAN™ protocol of Netvox and is compatible with LoRaWAN protocol.

R718PA5 can be connected with an NO2 sensor (RS485), and report the NO2 concentration collected by the device to the corresponding gateway. The device is compatible with LoRaWAN protocol.

LoRa Wireless Technology:

LoRa is a wireless communication technology dedicated to long distance and low power consumption. Compared with other communication methods, LoRa spread spectrum modulation method greatly increases to expand the communication distance. Widely used in long-distance, low-data wireless communications. For example, automatic meter reading, building automation equipment, wireless security systems, industrial monitoring. Main features include small size, low power consumption, transmission distance, anti-interference ability and so on.

LoRaWAN:

LoRaWAN uses LoRa technology to define end-to-end standard specifications to ensure interoperability between devices and gateways from different manufacturers.

2. Appearance



3. Main Feature

- Adopt SX1276 wireless communication module
- 12V DC power supply
- NO2 sensor detection
- The base is attached with a magnet that can be attached to a ferromagnetic material object
- Main body IP Rating: IP65 / IP67 (Optional)
- Compatible with LoRaWAN™ Class A
- Frequency hopping spread spectrum technology
- Configuring parameters and reading data via the third-party software platforms, and set alarms via SMS text and email (optional)
- Applicable to the third-party platforms: Actility/ ThingPark/ TTN/ MyDevices/ Cayenn

4. Set Up Instruction

On/Off

Power On	DC12V adapter
Turn On	DC12V power supply, the green indicator flashing once means turn on successfully.
Turn Off (Restore to factory setting)	Press and hold the function key for 5 seconds, and the green indicator flashes 20 times
Power Off	Remove DC12V adapter
Note	<p>1. On/off interval is suggested to be about 10 seconds to avoid the interference of capacitor inductance and other energy storage components</p> <p>2. The first five seconds after power on, the device will be in engineering test mode</p>

Network Joining

Never Join the Network	<p>Turn on the device to search the network</p> <p>The green indicator keeps on for 5 seconds: success</p> <p>The green indicator remains off: fail</p>
Had Joined the Network (Not restore to the factory setting)	<p>Turn on the device to search the previous network</p> <p>The green indicator keeps on for 5 seconds: success</p> <p>The green indicator remains off: fail</p>
Fail to Join the Network	Suggest to check the device verification information on the gateway or consult your platform server provider

Function Key

Press and Hold for 5 Seconds	<p>Restore to the factory setting / turn off</p> <p>The green indicator flashes 20 times: success</p> <p>The green indicator remains off: fail</p>
Press once	<p>The device is in the network: the green indicator flashes once and the device sends a data report</p> <p>The device is not in the network: the green indicator remains off+</p>

5. Data Report

After power on, the device will immediately send a version packet report, and then send another report with the data of NO2 concentration after 20 seconds.

The device sends data according to the default configuration before any other configuring.

Default setting

MaxTime: 180s (3min)

MinTime: The MinTime configuration is not available, but it needs to be set greater than 0 because of the software limitation.

Note:

1. Report interval is based on the factory default.
2. R718PA5 reports the NO2 concentration value.
3. The device reported data parsing please refer to Netvox LoRaWAN Application Command document and Netvox Lora

Command Resolver <http://www.netvox.com.cn:8888/cmddoc>

5.1 Example of ReportDataCmd

FPort: 0x06

Bytes	1	1	1	Var(Fix=8 Bytes)
	Version	DeviceType	ReportType	NetvoxPayLoadData

Version– 1 byte –0x01——the Version of NetvoxLoRaWAN Application Command Version

DeviceType– 1 byte – Device Type of Device

The devicetype is listed in Netvox LoRaWAN Application Devicetype doc

ReportType – 1 byte –the presentation of the NetvoxPayLoadData, according the devicetype

NetvoxPayLoadData– Fixed bytes (Fixed =8bytes)

Device	Device Type	Report Type	NetvoxPayLoadData				
R718PA Series	0x57	0x06	Battery (1Byte, unit:0.1V)	NO2 (2Bytes,0.1ppm)	SO2 (2Bytes,0.1ppm)	H2S (2Bytes ,0.1ppm)	Reserved (1Byte, fixed 0x00)

