ZLAN®

IOT Solution Selection Manual

Chips and embedded modules
Ethernet/WiFi/LoRa/4G

Wireless communication
LoRa/Zigbee/433M

Carrier network
4G/5G/NB-IoT

Serial server
1~32口/rail/Isolated type

WiFi products
WiFi/Ethernet/Serial port

Digital/analog acquisition
DI/DO/AI 4~16 port

Optical fiber products
Single mode/multi-mode
/RS232/RS485

Industrial protocol gateway
Various protocol conversion/
cloud interconnectionPROFINET
/BACnet/Modbus

Shanghai ZLAN Information Technology Co.,Ltd

TEL：400-601-5103
Address：Shihong Jinyuan Center, 28 Yuanwen Road, Minhang District, Shanghai
WEB：www.zlmcu.com

ZLAN Cloud　Wechat mini program　ZLAN IoT APP

The spirit of the ZLAN team

"Zhuo" symbolizes excellence

"LAN" compared to mountains

the pursuit of excellence is akin to scaling the peak

The vision of the ZLAN people

Connect IoT devices seamlessly to

the network and monitor them at

anytime and in any place.

CONTENTS

◆ Products

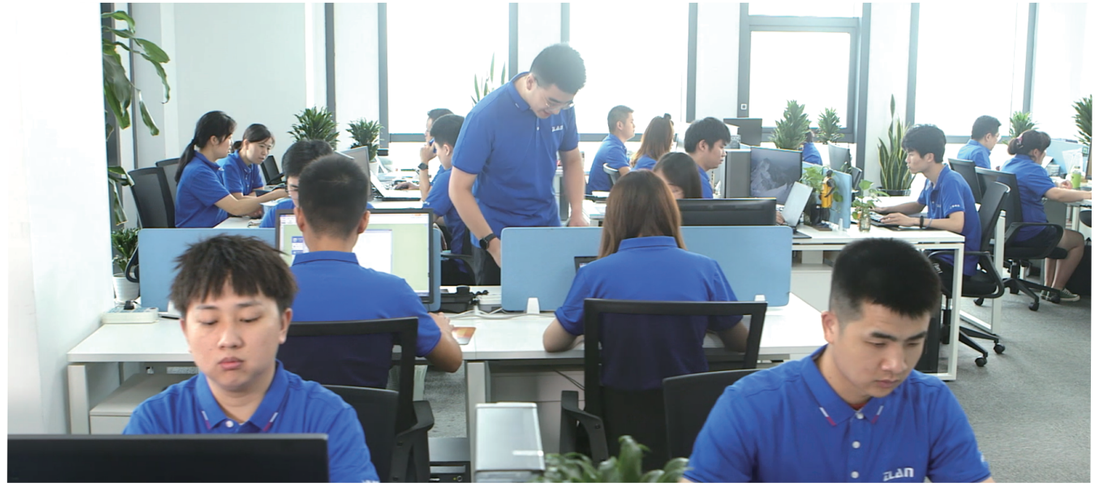
◆ Solutions

COMPANY PROFILE

Shanghai ZLAN Information Technology Co., Ltd. is a professional provider of industrial IoT solutions, research and development, production, sales as one of the set Group company. Shanghai ZLAN was founded in 2008 by Dr. Li Zhanglin, an expert in embedded TCP/IP protocols, with the registered trademark "ZLAN". The production company under the group has passed ISO9001 certification. The company has always adhered to the principles of technological innovation and quality first. After more than ten years of development, it has gradually become a company capable of providing various types of Internet of Things communication equipment and overall Internet of Things solutions. It is a group company integrating R & D, production, sales, and project undertaking capabilities.Shanghai ZLAN products include: serial port server, serial port to Ethernet chip and module, 4G DTU/ module, Modbus gateway, remote IO controller, serial port to Wifi/LoRa/Zigbee module and terminal, serial port to optical fiber, industrial 4G router, industrial switch, various sorts of interface converters, etc. What we provide:ZLAN cloud platform, cloud configuration, Wechat mini program, APP and other overall IoT solutions and customization Platform. ZLAN cloud platform can be connected to various networked devices of ZLAN, and implement cloud management of devices.

Scan the code to watch the company introduction video

Shanghai ZLAN has been deeply committed to the core technology of IoT networking, ZLAN has its own proprietary embedded TCP/IP stack software--ZLIP, and has obtained national copyright registration (registered 2007SR09907). ZLIP has its own proprietary embedded TCP/IP protocol stack software, which has obtained national copyright registration (registration number 2007SR09907). ZLAN is the first to develop a single-chip serial server in the serial server field, integrating the core technology of serial server in one chip, and can directly provide the chip for customers.ZLAN's P2P serial server products can realize intranet penetration, and has obtained the national invention patent (ZL201410088010.5). In the field of Web-based control, ZLAN has the invention patent of "Web server based on webpage module" (ZL201410088641.7), ZLAN has a utility model patent (ZL201420108890.3) in the field of multi-serial port server.



In more than 16 years of customer service, the application fields of ZLAN products have expanded to electrical power, industrial automation, rail transit, energy monitoring, medical, security, finance and other fields, serving tens of thousands of customers around the world. The products have been applied in railway ID card inbound inspection system, Bank of China banknote counting system, Shanghai residents' electricity meter collection and other important projects. "Zhuo" symbolizes excellence, "LAN" compared to the peak, ZLAN people have been adhering to the pursuit of excellence,adhere to the concept of quality first, technological innovation, service first, after 16 years of development, ZLAN products have been successfully and widely used in various industrial fields, and have been trusted by customers for their high quality service and stable performance.

DEVELOPMENT COURSE

2008

July 2008/Founded by Dr. Zhanglin Li, an expert in the field of embedded TCP/IP, ZLAN was incorporated in Shanghai.
December 2008/ First Generation Networking core product ZLSN2000 launched.

2010

March 2010/The first multi-serial server ZLAN5400, was successfully developed and launched in the market.

2011

ZLSN2002 products meet the requirements of electric power and have been successfully used in more than 10,000 residential meter-reading projects in Shanghai. In May, the second-generation serial-to-Ethernet core module, ZLSN2002, was successfully developed, and is surge-resistant and passes the group pulse test and other high-standard tests of the electric power industry.

2013

In May, ZLAN launched the chip-level serial server ZLAN1003.
In July, ZLAN developed the third generation serial server ZLAN5143, ZLAN5143I and etc.

2014

In January, ZLAN developed P2P serial server products and applied for national patents. Provide new solutions for the IoT.

2015

In January, ZLAN "multi-serial server" obtained patent certificate

2016

In March, ZLAN launches N2N product ZLAN7144N, which can realize cross-Internet control of intranet devices and network PLCs.

2018

May/ZLAN moved to its own property: Jinyuan Center, Yuanwen Road, Minhang District, Shanghai
In September, ZLAN developed the ZLAN Cloud platform, and subsequently launched Wechat mini programs, cloud configuration, and cloud device management.

2019

In March, ZLAN developed MQTT gateway and JSON gateway, which can convert Modbus RTU to JSON

2020

In February,ZLAN completes Development of YOXO1007, a New Generation of Serial-to-Ethernet Single-Chips.
In September, ZLAN has completed the development of 4G CAT1 DTU, which can provide more cost-effective 4G DTU.

2021

In January, ZLAN has completed the development of 5G products, realizing serial port to 5G and analog acquisition via 5G network.

2022

In February, ZLAN launched the Black Diamond series of products, characterized by rail type and high cost performance, covering all kinds of gateways.
In August, ZLAN Intelligent Inspection Robot Project was honored to be listed in the "2022 Star of IoT" China IoT Application Benchmark Case List.
In December, Shanghai ZLAN participated in the 24th China Hi-Tech Fair, and Black Diamond Product ZLAN5407M won the excellent product award.

2023

In February, Shanghai ZLAN was honored as one of the top 50 Chinese IoT enterprises with investment value in "2022 Star of IoT".

Our advantage

Founded by Dr. Li Zhanglin, an expert in embedded networking TCP/IP protocols, Shanghai ZLAN is based on the development of ZLIP protocol stack with completely independent intellectual property rights, and has reached the industry-leading level in design innovation and performance optimization of networking protocols.

After 16 years of development, ZLAN has accumulated a rich product line involving Ethernet, wifi, 4G/5G, LoRa, NB-IoT, Zigbee, fiber optic, RS485/232/422, Modbus gateway, MQTT/MQTTS gateway, JSON gateway, PROFINET gateway, BACnet gateway and so on. A full range of communication solutions could be provided according to client's requirements.

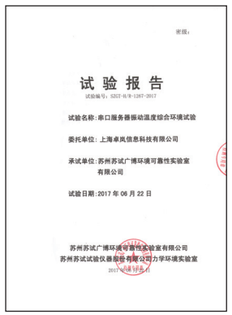
Shanghai ZLAN always insists on executing high standards for its products, and conducts industrial-grade temperature, industrial-grade high temperature and high humidity, network port surge, and fast group pulse tests for its products, taking stability and quality as the first criterion. ZLAN independently developed a single chip for serial server, condensing the core technology into a single chip to provide customers with more integrated and cost-effective networking products.

ZLAN has innovatively developed P2P serial port server and N2N networking technology to realize convenient point-to-point communication, providing a brand-new solution for the IoT. ZLAN cloud and its supporting cloud configuration, WeChat applet and mobile APP can provide users with comprehensive solutions in the cloud and on the cell phone, and all ZLAN networked devices can be seamlessly connected to ZLAN cloud and all kinds of public clouds.

Various kinds of characteristic gateways: with storage type, automatic learning type, manually configurable Modbus gateway; with ModbusRTU, DLT-645 to JSON gateway, which can be docked to all kinds of cloud platforms.

EMC TEST

High and low temperature test



Vibration test

High temperature and humidity test

Company Honor

Shanghai ZLAN has national invention patents for P2P serial port server and Web networking module; it can provide single-chip solutions for serial port server.

ZLAN has the national invention patent of P2P serial port server and Web networking module; it can provide single-chip solution of serial port server; it has the embedded TCP/IP stack software, which is the core software of networking with independent intellectual property rights; and it can provide various kinds of networking devices,-ZLAN cloud platform, micro letter small program and other overall solutions.

01 PRODUCTS

Single serial server

Serial port server can connect serial port devices such as RS232/485/422 to the network to establish a transmission channel between the serial port and the network, so that the data of serial port devices can be collected through the computer and the server or the serial port controller can perform corresponding actions.

Advantages of networking: Generally using Ethernet, wired network cable, connection and data stability is high, no additional traffic charges. In places with Ethernet networks, serial port server IoT access with wired network ports is preferred.

Shanghai ZLAN single serial server is divided into full isolation type ZLAN5143I, serial isolation type ZLAN5143BI, cost-effective ZLAN5107, ordinary ZLAN5143, high-performance iot gateway ZLAN5112, rail type ZLAN5143D, RS485 small serial server ZLAN5143 K. RS232 Small serial port server ZLAN5103K.

PRODUCTS

Single serial server

ZLAN5143I

Fully isolated serial port server, Modbus gateway

Hardware features

- RS485 driver 256 loads
- Power input Yes 3000V isolation
- RS485/422 has Interface isolation of 2500V
- Provide housing Ground terminal

ZLAN5143I is a serial port server /Modbus gateway product with high reliability and high performance, specially designed to resist lightning strike, electromagnetic interference and harsh environment requirements. It is the flagship product of serial port server. It can be used in tunnel monitoring, wind power generation, field geological disaster monitoring and other industrial applications requiring anti-interference and anti-lightning. ZLAN5143I features power supply, RS485/422, and full network port isolation.

ZLAN5143

Classic serial port server /Modbus gateway

ZLAN5143 is a classic ordinary serial port server. If you need RS485 serial port photoelectric isolation, you can choose ZLAN5143BI, and if you need RS232 serial port photoelectric isolation, you can choose ZLAN5143BI-232. ZLAN5143 is equipped with RS232/485/422 serial ports and Modbus gateway function.

ZLAN5112

High performance iot gateway

ZLAN5112 is a high-performance Internet of Things gateway, supporting MOTTS bidirectional authentication, RS232 and RS485/422 work at the same time, different serial ports are distinguished by port or IP, large memory, can support 1000 collection points to JSON, 921.6kbps high-speed serial communication without packet loss, And TCP server mode supports 100 TCP connections at the same time, with an industrial-grade temperature range.

ZLAN5143D

Guideway RS485 serial port server /Modbus gateway

ZLAN5143D is a guideway serial port server with only RS485 interface (excluding RS232), which has the characteristics of small size and high cost performance. Terminal power supply, 9 to 24V DC power supply.

ZLAN5143K

Cost-effective serial port server /Modbus gateway

ZLAN5143K is a small-size serial port server that only contains RS485 interface. In virtual serial port mode, it supports dynamic adaptive baud rate of host serial port, supports MQTT+JSON, Modbus protocol conversion, and adopts anti-interference EMC4 level. The installation method is desktop or optional guide accessories.

ZLAN5103K

Small RS232 serial port server /Modbus gateway

ZLAN5103K is a cost-effective serial port server containing only RS232 interface, with small size and high cost performance, optional back guide accessories. Terminal power supply, can be connected to on-site 24V DC power supply.

Software function feature

ZLAN5143I, ZLAN5143, ZLAN5143D, ZLAN5103K have the following software features

multi-mode	Supports TCP server, TCP client, UDP/UDP multicast, and TCP server/client coexistence
Multiple connection	The TCP client supports seven destination IP addresses and the TCP server supports 30 connections
multi-protocol	Supports MQTT, JSON, DLT-645, Modbus and other protocols to connect to various public clouds
Modbus Gateway	Support simple Modbus gateway, storage Modbus gateway, ZLMB pre-configured Modbus gateway
multi-c onfiguration	Supports cloud management, remote configuration, and remote upgrade
More support	Supports the registration packet, heartbeat packet, DHCP, DNS, and NTP functions

Option list

Type	Power isolation	Serial type	Serial isolation	Rail	voltage	LxWxH cm
ZLAN5143I	3KV	RS232/485/422	485Chip isolation	/	18 ~ 36V	9.4×6.5×2.5
ZLAN5143BI	/	RS232/485	485 Optocoupler isolation	/	9 ~ 48V	9.4×6.5×2.5
ZLAN5143BI-232	/	RS232	232 Optocoupler isolation	/	9 ~ 48V	9.4×6.5×2.5
ZLAN5143	/	RS232/485/422	/	/	9 ~ 24V	9.4×6.5×2.5
ZLAN5107	/	RS232/485/422	/	/	9 ~ 24V	9.4×6.5×2.5
ZLAN5112	/	RS232/485/422	/	/	9 ~ 24V	9.4×6.5×2.5
ZLAN5143D	/	RS485	/	rail	9 ~ 24V	8.7×3.6×5.9
ZLAN5143DI	/	RS485	485 Optocoupler isolation	rail	9 ~ 24V	8.7×3.6×5.9
ZLAN5143K	/	RS485	/	optional	9 ~ 24V	5.9x4.7x2.0
ZLAN5103K	/	RS232	/	optional	9 ~ 24V	5.9x4.7x2.0

Shanghai ZLAN provides multiple serial server including two port, four port, eight port, sixteen port, thirty-two port serial server. Among them, 8 port, 16 port, 32 port serial server can provide 1U rack structure products. Zolan multi-serial server is a patented product, with easy to use, support two network ports. Some models support serial isolation and rail mounting.

