1.Product Features

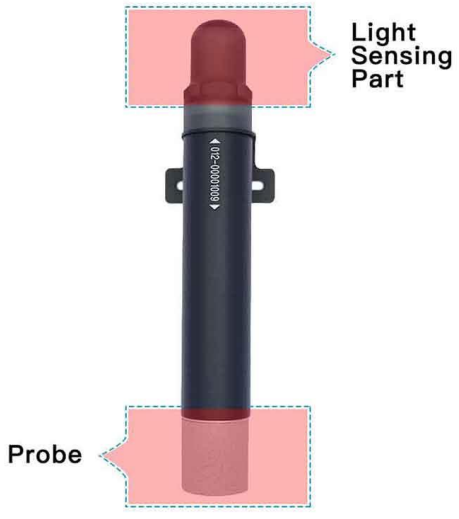
●Install and work, light sensing activating;
●Periodic detection，period is settable;
●Automatic registering to fit with gateway;
●Automatic routing to fit with repeater;
●Built-in battery and replaceable;
●wireless transmission can reach 5km LOS;
●Centralized acquisition, multi-mode output.

2.Applications

●environmental and meteorological monitoring
●medical and health care
●agriculture such as greenhouse
●storage and transportation,
●refrigeration and cold chain
●constant temperature and humidity production workshop

3. XZ-DS02-CO2C working status indication and description

XZ-DS02-CO2CWorking Process
XZ-DS02-CO2Cswitches to different modes according to using way：
Sleeping mode：Sensor no work, no transmission, and sleeping with low consumption
Starting mode：Light sensing triggering，
Trigger 3 times continuously within 10S，after triggering successfully at the 3rd time red light fast blinks 3 times, it means starting successfully.
（Triggering way: hand holds light-sensitive part 1～2S，loosen and red light blinks once）
Notice：please don't trigger it in dark light, instead using lens hood under hard light
Triggering mode：trigger once，detect sensor and send signal, transmission interval of sensor can be set by user.
Normal Mode：periodically detect sensor and send signal



4.XZ-DS02-CO2C Technical Parameters

CO2 Range1	400-2000ppm	CO2 Accuracy	±(50ppm + 5% of reading)
CO2 Range 2	400-5000ppm	CO2 Accuracy	±(40ppm + 5% of reading)
Temperature Range	-20～60℃	Temperature Accuracy	<±0.3℃(0～60℃）& <±1℃(<-20～0℃)
Humidity Range	0-100%	Humidity Accuracy	<±3%（10-90%）& <±4.5%(<10%,>90%)
Test pressure conditions	950～1050mbar	Acquisition cycle	5～240mins settable by user（30mins default）
Battery life-span	12months@2700mAH 30mins（14505 Li-SOCI2 battery, replaceable）		
Transmit Power	<17dBm	Receive Sensitivity	＜-136dBm
Transmit Current	<120mA	Receive Current	＜20mA
Transmission Distance	>5KM(LOS）	Working Temperature	0～50℃
Working Frequency	433MHz /480MHz /868MHz /915MHz /925MHz customized		

5.XZ-DS02-CO2C Data Protocols

Example：GW_ID:12345,TYPE:CO2,ID:1,STAT:11000000,CO2: 400,CO2_Para：15411，T:14.5℃,H:36.3%, ST:30M, V:3.66v, SN:2, RSSI: -79dBm, E:160.2020, N:110.2020, Time:2018-2-4 14:20:39

Explanation：

GID: Gateway ID （12345）	TYPE: CO2（CO2）	ID: Sensor address（1）
STAT: sensor status word BIT7=1 trigger reporting； BIT6= 0channel,1channel; BIT5=1repeater; BIT4=1 invalid data; BIT3= calibration; BIT2=1 data searching network; BIT1=0, low speed,1, high speed; BIT0=1start		
CO2:CO2concentration 400ppm	T: environmental temperature 14.5℃	H: environmental humidity 36.3%
ST: acquisition interval 30mins	V: battery voltage 3.66V	SN: sending serial number is 2
RSSI: wireless signal strength -79dBm	Longitude E: 160.2020, Latitude N: 110.2020	Time: 2018-2-4 14:20:39