Uplink:015706000032FFFFFFFF00

1st byte (01): Version

2nd byte (57): DeviceType 0x57 — R718PA Series

3rd byte (06): ReportType

4th byte (00): DC power supply

5th 6th byte (0032): NO2 - 5ppm, 0032(HEX)=50(DEC),50*0.1ppm=5.0ppm

7th 8th byte (FFFF): SO2

9th 10th byte (FFFF): H2S

11th byte (00): Reserved

5.2 Example of ConfigureCmd

FPort: 0x07

Bytes	1	1	Var (Fix =9 Bytes)
	CmdID	DeviceType	NetvoxPayloadData

CmdID– 1 byte

DeviceType– 1 byte – Device Type of Device

NetvoxPayloadData– var bytes (Max=9bytes)

Description	Device	Cmd ID	Device Type	NetvoxPayloadData		
Config ReportReq	R718PA Series	0x01	0x57	MinTime (2bytes Unit: s)	MaxTime (2bytes Unit: s)	Reserved (5Bytes, Fixed 0x00)
Config ReportRsp		0x81		Status (0x00_success)	Reserved (8Bytes, Fixed 0x00)	
ReadConfig ReportReq		0x02		Reserved (9Bytes, Fixed 0x00)		
ReadConfig ReportRsp		0x82		MinTime (2bytes Unit: s)	MaxTime (2bytes Unit: s)	Reserved (5Bytes, Fixed 0x00)

(1) Configure R718PA5 device parameter MaxTime = 1min

(The MinTime configuration is useless, but it needs to be set greater than 0 because of the software limitation.)

Downlink: 0157000A003C0000000000

Device Return:

8157000000000000000000000000 (configuration success)

8157010000000000000000000000 (configuration failure)

(2) Read R718PA5 device parameter

Downlink: 025700000000000000000000

Device Return:

8257000A003C0000000000000000 (device current parameter)

6. Installation

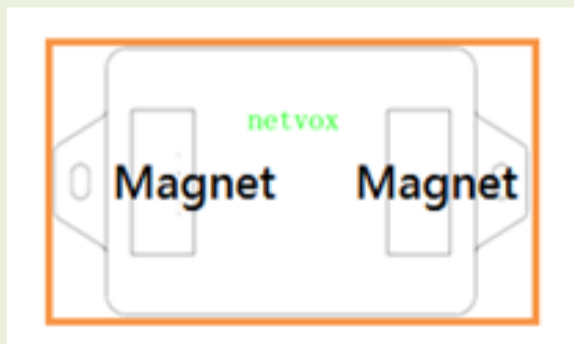
1. R718PA5 has the built-in magnet (as the figure below) which can be attached to the surface of an iron object during installation, which is convenient and quick.

In order to make the installation firmer, please use screws (purchased separately) to fix the device to the wall or other surface (as Figure below).

NO2 Sensor is fixed by screws that needs two screws (purchased separately) in the middle.

Note:

Do not install the device in a metal shielded box or in an environment surrounded by other electrical equipment to avoid affecting the wireless transmission of the device.