Typical application: Multiple serial port servers can use different serial ports to connect different models of serial port devices in the same place. Only one network cable is required onsite. In addition, when the number of RS485 meters exceeds 32, multiple serial ports are generally required to expand more serial port devices.

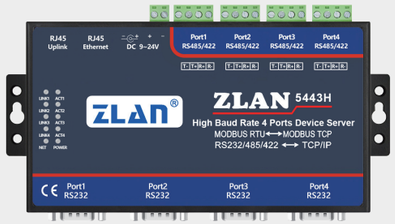
Two-serial server

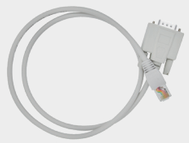
ZLAN5243A	ZLAN5207M	ZLAN5212DI
classic	rail	Optocoupler isolation
RS232/485/422	RS485	RS485
Dual network port	Single network port	Single network port
RS232 is in RJ45 form	/	/
9.4cm×6.5cm×2.5cm	3.7cm×8.3cm×8.9cm	8.8cm×6.2cm×3.3cm
 RJ45 to DB9 conversion cable		

Multi-serial server

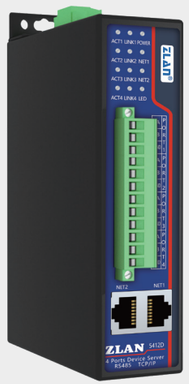
Four-serial server

ZLAN5443H	ZLAN5443D	ZLAN5412D
classic	rail + optocoupler isolation	rail + metal housing
RS232/485/422	RS485	RS485
Dual network port	Dual network port	Dual network port
9.2cm×19.7cm×2.5cm	15cm×10.5cm×4.1cm	15cm×10.5cm×4.1cm

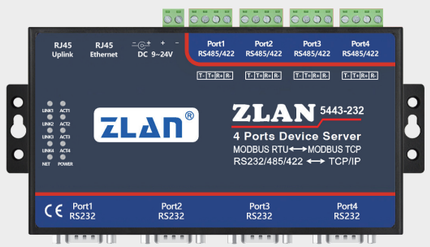




RJ45转DB9转接线



ZLAN5443-232	ZLAN5407M
232 Isolation	rail
RS232	RS485
Dual network port	Single network port
9.2cm×19.7cm×2.5cm	3.7cm×8.3cm×8.9cm



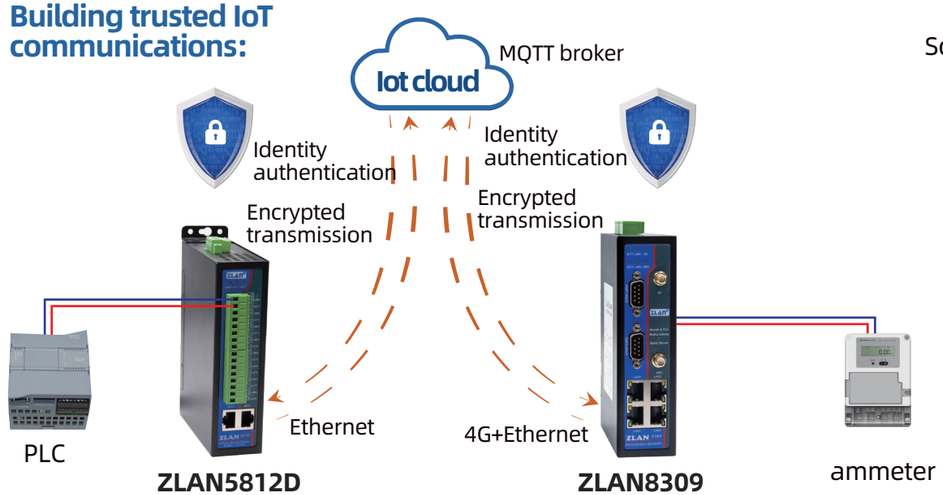
Secure communication serial port server

Secure serial port server MQTTS

1. The transmitted data is completely encrypted, and the listener cannot obtain the information content.
2. The communication server and client are authenticated to ensure that the identities of the communication parties are trusted.
3. Based on public key system and certificate system, encryption security can be guaranteed.

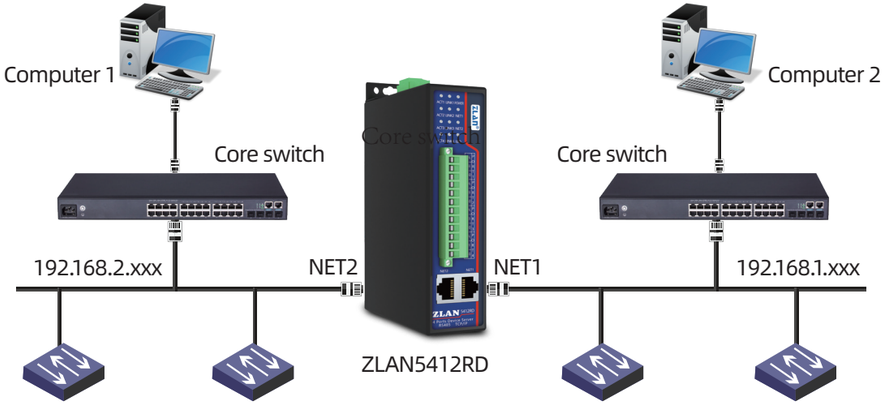
Scan the code for details

Building trusted IoT communications:



Redundant network port Serial port server

ZLAN5412RD is a serial port server with dual network port redundancy. In a common serial port server, two network ports are connected to the same switch or host, which causes a network storm. However, the two network ports of the 5412RD have the redundancy function and can be connected to different Lans. In redundant dual network, two hosts are connected by forming two independent physical networks. If one of the networks is disconnected, the other PC host can still communicate with the serial device over the standby network. Reduce the failure rate of data transmission, expand the range of communication IP addresses, and improve the working efficiency of equipment. Redundant network ports Serial port servers improve system reliability, availability, and performance to ensure normal system running and data security.



Redundant network port Serial port server network structure

Scan the code for details

PRODUCTS

Multi-serial server

Eight-serial server

ZLAN5843A	ZLAN5812D	ZLAN5812D-L4
classic RS232+RS485	rail + metal case + single IP	rail + metal case + single IP
RS232/485	RS485	RS485
RS485 Need adapter	/	/
Dual network port	Single network port	Quad network port
27cm×10.5cm×2.6cm	15cm×10.5cm×4.1cm	15cm×10.5cm×4.1cm
 DB9 Turn terminal adapter board		

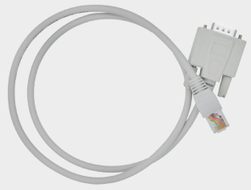
ZLAN5807M	ZLAN5843A-H	ZLAN5840I
rail+ small + high cost	Newly upgraded Industrial 8 serial server	485 isolated type
RS485	RS485/232/422	RS485
Single network port	Dual network port	Dual network port
3.7cm×8.3cm×8.9cm	27cm×10.5cm×2.6cm	27cm×10.5cm×2.6cm
		

16/32 rack-type serial port server

ZLAN5G00A is a 16 serial port server, 1U rack installation mode, built-in RS232/485/422 three forms of serial ports, 16 serial ports independently to realize the protocol transfer between serial ports and TCP/IP. Supports the Modbus gateway function. Provides four additional network ports. The serial port is an RJ45 port. Users can choose to make their own RJ45 crystal head, or use conversion accessories, when selecting RS485 form, select the following accessories to convert RJ45 into terminals; When RS232 is selected, the DB9 conversion cable is converted to DB9. When selecting the RS422 interface, you need to customize the ZLAN5G00A-422 model. ZLAN5G00A uses 220V AC power supply and adopts the standard size of 19 inches 1U (L x W x H =48cm×18cm×4.4cm).

ZLAN5W12 supports 32 serial ports, embedded Telnet to serial port protocol, can achieve Telnet and remote serial device/switch Console port communication.

Rack type 16 Serial port server ZLAN5G00A



RJ45 to RS232

RJ45 to RS422

RJ45 to RS485

Use effect

32 Serial Port Server ZLAN5W12

Multi-serial server

Rack type serial server selection table

Type	Number of serial ports	IP number
ZLAN5G00A	16	/
ZLAN5G00A-8	8	/
ZLAN5W12	32	4~32个 IP
ZLAN5G12	16	2~16个 IP
ZLAN5812	8	1~8个IP

Software function feature

01 All products support TCP server, TCP client, UDP/UDP multicast, TCP server/client coexistence.

02 All products support multiple connections: The TCP client supports 7 destination IP addresses. The TCP server supports 30 connections.

03 Supports MQTT, JSON, DLT-645, Modbus and other protocols to connect to various public clouds.

04 Non-storage Modbus gateway is supported, while the new model supports simple Modbus gateway and storage Modbus Gateway, ZLMB Pre-configured Modbus gateway and other types of Modbus gateways.

05 The new model supports cloud management devices, remote configuration, remote upgrade, registration packages, heartbeat packages.

4G DTU

ZLAN8305
Full Netcom + large storage capacity
RS232/485
Configuration mode: Serial port/cloud platform
Offline storage： 49MB
ZLAN8305 supports 7-mode full Netcom, Support telecom, mobile, Unicom all kinds of cards Support -40 ~ 85℃ industrial temperature range


ZLAN8305L
Full Netcom + large storage capacity + network port
RS232/485
nfiguration mode: Serial port/Cloud platform /Network port /Web
Offline storage： 49MB
With a 1000M network port 4G and Ethernet interworking function With network port to 4G router function


ZLAN8308M
CAT1 4G+ rail + High cost performance
RS485
Configuration mode: Serial port/cloud platform
Offline storage： 256K
·CAT1 4G module · Guide rail installation · High cost performance


4G DTU

A gateway for iot data acquisition

ZLAN 4G DTU is available in 3 types

1. Full Netcom 4G DTU: ZLAN8305, this product supports 7 modes of all operators, with high compatibility.

2.CAT1 4G DTU: ZLAN8308, this product only supports 4G LTE and 2G GPRS, supports all operators. The uplink speed is 5M and the downlink speed is 10M, which fully meets the requirements of DTU communication. The guide rail model is ZLAN8308M.

3. 4G DTU with network port: ZLAN8305L. This product adds 1000M Ethernet network port on the basis of ZLAN8305, which can be used as a cable network where there is no 4G signal. In addition, it can be used as a router to connect multiple serial servers to 8305L Ethernet network ports to realize multi-serial ports to 4G.

Typical application: When there is no Ethernet wired network and no wifi hotspot can be used on the site, 4G DTU can be used to collect data, which is simple and easy to use, but it requires a monthly communication fee.

ZLAN8308

Industrial grade

High cost performance

CAT1 4G

RS232/485

Configuration mode:

Serial port/cloud platform

Offline storage: 256K

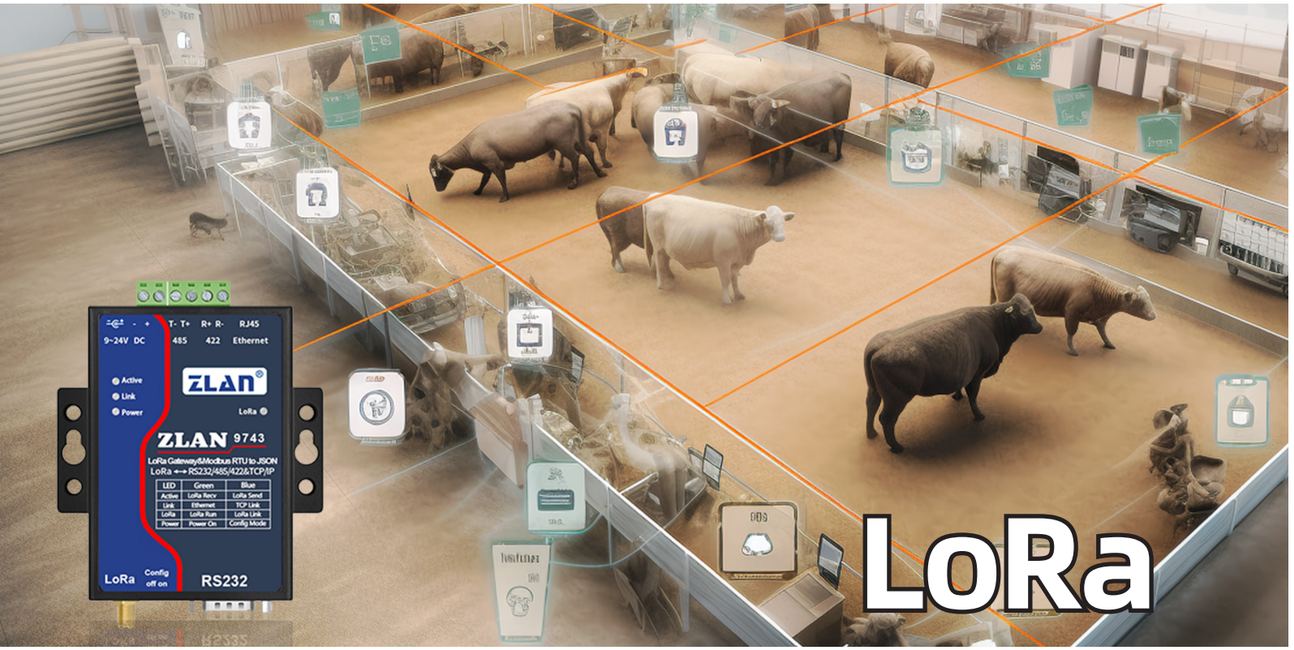
Support remote management

Software function feature

- 01 Support MQTT protocol and Modbus TCP to RTU protocol
- 02 Supports custom registration packages and heartbeat packets
- 03 Supports remote program upgrade on the server
- 04 Supports Modbus RTU to JSON
- 05 Supports DLT-645 to automatically collect and transfer JSON
- 06 Configure and remotely upgrade devices on the cloud platform

PRODUCTS

LoRa products



Remote radio communication

LoRa is a long-distance wireless communication scheme. Compared with GPRS and 4G schemes, LoRa does not need a monthly fee for access to the network, and the distance is farther than Wifi and Zigbee. So LoRa is more and more widely used in small data remote communication.

Shanghai ZLAN LoRa products can achieve -140dBm receiving sensitivity and +20dBm output power, outdoor line-of-sight communication distance of 8km, with long distance, low power consumption, anti-interference characteristics. At present, ZLAN LoRa products are divided into two categories, one is serial port to LoRa, model ZLAN9700/ZLAN9700M, which realizes serial port to LoRa; The other type is Ethernet (TCP/IP) to LoRa, the model is ZLAN9743, which can connect LoRa and the Internet.