6.Frequency and model choosing

Model frequency comparison table		Matching gateway selection	
Model Number	Working Frequency	Model Number	Typical docking scene
XZ-DS02-CO2C-433	433MHz	XZ-DSG1	Computer and cloud server

XZ-DS02-CO2C-480	480MHz	XZ-DSG2	computer
XZ-DS02-CO2C-868	868MHz	XZ-DSG4	Cloud server
XZ-DS02-CO2C-915	915MHz	XZ-DS-MUS	PLC, touch screen
XZ-DS02-CO2C-925	925MHz	Please see following topology diagram	

7.Four Types Gateway for choosing

7.1 RJ45 Network Gateway XZ-DSG1

●Install and use; DC power supply;

●Dynamic and static IP, adaptive public network;

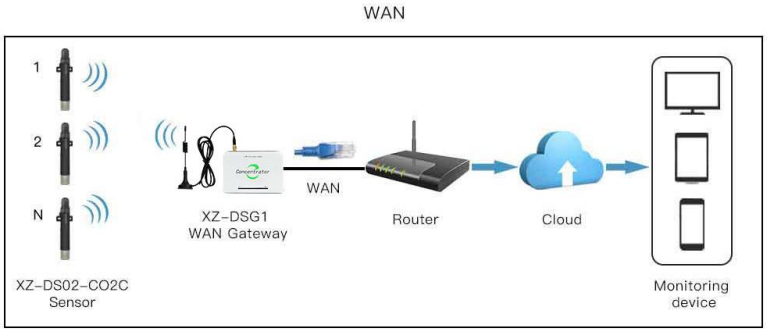
●Automatic routing to adapt to repeaters;

●Wireless transmission more than 5km;

●Centralized acquisition, multimode sensor.

●One Gateway can work with more than 100pcs sensors

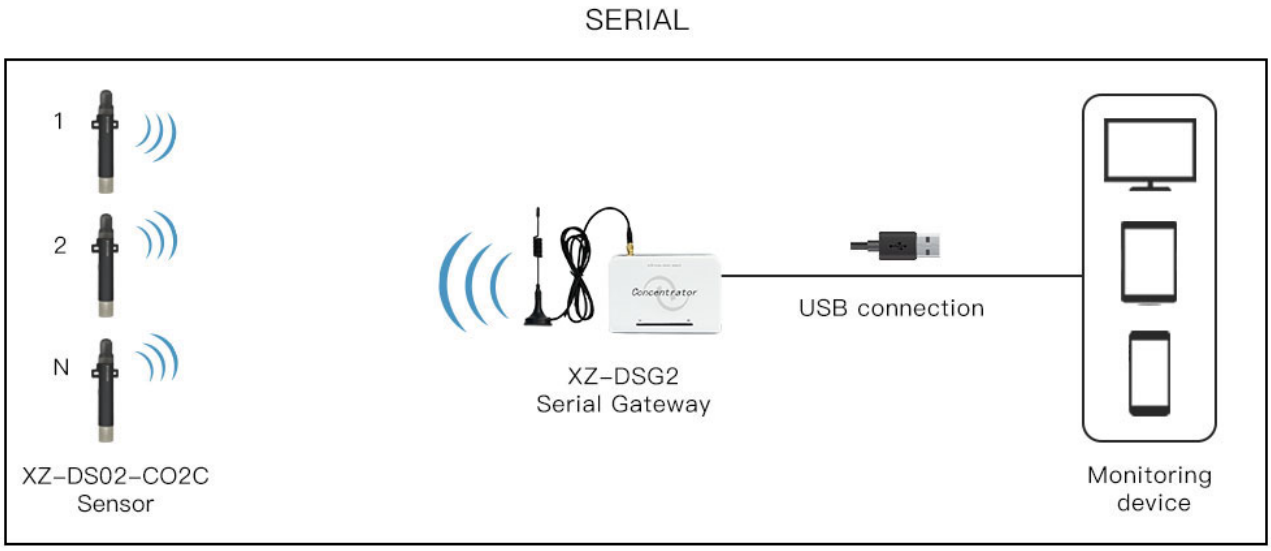
Basic parameters		Network Parameters		Wireless Parameters	
Working voltage	DC：5V	Wired network:	RJ45	Working frequency	433MHz /480MHz /868MHz /915MHz /925MHz customized
Working current	<1A	Communication Method	TCP/IP	Receive sensitivity	-136dBm
Working Temperature	-40～80℃	Parameters Configuration	Serial port configuration IP or domain name	Transmission distance	5KM (LOS）