2. R718PA5 regularly reports data that is NO2 concentration according to MaxTime. The default Max Time is 3 min.

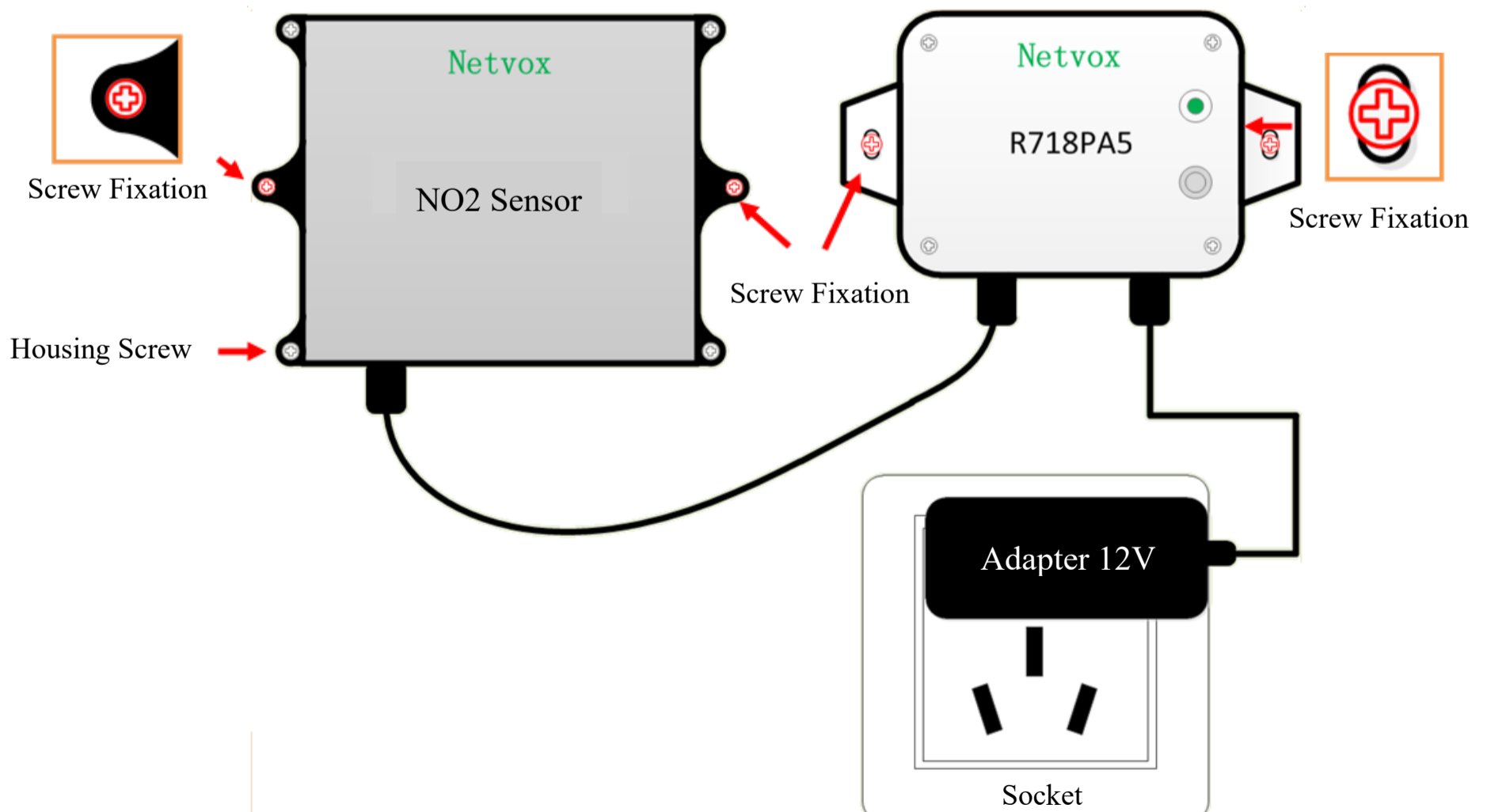
Note:

MaxTime can be modified by the downlink command, but it is recommended not to set the interval too short.

R718PA5 can be applied to the scene of detecting the NO2 concentration.

Example:

- Underground parking lot
- Environmental protection monitoring



7. Important Maintenance Instruction

Kindly pay attention to the following in order to achieve the best maintenance of the product:

- Keep the device dry. Rain, moisture, or any liquid, might contain minerals and thus corrode electronic circuits. If the device gets wet, please dry it completely.
- Do not use or store the device in dusty or dirty environment. It might damage its detachable parts and electronic components.
- Do not store the device under excessive heat condition. High temperature can shorten the life of electronic devices, destroy batteries, and deform or melt some plastic parts.
- Do not store the device in places that are too cold. Otherwise, when the temperature rises to normal temperature, moisture will form inside, which will destroy the board.
- Do not throw, knock or shake the device. Rough handling of equipment can destroy internal circuit boards and delicate structures.
- Do not clean the device with strong chemicals, detergents or strong detergents.
- Do not apply the device with paint. Smudges might block in the device and affect the operation.
- Do not throw the battery into the fire, or the battery will explode. Damaged batteries may also explode.

All of the above applies to your device, battery and accessories. If any device is not working properly, please take it to the nearest authorized service facility for repair.