LoRa Product characteristics

01 Communication distance

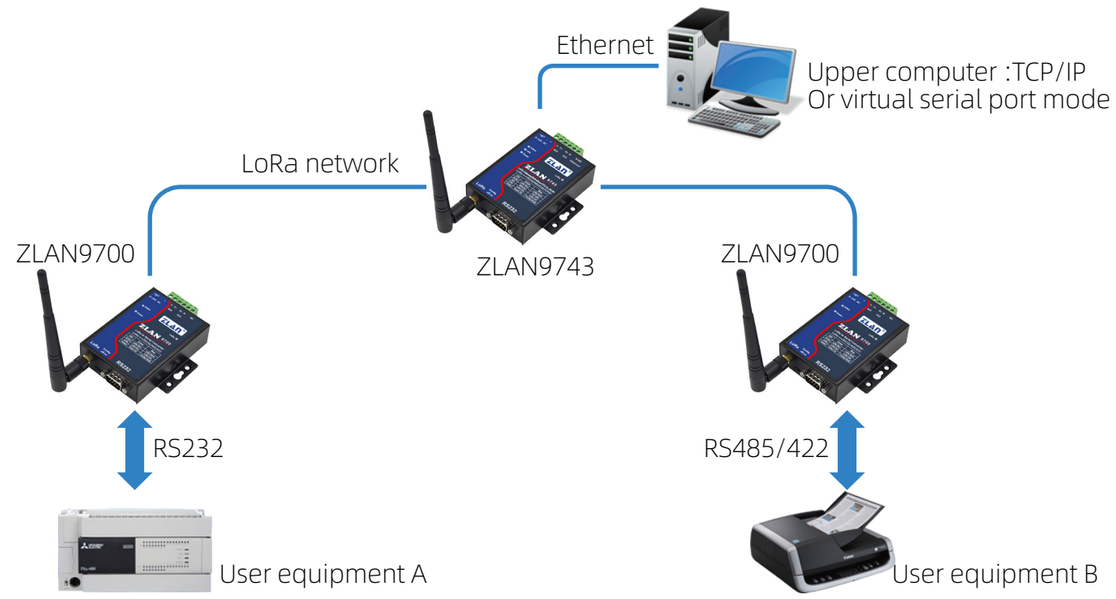
02 Multi-functional LoRa to Ethernet function, to achieve LoRa to TCP/IP

03 Supports RS485, 232/422 interfaces

04 9 to 24V power supply, support plug and terminal two power supply modes

05 LED indicators indicate the direction of data flow, LoRa communication status, equipment operating status, intuitive reaction equipment status

ZLAN9743 can implement LoRa to Ethernet (TCP/IP) LoRa gateway function. When collecting device data through the upper computer TCP/IP, the network port of a ZLAN9743 is connected to the Ethernet network, multiple ZLAN9700 can be connected to the device to collect data, and the data is transferred to 9743 through LoRa, and 9743 is then transferred to the computer through the Ethernet. The computer and 9743 can adopt Modbus TCP, virtual serial port, JSON, TCP/IP protocol, MQTT protocol and other modes. It can collect, report, and directly connect to the public cloud.



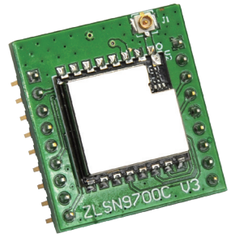
▲ZLAN9743
LoRa to TCP/IP

▲ZLAN9700
LoRa to RS232/RS485/RS422

▲ZLAN9700M
rail LoRa to RS485

▶ ZLSN9700C(LoRa to serial port module)

ZLAN9700C is a TTL level serial to LoRa core module that can be used for embedded circuit board applications. Operating voltage DC5V, size: 26.4mm×28.2mm, outdoor without shelter 6km~8km.



Zigbee products

The biggest advantage of Zigbee is that it can support AD hoc networking, which can greatly expand the distance of wireless communication through the relay of intermediate nodes. Although the communication distance of a single product is about 2Km, it is not as good as the 6-8km of LoRa products, but the AD hoc wireless communication method can make up for the lack of communication distance. Shanghai ZLAN's ZigBee products are currently divided into two categories.

ZLAN9500

Zigbee to RS232/RS485/RS422

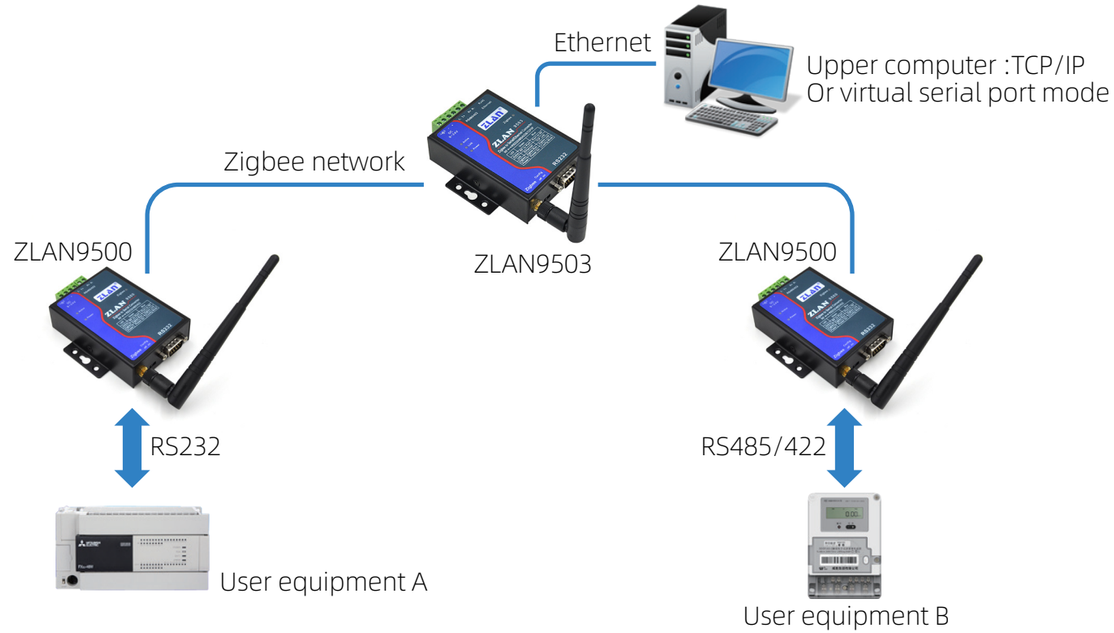
ZLAN9503

Zigbee to TCP/IP

Zigbee two broad categories

One is serial to ZigBee, model ZLAN9500, it contains three forms of serial port, namely RS232/485/422, generally can be used to connect, so that RS485 interface to achieve wireless transmission;

One is Ethernet (TCP/IP) to ZigBee, the model is ZLAN9503, ZLAN9503+ZLAN9500 can achieve RS485 to TCP/IP wireless transmission, as shown in the figure:



Zigbee product characteristics

01	Long distance ZigBee communication solution, high performance, high stability. Communication distance up to 2 km.
02	Big data transmission without packet loss. Two-way data transmission under 38400bps does not result in packet loss and pause, and the data is smooth.
03	ZLAN9503 has a multi-functional ZigBee to Ethernet function to achieve ZigBee to TCP/IP, and can be configured asTCP server, TCP client, and UDP modes.
04	ZigBee networking mode is flexible: can achieve point-to-point, point-to-multipoint;There are central nodes and no central nodes;Star network, mesh network, peer-to-peer network and other modes.
05	Large network capacity: 16 channels optional, 65535 network ID can be arbitrarily set.
06	Six LED indicators indicate data flow direction, TCP/IP network status, Zigbee signal, and connection status Visualize the device status.
07	L x W x H =9.4cm×6.5cm×2.5cm , 9 ~ 24V Dc power supply.

WIFI products

Enable RS485/232/422 devices to quickly achieve wireless networking

WIFI products

Compared with 5G/4G/NB-IoT, WIFI communication does not require a monthly fee. Compared with LoRa/Zigbee communication mode, the bandwidth is wider, the communication speed is faster, but the communication distance is short. Compared with Ethernet, the biggest advantage of WIFI communication is that there is no need for wiring, but the stability is not as good as Ethernet, and in the same case, try to use Ethernet.

ZLAN WIFI to serial port products, including WIFI core module, RS232/RS485 wireless serial port server industrial AP. It can easily connect all kinds of serial devices to WIFI wireless network.

WIFI to serial port

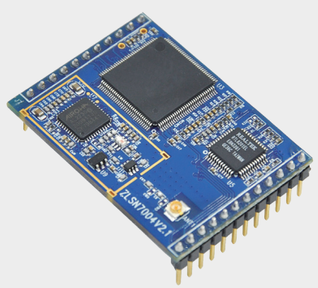
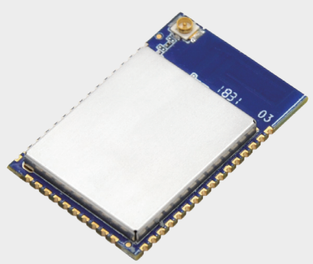
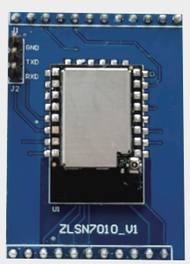
ZLAN7104	ZLAN7146
Network port product	5.8G wifi product
Wifi+Net interface+RS232/485/422	5.8G+2.4G+RS232/485/422
Tape network port	No network port
Support Ethernet and Wifi access at the same time support network port and WIFI communication	Support 5.8Gwifi
9.4cm×6.5cm×2.5cm	9.4cm×6.5cm×2.5cm
	

PRODUCTS

WIFI products

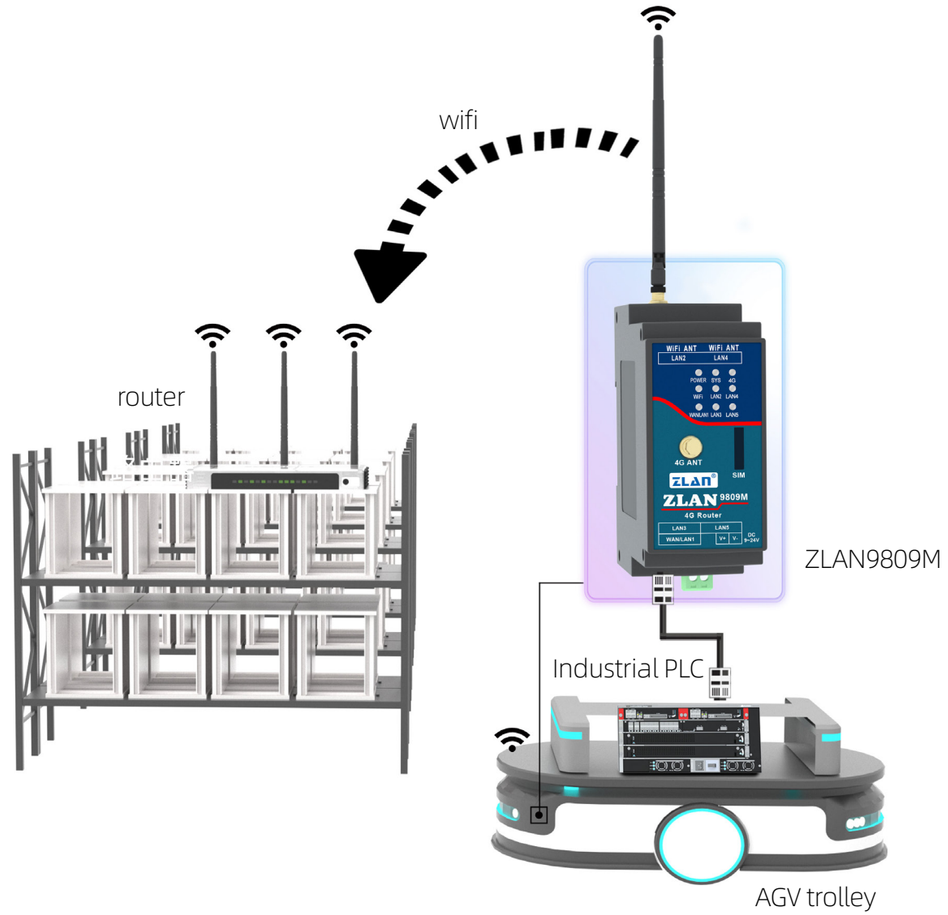
ZLAN7110M	ZLAN7104M	ZLAN7106M
High cost performance	Rail network port products	5.8G rail wifi
2.4G wifi+rail+RS485	Wifi+Net interface+rail+RS485	Wifi+5.8G+rail+RS485
No network port	network port	network port
ZLAN7110MI is the RS485 tape isolation version	Supports simultaneous Ethernet and Wifi access Supports network port and WIFI communication ZLAN7104MI is the RS485 tape isolation version	Support 5.8Gwifi The ZLAN7106MI is RS485 Tape isolated version
3.7cm×8.3cm×8.9cm	3.7cm×8.3cm×8.9cm	3.7cm×8.3cm×8.9cm
		

Wifi to TTL serial port module

ZLSN7004	ZLSN7046T	ZLSN7010
WIFI+Network port module	5.8G wifi module	wifi module
/	support 5.8Gwifi	/
43.5mmx31.0mm	31.2mmx20.2mm	43mmx30mm
Array pin	Stamp hole	Array pin
		

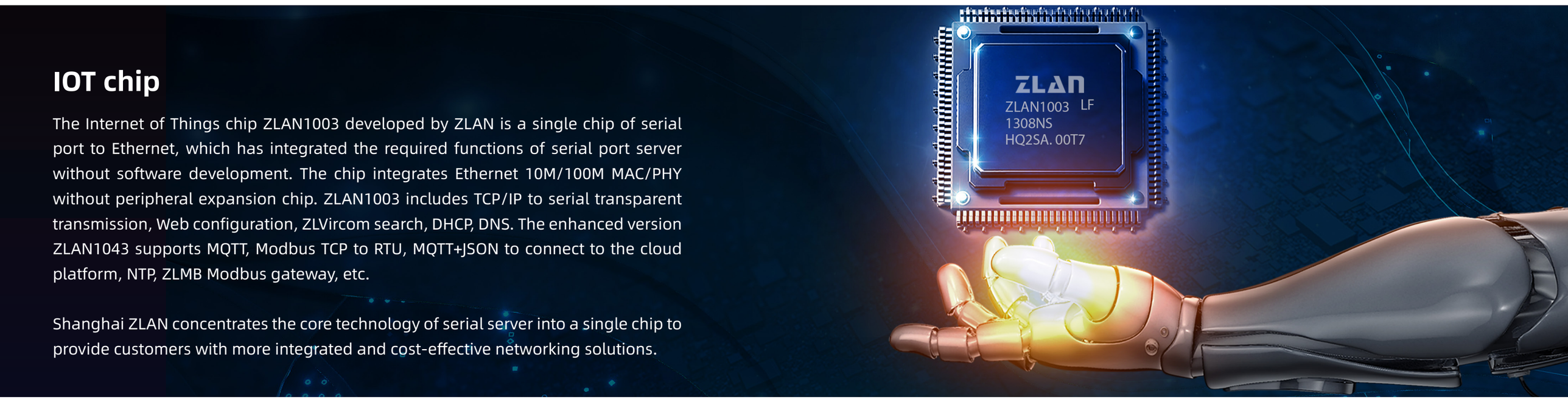
Network port to wifi function

It can realize the network port to WIFI networking of network port devices such as PLC/ touch screen



ZLAN9809M

ZLAN9809M can be used as network port to wifi, and ZLAN9809M can be connected to wifi router in STA mode to connect network port PLC and other network port devices to the wireless network.