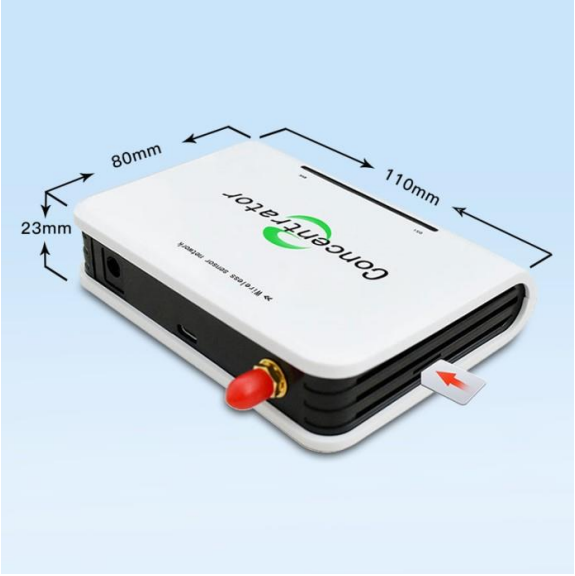
7.2 USB Serial Gateway XZ-DSG2

- Install and use; DC power supply;
- Micro USB to serial port,9600bps;
- Automatic routing to adapt to repeaters;
- Wireless transmission more than 5000m;
- Centralized acquisition, multimode sensor.
- One Gateway can work with more than 100pcs sensors

Basic parameters		Serial Port Parameters	Wireless Parameters	
Working voltage	DC：5V	Micro USB to serial port	Working frequency	433MHz /480MHz /868MHz /915MHz /925MHz customized
Working current	<1A	9600bps	Receive sensitivity	-136dBm
Working Temperature	-40～80℃	8N1	Transmission distance	5KM (LOS）