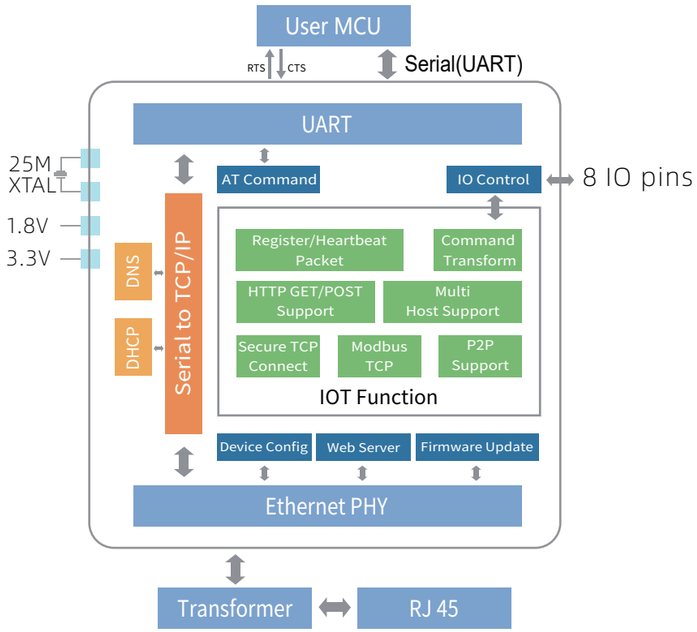
IOT chip

The Internet of Things chip ZLAN1003 developed by ZLAN is a single chip of serial port to Ethernet, which has integrated the required functions of serial port server without software development. The chip integrates Ethernet 10M/100M MAC/PHY without peripheral expansion chip. ZLAN1003 includes TCP/IP to serial transparent transmission, Web configuration, ZLVircom search, DHCP, DNS. The enhanced version ZLAN1043 supports MQTT, Modbus TCP to RTU, MQTT+JSON to connect to the cloud platform, NTP, ZLMB Modbus gateway, etc.

Shanghai ZLAN concentrates the core technology of serial server into a single chip to provide customers with more integrated and cost-effective networking solutions.

Model selection

Model number	Function	Instructions
ZLAN1003	Transparent serial/ Ethernet transmission	Common serial server chip
ZLAN1043	Modbus Gateway Single chip	In addition to the 1003 function also has Modbus Gateway function
ZLAN1043N	P2P single chip	In addition to 1043 function, it also has P2P function， For details about P2P, refer to the solution section of this manual
ZLAN1003W	Web control chip	Ability to have custom web output through embedding， Function of input serial command



ZLAN1003 Block diagram

ZLAN1003

Serial to Ethernet single chip

Iot chip

ZLAN1003 Functional characteristics

01 Internal integration of the full function of serial port to TCP/IP software, without complex programming, easy to use.

02 MAC and PHY interfaces with integrated 10M/100M fast Ethernet.

03 Supports TCP server, TCP client, UDP, and UDP multicast modes.

04 As a TCP client, seven destination IP addresses and ports can be connected at the same time.

05 The baud rate ranges from 300 to 460800 and supports hardware flow control and software flow control.

06 80 pin LQFP package, Lead free package.

07 Indicators: TCP connection establishment indicator, network cable connection indicator, data communication indicator.

08 -40°C to 85°C industrial-grade chips.

09 It supports AT-like instructions for chip connection control, parameter configuration and status reading through serial port.

10 Support for 485 transmit allows control line RS485_EN pin used on RS485 bus.

YOXO1007

Small size/cost-effective serial server single chip

YOXO is the chip brand of Shanghai ZLAN. YOXO1007 chip is a new generation of serial port to Ethernet/serial port server single chip. Compared with ZLAN1003, it has the characteristics of high cost performance and low power consumption. The YOXO1007 comes in a 48-pin QFN package for a smaller size.

Equipping data

· Provide complete reference design schematics, PCB and package

· Provide protocols related to device network port search and serial port AT command

· Provide secondary development library DLL library

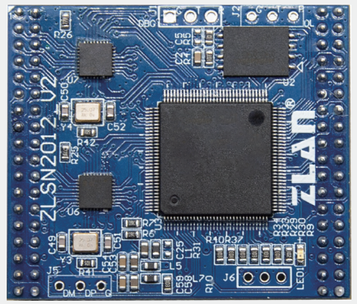
More content： http://www.zlmcu.com/products_YOXO1007.html

Serial port to Ethernet module

ZLSN2812/ZLSN2812L

High performance serial port to Ethernet core module

ZLSN2812



ZLSN2812L

ZLSN2812 is an 8 serial port to Ethernet core module. Provide 8 serial ports, 8 serial ports support hardware flow control and RS485EN control pin, easy access to RS485 circuit. ZLSN2812L provides two network ports to realize the switch function of network ports 1 and 2.

The 4-way and 2-way modules are available

ZLSN2812	ZLSN2812L	ZLSN2412	ZLSN2412L	ZLSN2212	ZLSN2212L
8-way TTL	8-way TTL Dual network port	4-way TTL	4-way TTL Dual network port	2-way TTL	2-way TTL Dual network port

Functional characteristics

01 Has a powerful cloud interconnection function, support MQTT, JSON to Modbus, remote cloud management.

02 Support 921.6bps high-speed serial communication. Multiple serial ports can be configured with different parameters.

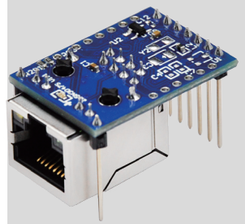
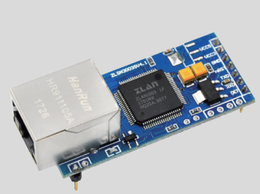
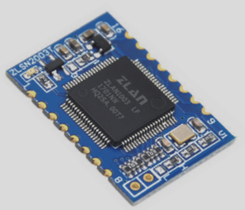
03 Supports 1 to 8 IP addresses, which can be combined or deformed at will.

04 Industrial grade temperature range -40℃~85℃.

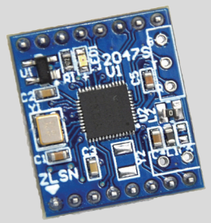
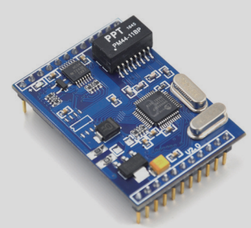
Serial port to Ethernet module

ZLSN series serial to Ethernet core module is the internal core module of serial server, which is a convenient and stable solution for embedded devices, microcontrollers and Internet of Things acquisition systems to access Ethernet. It is a TTL level of the serial port (also known as UART), one end is connected to the Ethernet cable (such as RJ45), to achieve the transparent transmission of serial port and network port, Modbus gateway, MQTT gateway, JSON to Modbus RTU and other functions. ZLSN series core modules support multi-TCP connection, multi-host access, DHCP, DNS, serial port configuration, remote device cloud management, powerful, easy to use.

TTL serial port to network port module

ZLSN3007S	ZLSN3003S	ZLSN3002	ZLSN2003T
Super network port	Super network port	Screw fixed, row line	Stamp hole
Tape RJ45	Tape RJ45	Tape RJ45	No network transformer
Current 50mA	Current 170mA	Current 80mA	Current 170mA
21.7mm×30.6mm	22.5mm×45.7mm	43mm×55mm	20.0mm×30.0mm
Default 3.3V ZLSN3007S adopts the flip down design of the network port to facilitate the design of the network port shell	Default 3.3V	Default 3.3V ZLSN3007S adopts the flip down design of the network port to facilitate the design of the network port shell	/
			

Serial port to Ethernet core module

ZLSN2007S	ZLSN2003B	ZLSN2003S	ZLSN2002
Low power consumption high performance	High performance	Small volume	anti-jamming module
No network transformer	Tape transformer	No network transformer	Tape transformer
Current 50mA	Current 170mA	Current 170mA	Current 80mA
19.1mm×16.3mm	31.75mm × 44.45mm	19.1mm×16.3mm	31.75mm × 44.45mm
/	3.3V	ZLSN2003SL is low speed Low-power module	5V
			

Functional characteristics

01 Multi-mode: Supports TCP server, TCP client, UDP/UDP multicast, and TCP server/client coexistence.

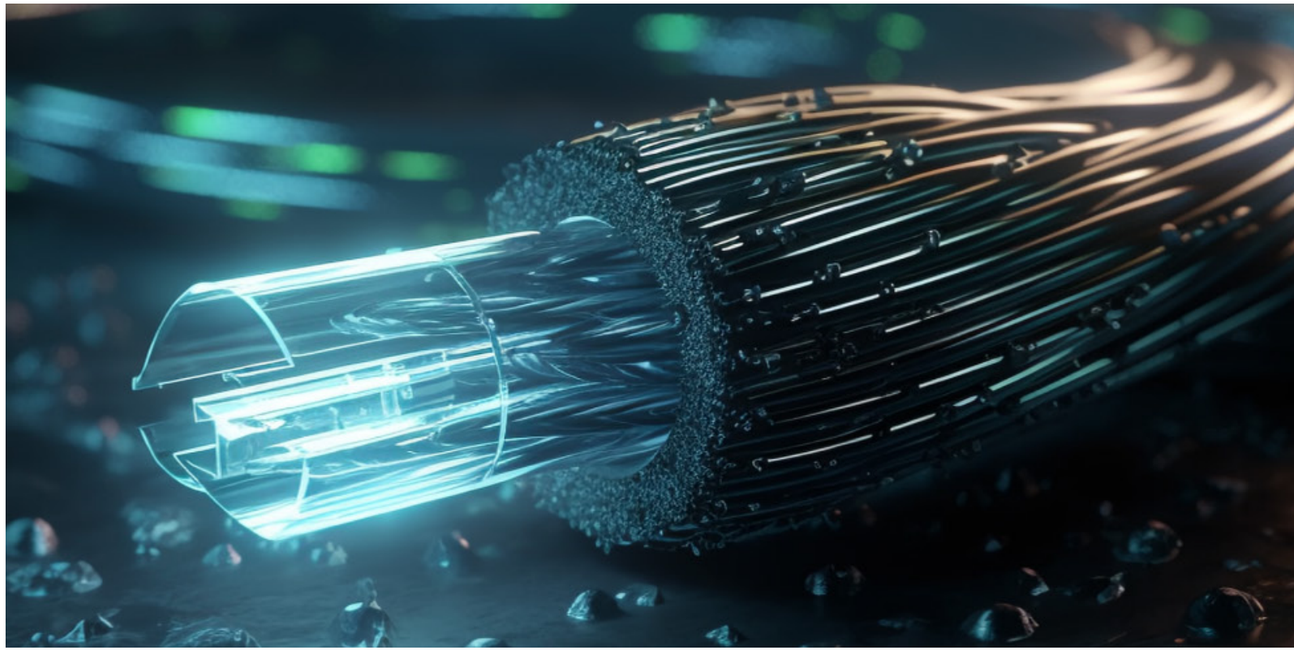
02 Multiple connections: The TCP client supports seven destination IP addresses and the TCP server supports 30 connections.

03 Multi-protocol: Support MQTT, JSON, DLT-645, Modbus and other protocol conversion, connect to various public clouds.

04 Multiple Modubs gateway functions: Support simple Modbus gateway, storage Modbus gateway, ZLMB pre-configured Modbus gateway.

05 Supports cloud management, remote configuration, and remote upgrade.

06 Supports the registration packet, heartbeat packet, DHCP, DNS, and NTP functions.



Optical fiber products

Compared with ordinary network communication products based on Ethernet, optical fiber products have the characteristics of long transmission distance, fast speed and strong anti-interference ability. Shanghai ZLAN provides: ZLAN9100 products of network port to optical fiber, ZLAN9153/ZLAN9163 products of serial port to optical fiber. ZLAN-optical fiber products can be used in remote industrial control, security monitoring and other fields.

Optical fiber product features

01 Industrial design: 9 ~ 24V power supply, terminal connection mode, industrial temperature, can be equipped with rail mounting accessories.

02 Single-mode single-fiber fiber: Only one transmission fiber is required to save costs.

03 Single mode fiber transmission distance up to 20 km.

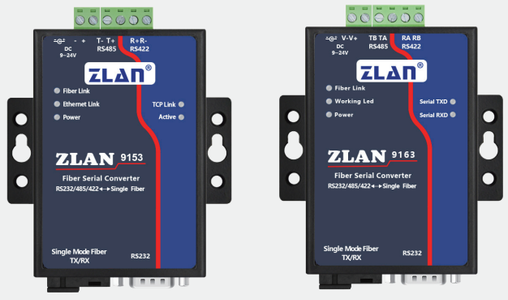
ZLAN9100

network-to-fiber

ZLAN9100 implements Ethernet to optical fiber products, that is, optical transceivers. The optical fiber is single-mode single-fiber with SC ports. The ZLAN9100 is divided into two sub-models: ZLAN9100-3 (A terminal) and ZLAN9100-5 (B terminal), which can be used in tandem or connected to customer optical switches. Length × width × height =9.4cm×6.5cm×2.5cm.

ZLAN9153/ZLAN9163

Serial to optical fiber /485 to optical fiber



ZLAN9153 ZLAN9163

Both ZLAN9153 and ZLAN9163 can convert RS232/RS485/RS422 to fiber optic signals. ZLAN9153 uses the TCP/IP protocol over the optical fiber, which is actually the mode of ZLAN5103+ZLAN9100, and can communicate through the FC switch, but the baud rate of the device must be configured. The ZLAN9163 can be used in pairs to achieve remote transmission from serial port to serial port through optical fiber, and there is no need to configure the baud rate in plug and play. Length × width × height =9.4cm×6.5cm×2.5cm.

ZLAN9809M-4G

4G router

The ZLAN9809M-4G is a cost-effective industrial 4G router with 4 LAN ports, a WAN interface and WIFI interface. Four LAN ports form an Intranet, and you can choose WAN, 4G or WIFI Internet access. Four LAN ports provide switch functions. Adopts guide rail installation, terminal type power supply, 9~24V wide voltage input. With industrial grade temperature, pass 4 anti-static interference.
ZLAN9809M-4G can provide network port to WIFI, WIFI to 4G, network port to 4G and other functions. Supports WEB configuration and easy management.

Can be applied to:

01	If IP addresses are insufficient, create an internal subnet.
02	Network port PLC to wifi wireless access to the existing network.
03	With wifi relay function, expand wifi communication range.
04	By default, the Internet access is wired. However, when the WLAN interface is disconnected, you need to switch to the 4G application domain immediately.

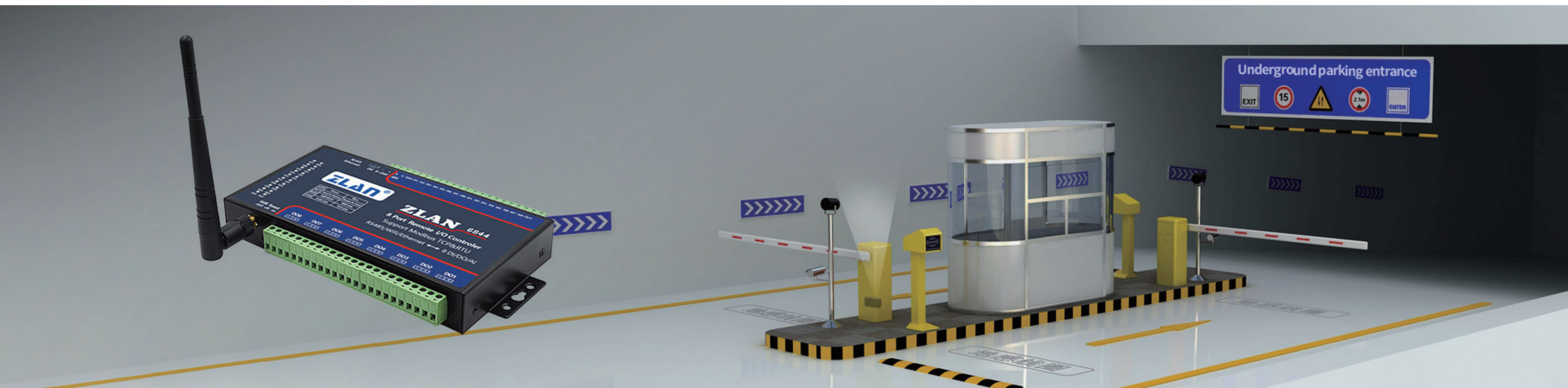
ZLAN9850M

5 rail industrial switch

The ZLAN9850M is a switch designed for industrial rail environments. Easy to install, terminal type 9~24V voltage power supply, can achieve multiple Ethernet equipment network access in the industrial site.

PRODUCTS

Remote IO controller



Remote IO controller

Remote IO controller realizes remote relay control, remote switching input and analog acquisition through Ethernet, RS485, 4G, Wifi, LoRa and other communication methods.

Product characteristics

01 Digital input: can collect the switching signal, while compatible with passive switching (dry node), active level (wet node).

02 Digital output: using relay output, can directly control the large current, 5A@AC250V/DC30V. Relay adoption AgSnO2 contact, suitable for lamp load, capacitive load, motor load and other contact transient high inrush current occasions.

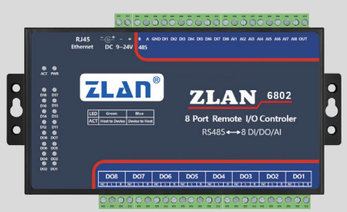
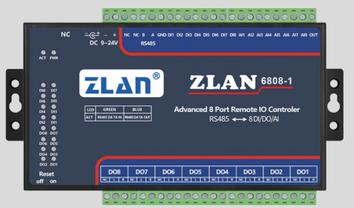
03 Analog input: Current input: 4~20mA, voltage input: 0~5V,0~10V, resistance: 0~10k or Resistive temperature and humidity sensor. The 68X2 is 10-bit precision and the 68X8 is 12-bit precision.

04 Support Modbus RTU/TCP, active reporting, IO mutual control, MQTT, JSON format to the cloud and other communication methods.

05 The input/output status of each of the eight switches is displayed by an independent indicator. You can know the input/output status of the switch through the indicator.

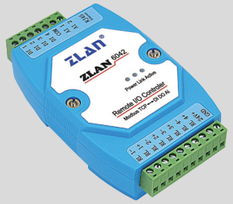
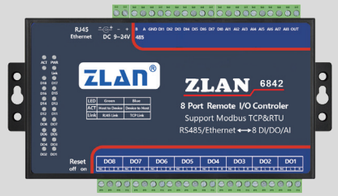
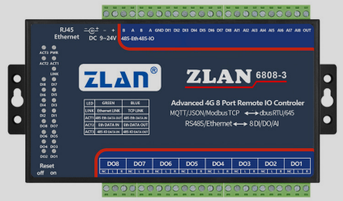
06 The RemoteIO control demonstration software is provided over RS485 or TCP/IP to demonstrate device IO control and AI data acquisition It can provide complete RS485 control instructions and Modbus TCP instructions, which is convenient for engineers to integrate development.

RS485/RS232 IO controller

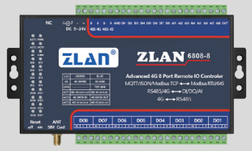
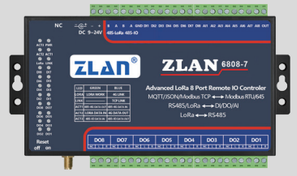
ZLAN6002A	ZLAN6802	ZLAN6808-1
4 RS485/232 IO controllers	8 RS485 IO controllers	High precision 8 RS485 IO controllers
ZLAN6002A-2 is RS232 port model	AI can be 4 ~ 20mA current 5V voltage, 10V voltage quantity	AI can be 4 ~ 20mA current 5V voltage, 10V voltage quantity Support AI with 12-bit precision
4 DO, 4 DI,2 AI	8 DO, 8 DI,8 AI	8 DO, 8 DI,8 AI
		

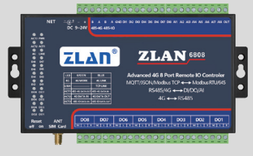
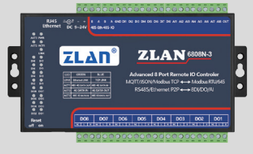
Remote IO controller

Ethernet IO controller

ZLAN6042	ZLAN6842	ZLAN6808-3
4-way Ethernet IO controller	8-way Ethernet IO controller	High precision 8 Ethernet controller
AI can be 4 ~ 20mA current 5V voltage, 10V voltage quantity	AI can be 4 ~ 20mA current 5V voltage, 10V voltage quantity	AI can be 4 ~ 20mA current 5V voltage, 10V voltage quantity Support AI with 12-bit precision
4 DO, 4 DI,2 AI	8 DO, 8 DI,8 AI	8 DO, 8 DI,8 AI
		

Other communication modes IO controller

ZLAN6808-8	ZLAN6844	ZLAN6808-7
4G	2.4G wifi	LoRa
		

ZLAN6808-5	ZLAN6846	ZLAN6808N-3
4G+Ethernet	5.8G wifi	P2P mode
		

The ZLAN6808N-3 is an IO controller for remote control through P2P (ZLAN patented technology). When it is controlled by the Internet network, the computer and device can be located anywhere in two different internal networks, without port mapping or setting up a public network server, and can be controlled anytime and anywhere.

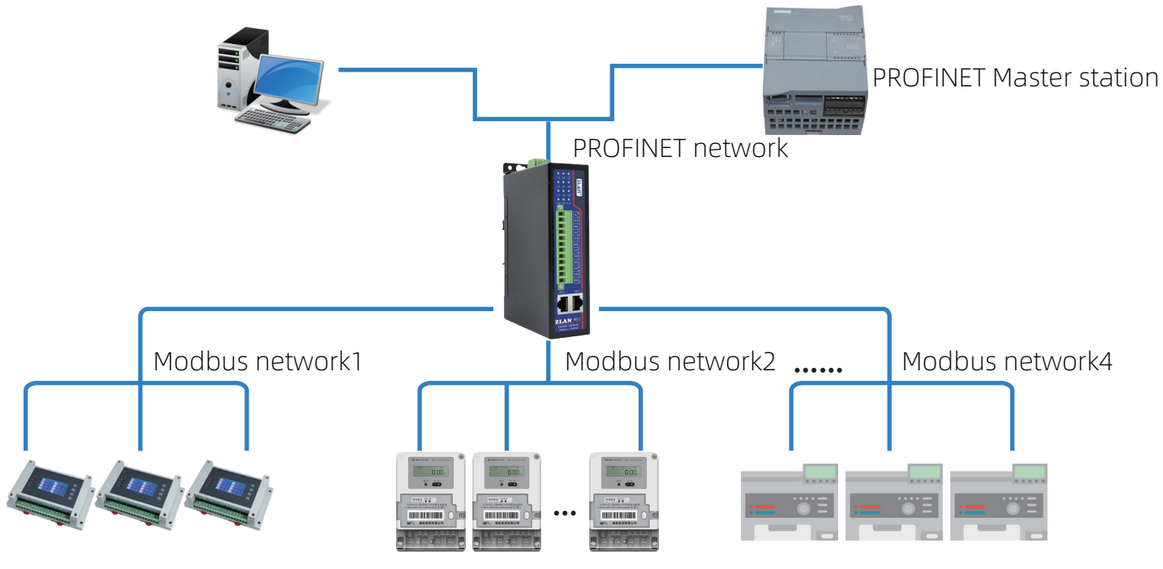
Protocol translation gateway

ZLAN9913

PROFINET gateway

ZLAN9913 is a gateway device that can convert Modbus master communication protocol to PROFINET network protocol, and can be used to help users realize data interaction between the two devices in different industrial scenarios.
Up to 4 Modbus slave station devices can be connected to the PLC for data interaction, such as: frequency converters, intelligent instruments, flow meters, sensors, etc.

01	Supports the standard PROFINET protocol and is used as a PN slave device.
02	Data interaction between PROFINET devices enables the length of input data to be up to 1440 bytes and the length of output data to be up to 1440 bytes.
03	The serial port supports Modbus master protocol.
04	A maximum of 64 Modbus commands can be delivered, and function codes such as 01H, 02H, 03H, 04H, 05H, 06H, 0fH, and 10H are supported.



ZLAN8309

BACnet Gateway /PLC gateway

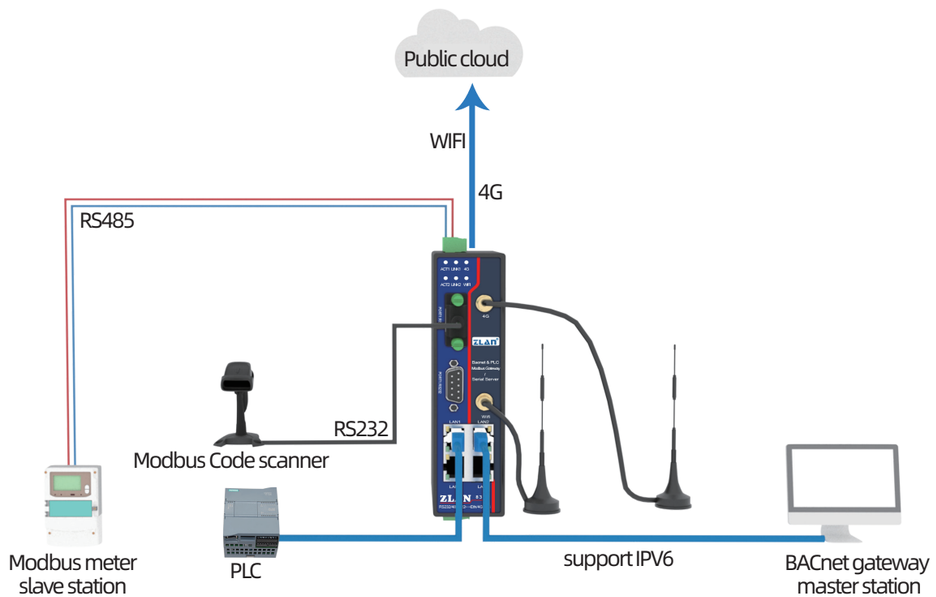
ZLAN8309 is a BACnet gateway /PLC gateway with 4G, 4 LAN ports, Wifi, RS485/422/232 serial port. Support IPV6, support 4G full netcom networking. Powerful, is a multi-functional Internet of Things protocol gateway.

01 BACnet to Modbus: The communication gateway of BACnet IP slave station protocol and Modbus master station protocol conversion, which can realize the data communication between BACnet\IP master station and multiple Modbus slave stations. It can solve the problem that the building automation configuration software cannot connect some serial port devices using Modbus protocol.

02 Support all kinds of serial port, network port PLC remote monitoring, remote program download.

03 Can be used as a 4G router.

04 It can realize serial port to network and can be used as 4G DTU or serial port server.



ZLAN9480A/9440

RS485 concentrator

ZLAN9480A

ZLAN9440

RS485 hub can play the role of isolation, relay and expansion when multiple RS485 ports are connected to each other. The 485 hub is further divided into 4-port hubs and 8-port hubs, corresponding to the ZLAN9440 and ZLAN9480A respectively. The main port of the ZLAN9440 can be RS232 or RS485, while the main port of the ZLAN9480A can only be RS485.

Product characteristics

01 Isolated hub, master/slave isolation, input power isolation 1500V

02 Supports 460800bps high baud rate, long-term communication without error code

03 Wide voltage input, support guide mounting

04 Main serial port type: 9440 RS485 and RS232; 9480A is RS485

05 Serial port: RS485 is the wiring terminal. RS232 is the DB9 female head

06 Secondary serial port type: 9440 for the four-channel RS485, 9480A for the eight-channel RS485

07 Communication distance: 1200 meters; The higher the rate of communication, the shorter the distance

08 RS485 slave stations: 32

PRODUCTS

Interface converter

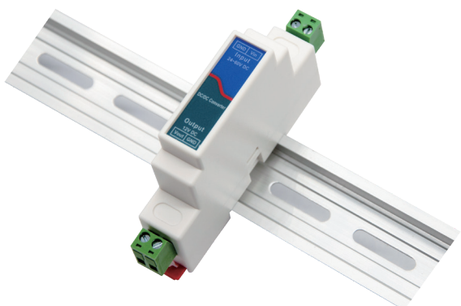
ZLAN9223E

RS232 to 485

ZLAN9223E can realize RS232 and RS485 interconversion, unique appearance design, no exposed circuit board. Supports baud rates up to 230400bps. Size: Length × width × height =7.0cm×3.2cm×1.2cm.