7.3 4G Gateway XZ-DSG4

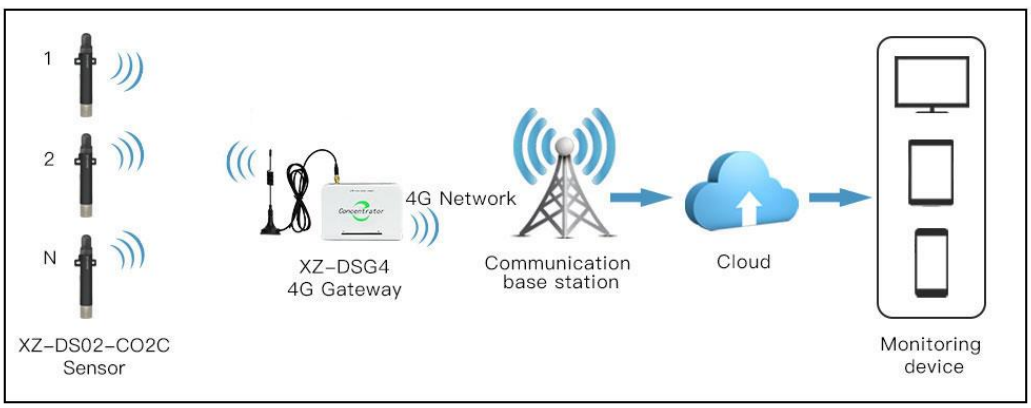


- Install and use, DC power supply;
- Support full netcom,4G/3G/2G
- Automatic routing, adapting to repeaters;
- Wireless transmission, more than 5KM Line of sight;
- Centralized acquisition, multi-mode sensor.
- Working on hopping frequency, Strong anti-interference ability
- One Gateway can work with more than 100pcs sensors

Product Parameters:

Basic parameters		Network Parameters		Wireless Parameters	
Working voltage	DC：5V	All Netcom	4G/3G/2G	Working frequency	433MHz /480MHz /868MHz /915MHz /925MHz customized ）
Working current	<1A	Communication Method	TCP/IP	Receive sensitivity	-136dBm
Working Temperature	-40～80℃	Parameters Configuration	Serial port configuration IP or domain name	Transmission distance	5KM (LOS）

4G



7.4 Modbus Gateway XZ-DS-MUS

XZ-DS-MUS can receive lora sensor data and store it into the corresponding configured space then read out from the serial port through the MODBUS protocol

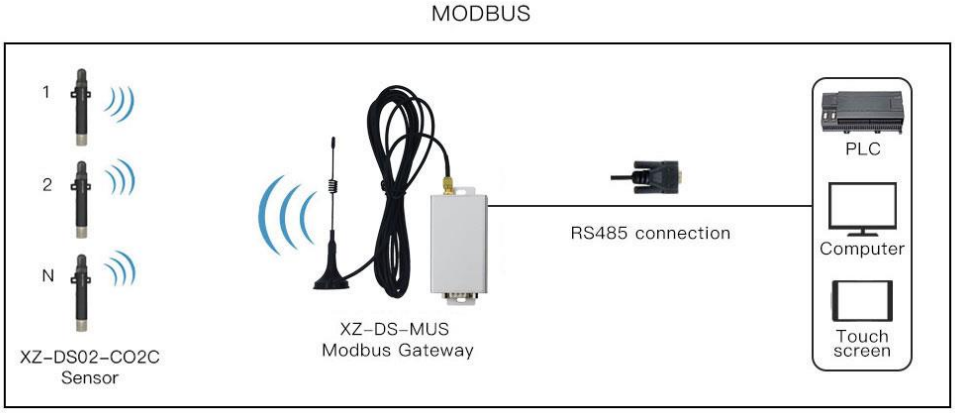
One Gateway can work with 30pcs sensors.

Product parameter

Working Frequency	433MHz/480MHz/868MHz/915MHz/925MHz customized
Transmit Power	<18dBm
Sensitivity	<-128dBm
Transmit current	<120mA
Receiving current	<40mA
Working Voltage	5~36V @ XZ-DS-MUS
Transmission distance	>2KM(Line of sight)
Working temperature	-40℃～+80℃
Interface	9600bps,8N1, RS485

XZ-DS-MUS Pin Definition

	Pins	XZ-DS-MUS	Remark
DB9male connector	1	VCC (+5V)	5 ～ 36V customized
	2	RS-232/RXD	
	3	RS-232/TXD	
	4	GND	Power Ground
	5	AGND	Signal grounding
	6	RS-485/A	
	7	RS-485/B	
	8		
	9		



8. Software and cloud server for remote monitoring

We provide free software and cloud server for remote monitoring, and we can also provide protocols for customers to build their own platform. If using our XZ-DSG1 gateway, one can use both our software and cloud server; if use our XZ-DSG2 gateway, one can only use our Galaxy software; if using our XZ-DSG4 gateway, one can only use our cloud server; if using our XZ-DS-MUS gateway, one can use our Modbus software tool.