ZLAN4101

DC power converter

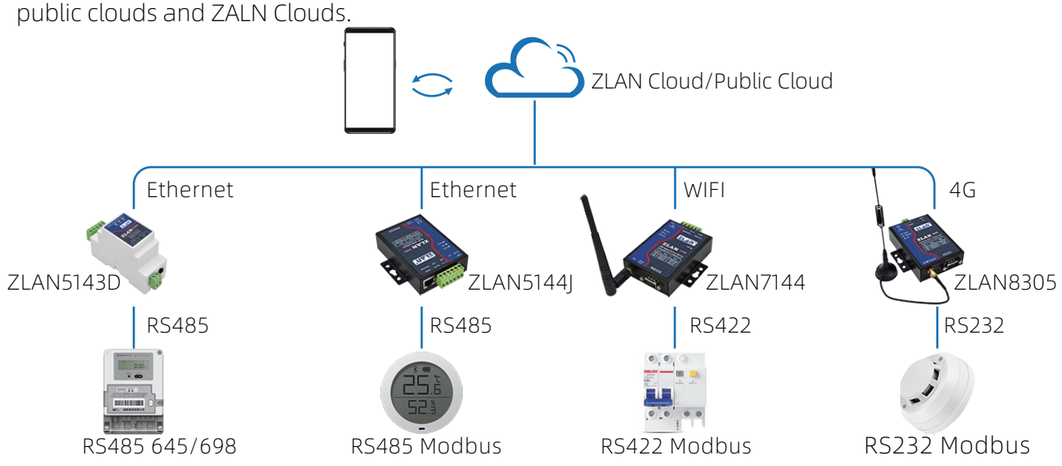


ZLAN4101 is suitable for DC voltage 24~60V input, output 3.3/5/9/12V DC voltage reduction requirements, with high efficiency, cost-effective, long life and other characteristics, while with its own guide clip, easy to guide installation.

02 SOLUTIONS

JSON to Modbus/645/698

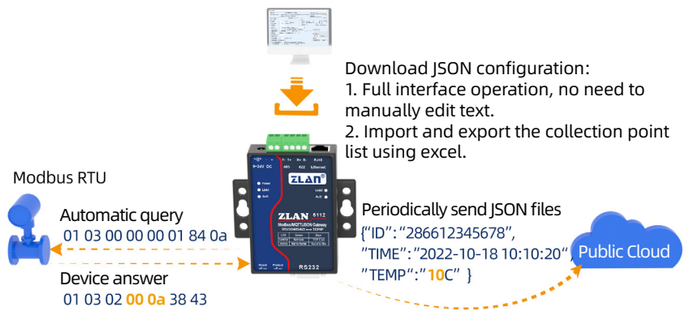
The JSON-to-ModBUS /645/698 protocol gateway can automatically collect all kinds of Modbus, DTL-645/698, and customized special serial port protocol devices, and convert them into JSON format data, also known as JSON gateway. Since JSON (JavaScript Object Notation) is widely used in the meaning identification of Internet of Things data, converting various protocols into standard JSON format has become a requirement of the Internet of Things. ZLAN JSON gateway can interconnect with various public clouds and ZALN Clouds.



JSON Gateway structure diagram

```
{ “header” :
{ “DEVID” :” 285301020304” ,
 “time” :”  2019-05-13
22:23:31” },
   “data” :
{ “id” :” MyData123456” ,
 “alarm” :{ “alarm1” :123.4C
            “alarm2” :567.8C
                  }
          },
   “value” :2345
}
```

Upload JSON format



JSON configuration

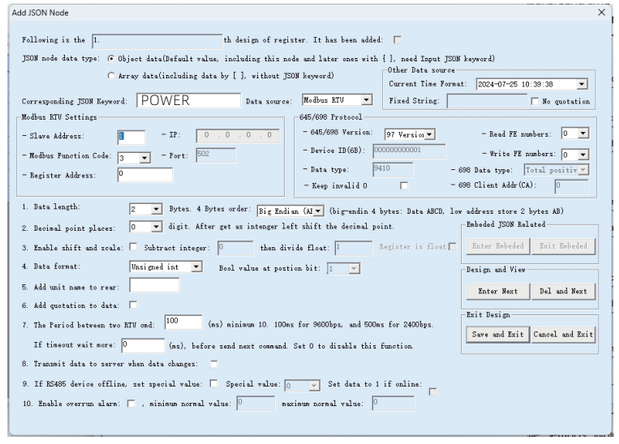
During the configuration, select "Firmware and configuration" in the parameter dialog box, click "JSON configuration", and then configure the Modbus/645/698 information corresponding to each JSON keyword, and you can determine the data type, data length, size end, etc. You can configure data sources such as fixed string, current time, and device ID. After the configuration is complete, click download configuration. The JSON gateway automatically collects the required data and uploads it to the server in the required format. ZLAN JSON Gateway Features:

1. Support 4G, Ethernet, Wifi, LoRa, optical fiber, NB-IoT and other communication media.
2. Support upload based on MQTT protocol, HTTP GET/POST protocol or transparent upload JSON packets.
3. The configuration is flexible. It can be flexibly configured based on the configuration tool user, and supports JSON nested format and JSON array.
4. Support JSON format delivery to Modbus RTU, can achieve reverse data conversion.

More content： http://www.zlmcu.com/document/jsondata.html

JSON to Modbus/645/698

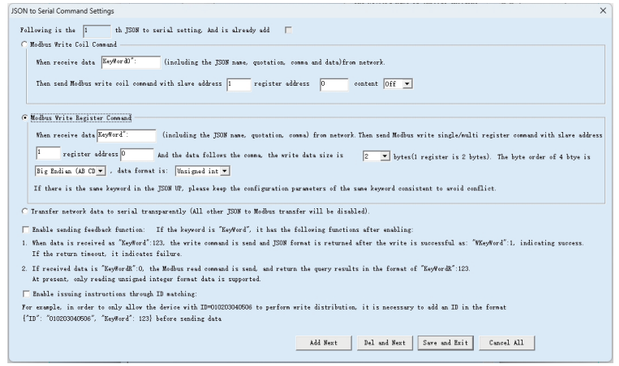
JSON ascending



Send node configuration on JSON

In the conventional autonomous acquisition Modbus/ DTL-645/698 protocol to JSON, Shanghai ZLAN also adds powerful edge computing functions, such as: Data translation and scaling, data change reporting, device offline alarm, device online data forced to 1 and data limit alarm and other functions, send time from 100 milliseconds to 8.8 hours customers can set, support NTP protocol, automatically obtain time. Support various types of complex nested formats, editable JSON format with high flexibility and compatibility, stable edge computing capabilities with high-performance gateways, better to achieve data on the cloud, reduce cloud development, shorten the project cycle.

JSON issue



JSON Delivers node configurations

In many application scenarios, data not only needs to be sent to the cloud platform, but also needs the platform to issue instructions to write registers or control coils. The JSON-to-Modbus RTU function of ZLAN Gateway supports the 05/06/15/16 command to achieve the reverse conversion of data. ZLvircom software can set Modbus coil instructions, register instructions and network data transparent transmission to the serial port. You can import and export EXCELL file Settings, which is easy to operate and simple to set.

Enable the delivery feedback function: If the delivered KeyWord is KeyWord, the following functions are enabled:

If the data is delivered with "KeyWord" :123, when the write command is delivered, WKeyWord :1 is returned after the write succeeds. If the timeout is not returned, it indicates a failure.

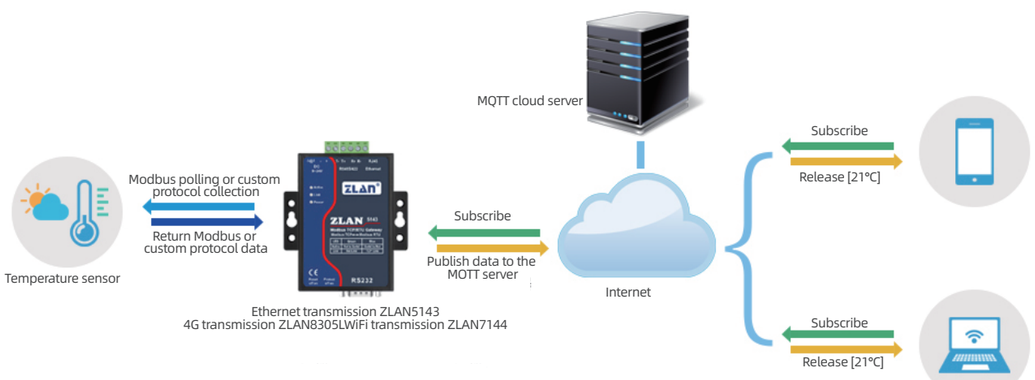
If "KeyWordR" :0 data is delivered, the read Modbus: command is issued and the results are returned in the format of "KeyWord" :123. Currently, only unsigned integer format data can be read.

Commands can be delivered by ID matching:

For example, to enable the device whose ID is 010203040506 to perform write delivery, you need to add an ID before data delivery. The format is {" ID ":" 010203040506 ", "KeyWord" :123}.

MQTT/MQTTS gateway

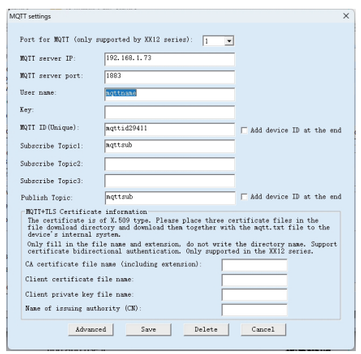
MQTT, the Message Queuing Telemetry Transport Protocol, is also a short for Message Queuing Telemetry Transport, is a lightweight protocol based on client/server message publishing/subscription. At present, it is widely used in data collection and subscription of Internet system. MQTT gateway can convert RS485/232 serial port data into MQTT protocol data on the network. Compared with the previous M2M scheme, the M2M scheme realizes that a host corresponds to multiple slaves through the Internet, and MQTT can transform any one of the device groups into a host, send data at any time and notify the remaining devices, which can reduce the data query traffic and change passive query to active reporting.



ZLAN MQTT gateway can connect with various cloud platforms: ZLAN Cloud, Ali Cloud, ONENET, etc., can cooperate with uploading MQTT+JSON data; MQTTS encrypted transmission is supported, where the ZLAN8305 supports subscribing to multiple topics. ZLAN MQTT gateway supports automatic acquisition of Modbus RTU, DLT-645 meters, and sends topics in JSON format. Release interval, upload format can be freely selected. Subscribers can also receive data in JSON format. ZLAN's MQTT gateway has a wide variety of types, as follows:

Type	Model number
4G DTU	ZLAN8305
Ethernet	ZLAN5112
Wifi+Ethernet	ZLAN7144
Wifi	ZLAN7146
Embedded MQTT gateway module	ZLSN7044E
MQTT gateway single chip	ZLAN1043/YOXO1007

Models that support MQTTS	
Ethernet	ZLAN5112
4G	ZLAN8309

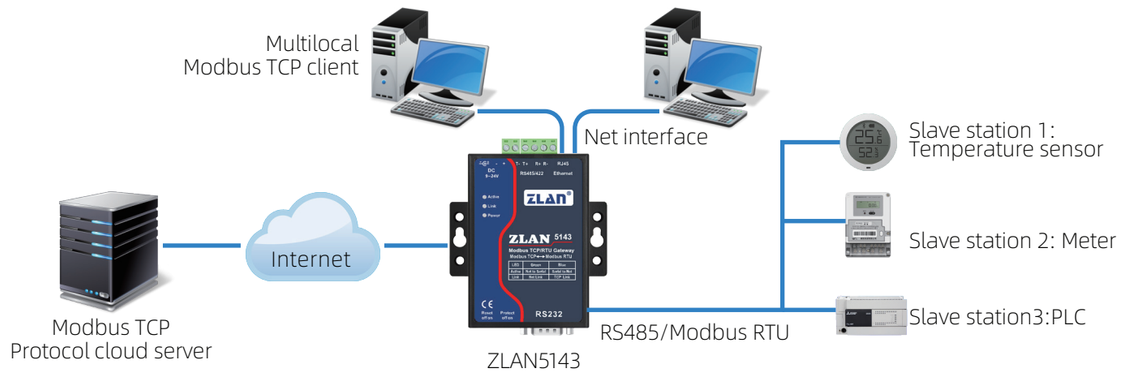


When configuring MQTT parameters, click "Firmware and Configuration" in the device parameter dialog box, and then click "MQTT Configuration" to enter parameters such as theme, download the configuration and use it

More content：http://www.zlmcu.com/document/Usage_of_MQTT_Gateway.html

Modbus gateway

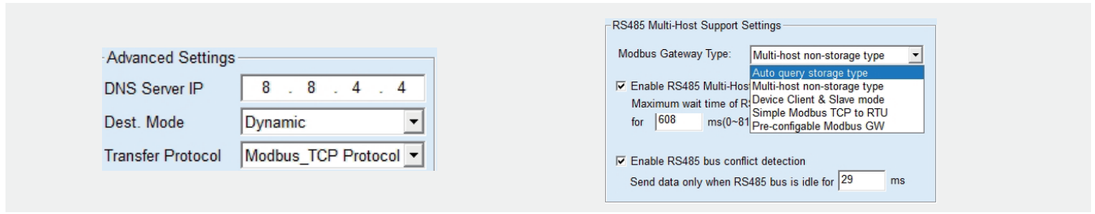
The Modbus gateway can convert Modbus RTU data on the RS485/RS232 interface into Modbus TCP data. Since a large number of instruments use Modbus RTU protocol, and the upper computer generally needs to collect data through the network, it is necessary to use Modbus gateway to achieve data acquisition and transformation.



More content：http://www.zlmcu.com/document/Modbus_Gateway.html

Modbus gateway

ZLAN Modbus gateway is basically divided into: simple Modbus TCP to RTU gateway, non-storage Modbus gateway, storage Modbus gateway, device for the client to do the slave station gateway, configurable ZLMB gateway. After Modbus TCP is selected on the home screen, you can select a Modbus gateway in more advanced options:



01 Simple Modbus TCP to RTU gateway: Supports only protocol conversion and does not support multiple hosts.

02 Non-storage Modbus gateway: Supports multiple hosts, that is, supports simultaneous access by multiple Modbus TCP clients.

03 Storage Modbus gateway: supports multiple hosts and data collection. It adopts the mode of automatic query, automatic storage and update, and the query table is automatically generated according to the requirements of Modbus TCP, without manual configuration. Its advantage is that the query data is stored in advance, and the return speed is fast. However, the gateway will continue to query the device, increasing the query amount on the RS485 bus. In addition, it is not possible to map all the devices' registers to the same area and read them at once.

04 The device acts as the slave gateway for the client: This mode is only applicable to the cloud server supporting the Modbus TCP server. The mode of the device acting as the Modbus TCP client can realize the cloud's active acquisition and the mode of the device acting as the passive response mode for the client.

05 Configurable ZLMB gateway: The station address and register of Modbus RTU that need to be collected can be manually configured, and mapped to a register area in a unified way, which can achieve one-time reading. When you need ZLMB function, you need to click "Firmware and configuration" and select "ZLMB Gateway". As shown in the following figure, different station addresses and function codes can be uniformly mapped to the local "TCP register address".

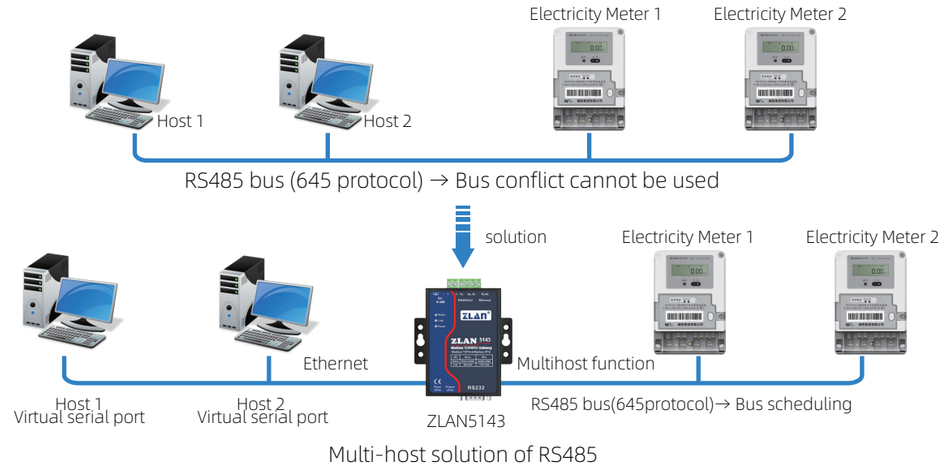
Record number	Slave address	Function code	Register origin address	Register length	Serial port polling interval	Timeout response time	TCP register address
1	1	3	2	4	100	500	0
2	3	3	2	4	100	500	4
3	2	1	5	9	100	500	128

More content：http://www.zlmcu.com/document/Modbus_Gateway.html

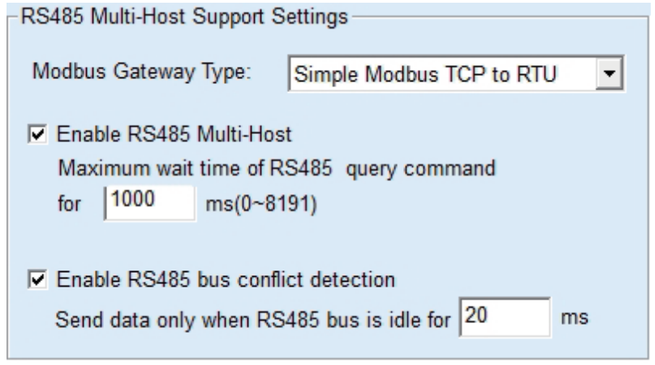
Multi-host scheme

The host is the scheme for monitoring the computer

For protocols based on RS485 buses, such as Modbus RTU and DLT-645, traditional methods can only have one host on the midline. If two computers need to monitor the same RS485 bus, RS485 conflicts may occur.



Multi-host solution of RS485



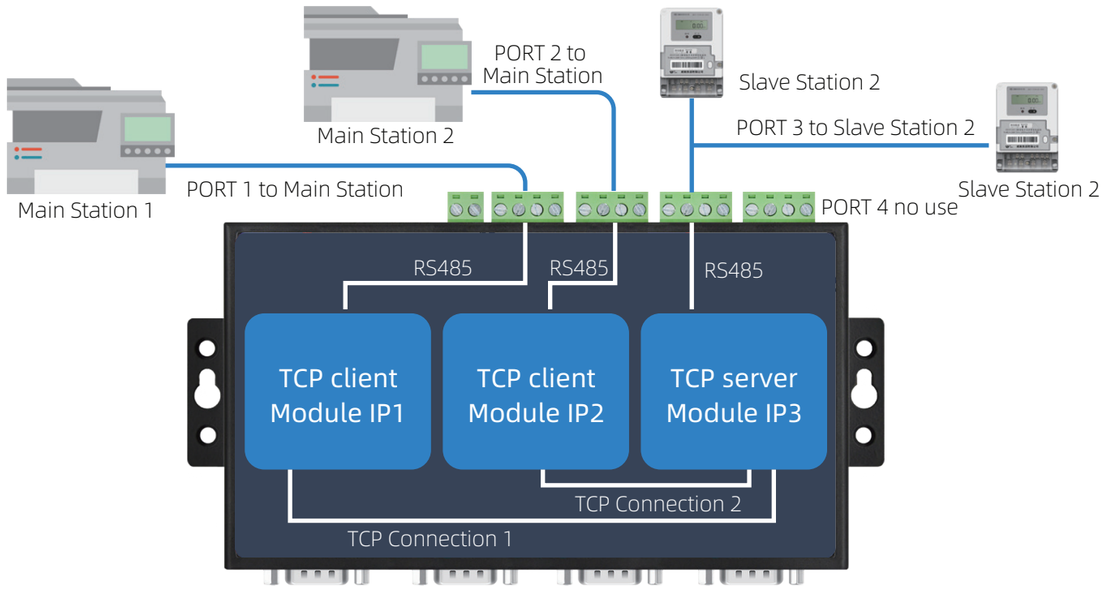
Multi-host setup

ZLAN5143 and other serial servers provide multi-host functions. The host computer can choose the virtual serial port or TCP protocol. When multiple hosts query data at the same time, ZLAN5143 can schedule data and complete the function of multiple hosts accessing a bus. The specific setting method is as follows: Select None for Conversion Protocol in the main parameter, and select multi-host function Settings as shown in the figure for more advanced options.

More content：http://www.zlmcu.com/document/tech_multi_485_host.html

If the host is an RS485 device

In practice, it is often encountered that the host is not a computer (such as the control host, PLC, etc.), and the network connection with ZLAN5143 cannot be established through the virtual serial port and TCP. In this case, you can use a multi-serial server such as ZLAN5443H/-ZLAN5407M.

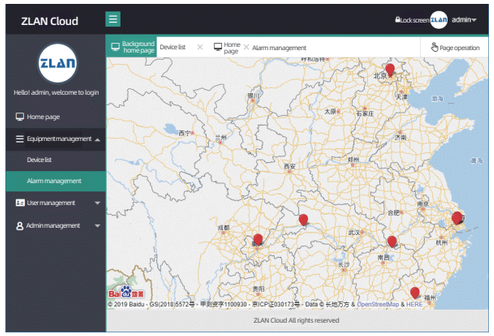


As shown in the figure, two master stations are connected to the RS485 ports PORT1 and PORT2 respectively, while all slave stations are connected to PORT3. Because each PORT has an independent internal IP address, the modules corresponding to PORT1 and PORT2 are set as the modules for TCP clients to connect to PORT3, and PORT3 enables the multi-host function above to achieve simultaneous access to two master stations of RS485.

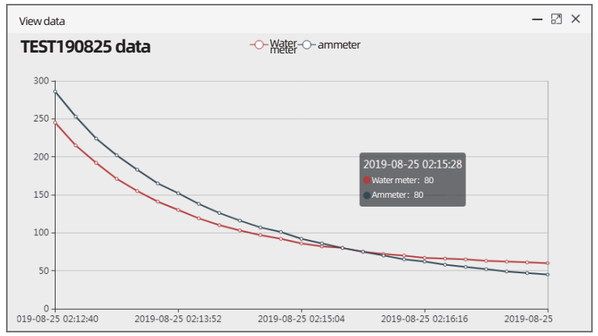
More content：http://www.zlmcu.com/document/tech_multi_485_host.html

Overview of ZLAN Cloud

ZLAN Cloud is a free Internet of things cloud platform. You can connect to all kinds of Internet of things gateways of ZLAN, use the configuration tool to select "ZLAN Cloud" to configure ZLAN equipment to connect to ZLAN Cloud. Supports JSON format data upload. The JSON name of the device required for configuration corresponds to the Modbus register of the device, and is associated with the JSON of the cloud. Support Web or wechat mini program to view data. You can view the current value and historical data of a collection point. At the same time, the data can be set, and the control command can be issued. In addition, ZLAN provides cloud platform design services tailored to customers' applications!



Equipment monitoring throughout the country



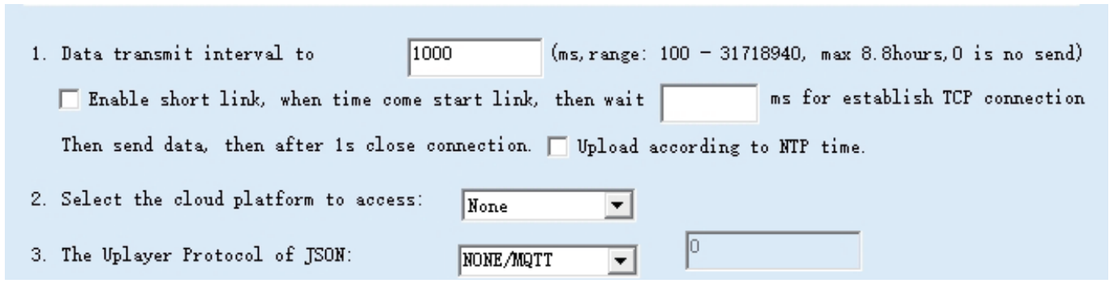
View historical device data

The advantages of ZLAN Cloud platform

Free to use	As long as the purchase and use of ZLAN equipment with JSON function can be free to use ZLAN platform, equipment unlimited interface, including ZLAN 4G, Ethernet, WIFI, LoRa, NB-IoT and other communication devices.
Combination of hardware and software	Shanghai ZLAN professional design of all kinds of Internet of things acquisition equipment for more than ten years, rich hardware models, cost-effective, high stability is our advantage, to solve the user platform design, a large number of hardware gateway laying costs too high concerns. Coupled with the free cloud platform, the combination of hardware and software is realized, so that the software platform integrates the value of the hardware, and the hardware advantages reduce the cost and ensure the stability of the platform.
Wechat mini program	ZLAN Cloud supports wechat association, users can use the mobile phone's wechat small program [ZLAN IoT] for real-time monitoring and communication, mobile terminal control, convenient and fast.

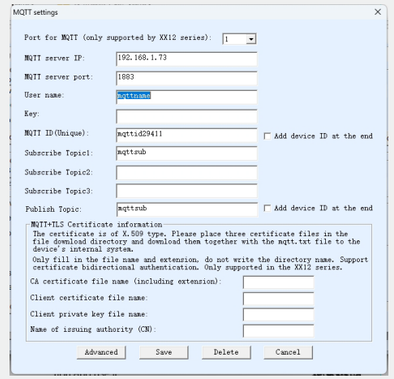
More content：http://www.zlmcu.com/cloud.html

Shanghai ZLAN 4G DTU, serial server, etc., can be connected to all kinds of public clouds, such as Ali Cloud, OneNet, Baidu Cloud, etc. Generally, MQTT+JSON protocol is used for interconnection. Here, OneNet is used as an example to introduce the interconnection method of public cloud. Suppose that if we need to upload an instrument data with station address 1, function code 03 and register 01 to OneNet, we need a gateway with MQTT+JSON to Modbus function (such as ZLAN5144J). After getting the gateway, connect the instrument to the RS485 port of the gateway, run the ZLVricom tool to configure the device through the network port, and select "OneNet" in the selected cloud platform. In this way, the device automatically uploads the default configuration information required by OneNet.

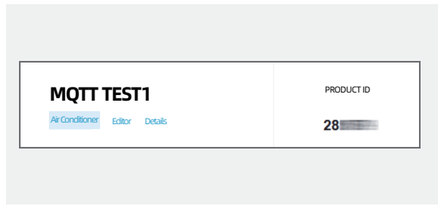


More content: http://www.zlmcu.com/news/onenet.html

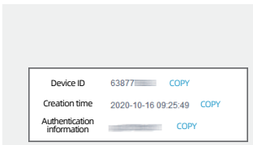
In the mapping between JSON and Modbus, the JSON name is set to mydata and corresponds to the station address as 1, function code as 03, and register as 01. In this way, the device automatically collects register data and uploads the data in {" mydata ":3} format.



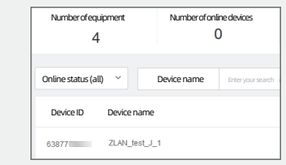
The correspondence between MQTT parameters of ZLVircom and OneNet platform parameters



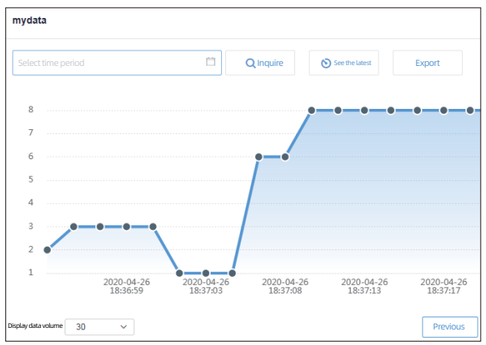
View in Product Overview 【 Product ID】
Used to fill in the left [User name]



Authentication Information
When Adding a device
Used to fill in on the left
[Password]



See [Device ID] in the device list.
Used to fill in the left [Client ID]



During MQTT configuration, the information of the device added when the OneNet platform is registered corresponds to the MQTT configuration information of the gateway, as shown in the figure above. After that, you can see the mydata data node on the OneNet platform. Click it to see the mydata collected by the ZLAN5144J gateway.

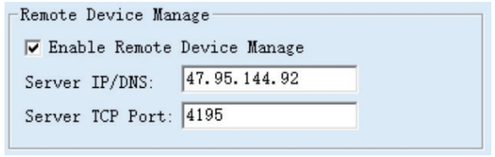
All kinds of gateways of Shanghai ZLAN have embedded the default configuration of connecting with public cloud, you can select the corresponding platform, can provide various cases, easy to implement, simple configuration.

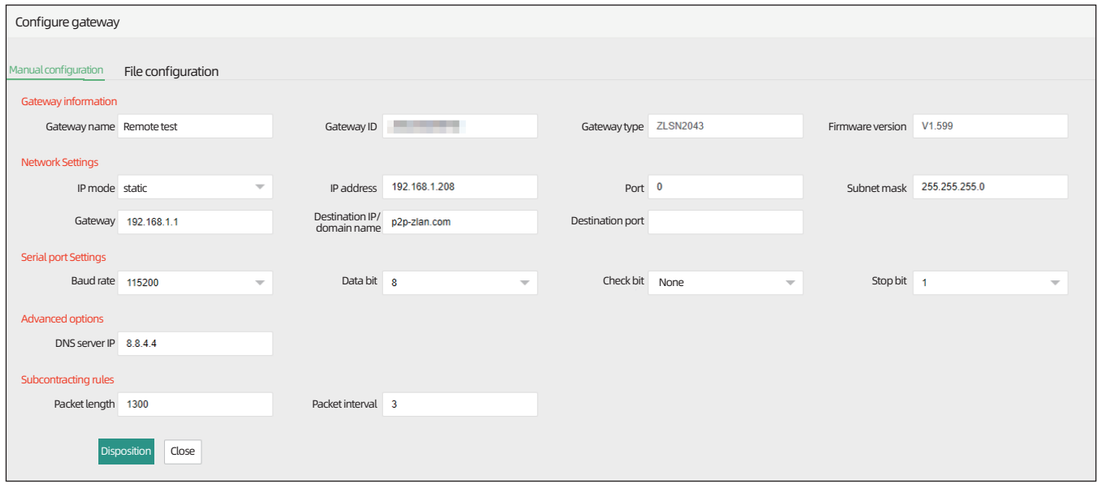
More content: http://www.zlmcu.com/news/onenet.html

Cloud-based device management

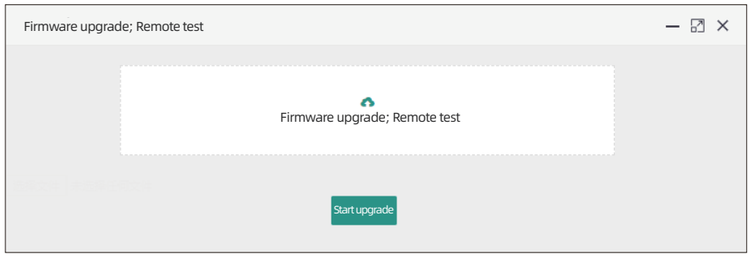
Cloud-based device management can be enabled for all types of ZLAN 4G DTU and serial servers. As shown in the figure below, ZLVircom is used to configure the device to support remote device management. When enabled, the device is connected to the server (by default, ZLAN Cloud), and the online status of the device can be viewed on the server, device parameter configuration can be modified, firmware can be upgraded remotely, and remote configuration file can be downloaded. All operations can be completed by opening the browser and using the Web mode.

ZLAN can set up their own equipment management server for customers, centralized management of equipment. Cloud-based device management allows you to centrally manage devices, monitor device status, modify configuration information, and upgrade devices on the cloud platform, facilitating subsequent device maintenance.





See the list of devices in ZLAN Cloud and modify the parameter information of a device



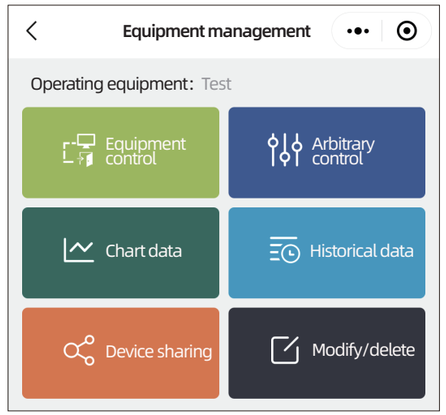
The firmware of the device can be upgraded

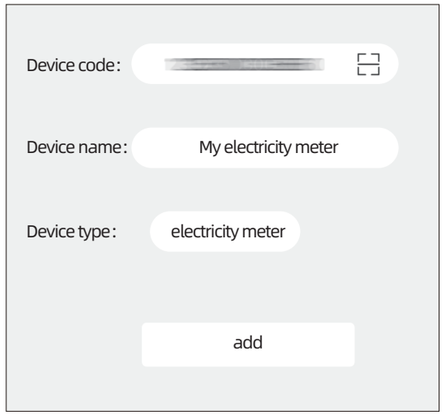
As shown in the figure, if you need to upgrade the firmware of a certain device, click the "Upgrade" button in the device list, and the upgrade box will pop up to select the upgrade file. It also supports batch device upgrade.

More content：http://www.zlmcu.com/document/cloud_dev.html

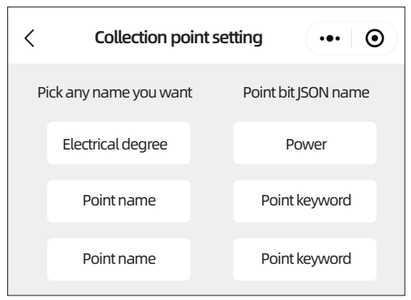
ZLAN thing link wechat mini program

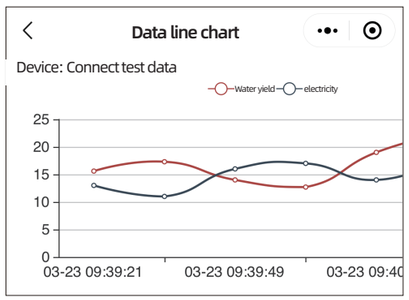
"ZLAN IoT" wechat mini program can replace the Web browser interface of ZLAN Cloud, which is convenient to view the device data and control the device on the mobile phone, and has the cross-platform advantages of supporting Android and iOS platforms at the same time. Open wechat, search wechat mini program "ZLAN thing link". "ZLAN IoT" support modules include: device command control, device JSON keyword delivery Settings, current table data view, historical icon data view, etc.
You can add a ZLAN device gateway by adding the Device Code of a device.





After adding the device, add the required JSON keyword (such as "power"), and map "power" to the address and register of the Modbus station connected to the gateway when configuring the ZLAN gateway (such as ZLAN8305). After that, ZLAN8305 will automatically collect data and upload the data, as shown in the figure below.





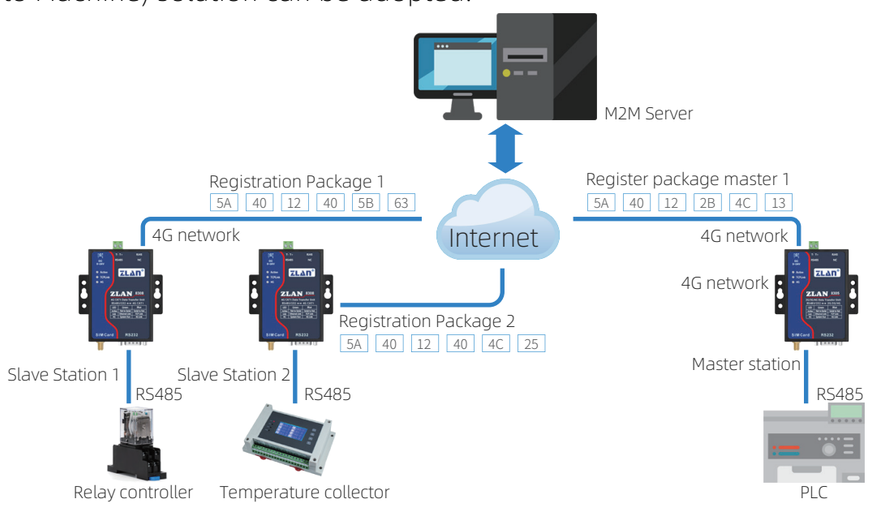
"ZLAN IoT" also supports data delivery Settings and control commands.
"ZLAN IoT" is a general framework that can provide customized private cloud platform and customized wechat mini program design services, tailored for your specific application, close to the actual project needs, and quickly get through the mobile, cloud and device end.

More content：http://www.zlmcu.com/news/wechat_applet.html

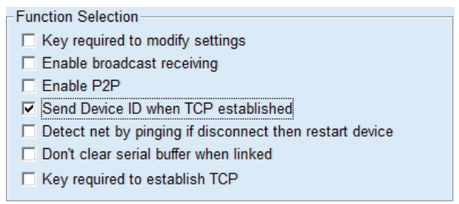
SOLUTION

M2M networking solution

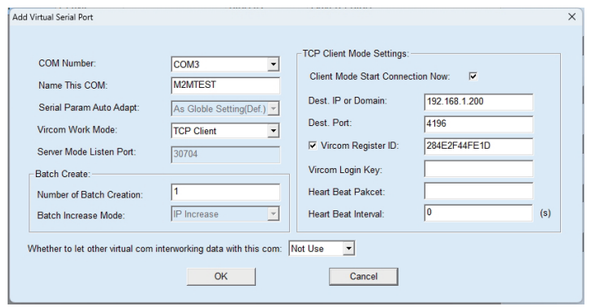
P2P and N2N networking scheme is a scheme to realize remote collection, control and PLC download of serial port and network port equipment. If it is necessary to realize the communication between devices and devices based on the Internet, the M2M (Machine to Machine) solution can be adopted.



As shown in the figure, the PLC master station was originally connected to the relay controller and temperature collector through the RS485 bus. Now through three 4G Dtus, and then with the help of M2M servers, forward the required control commands to achieve the connection over the Internet. The registration package of the master station 1 and the registration package of two slave stations 1 and 2 are registered on the M2M server. When the TCP connection is established between the device and the M2M server, the corresponding registration package is sent immediately. After identifying devices, the M2M server can forward data accordingly. It can realize the data forwarding function of one master station and multiple slave stations.
For 4G DTU generally use the registration package, if the serial server such as ZLAN5103N, you can use the function of sending MAC addresses on the connection more convenient, as shown in the figure. In addition, the virtual serial port of the computer can be connected to the Zolan device through the M2M function, that is, a registration package can be set up when the virtual serial port is used as the TCP client.



Take MAC as the registration package



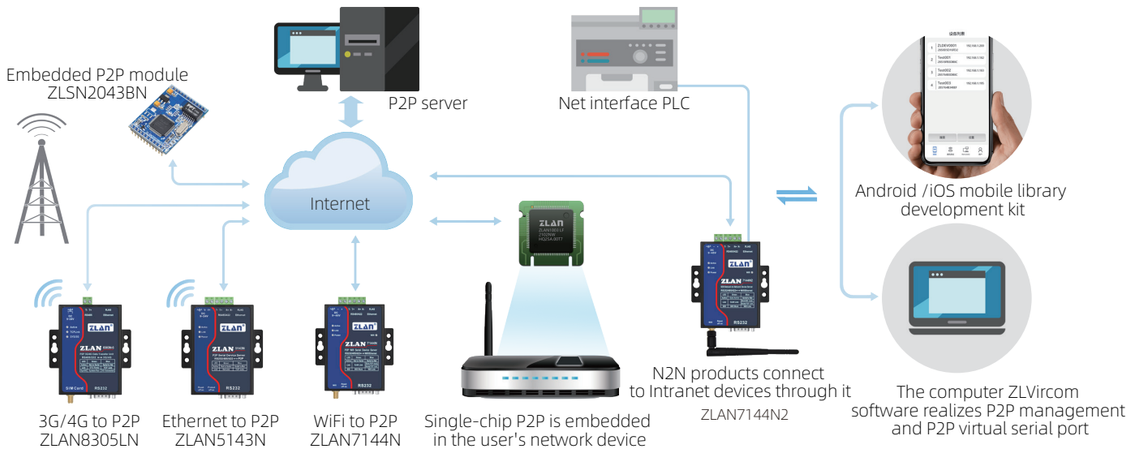
M2M function of the virtual serial port

More content：http://www.zlmcu.com/document/m2m.html

P2P networking solution

P2P networking solutions can provide ID-based network connections for devices and computers. ZLAN proposed P2P serial server product in 2014, and obtained the national invention patent (patent No. ZL201410088010.5). In the traditional TCP/IP communication mode through IP+ port, if the device is on the LAN and in TCP Server mode, the device cannot be accessed through the Internet unless port mapping is used. However, port mapping brings complexity to network configuration. P2P networking mode through ID communication, that is, do not need to know the IP and port in advance, as long as the computer side to add the ID can achieve network connection. We use P2P technology to achieve external network access to the internal network port device technology called N2N technology, and P2P here generally refers to the realization of computer data communication to serial devices through P2P. Compared with the ordinary server-based forwarding mode, P2P uses Peer-to-Peer (peer-to-peer) technology, that is, data is not forwarded through the server in the actual communication, but directly the device and the computer communication. Only an information exchange at the beginning of the communication can be carried out, which can greatly reduce the load of the server, so that the server can bear a large number of connections and communication speed.

P2P networking solution



ZLAN P2P product features

01 Supports multi-host access, that is, when multiple users request data from the device at the same time, multiple connections can be established.

02 The user name and password can be used to access the device for owning and managing the device.

03 Computer communication, support virtual serial port, suitable for all kinds of industrial communication and remote data acquisition systems.

04 Supports sharing between P2P and traditional TCP servers.

05 Supports the establishment of independent P2P authentication servers for users in need to meet data security requirements.

The P2P products provided by Shanghai ZLAN include: Ethernet to serial chip (ZLAN1043N), Wifi module (ZLAN7146N), 4G DTU (ZLAN8305LN), LoRa gateway (ZLAN9743N), remote IO controller (ZLAN6844N), etc. The model ends in N.

More content：http://www.zlmcu.com/document/tech_p2p.html

N2N networking solution

The N2N (Net to Net) technology is based on P2P networking technology to access network port devices in the TCP Server mode on the Intranet. ZLAN N2N products provide a new way for network port PLC, network port touch screen remote monitoring, program download.

Figure. Provides remote access for network port devices

Models with N2N function include ZLAN7144N2 (Wifi/ Ethernet support) and ZLAN8305LN (Ethernet /4G support). The N2N technology can map network ports on an Intranet to network ports on another Intranet, enabling external networks to access TCP devices on the Intranet without modifying the original user software. In actual use, place the 7144N2 product next to the network port PLC that needs to be monitored. Install the ZLVircom program on the remote computer.

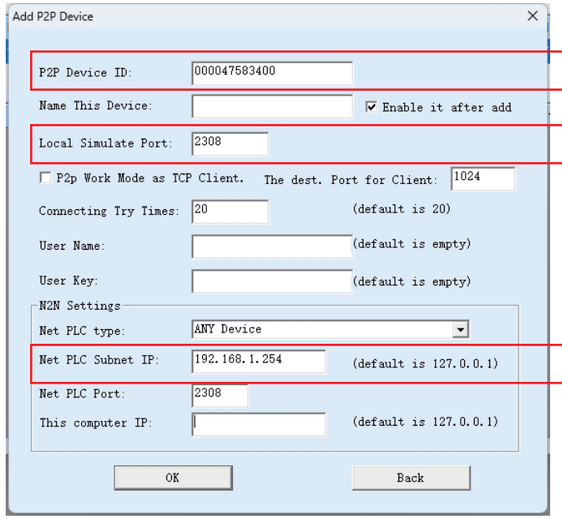


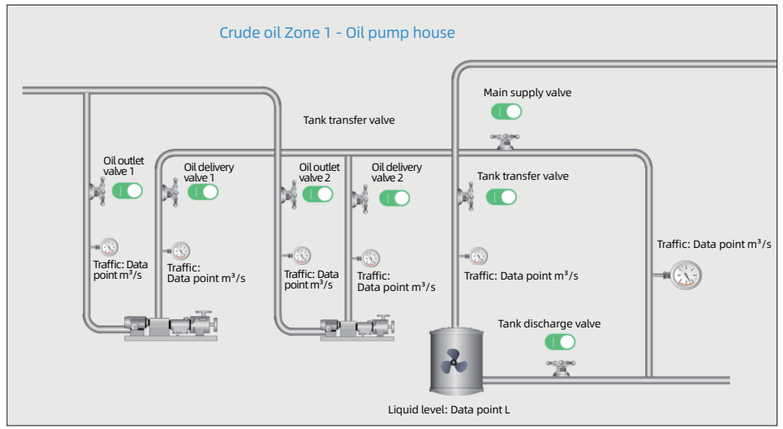
Figure.N2N ZLVircom configuration on a remote computer

By writing the ID of 7144N2 and the Intranet IP port of the network port PLC into Zlircom, the network port of the remote network port PLC can be mapped to a certain port of the local computer where ZLVircom is located. The user software accesses this port of the local computer to achieve access to the remote network port computer.

More content：http://www.zlmcu.com/document/app_plc_l02.html

IoT cloud configuration

ZLAN IoT cloud configuration allows users to design the required monitoring screen, display with ZLAN cloud, and collect data with ZLAN gateway. Similar to traditional configuration software, you can design the configuration screen by dragging ICONS and binding JSON keywords, you can design crude oil, power, hydrology, boiler control and other screens. Can provide a dynamic picture, at the corresponding data collection point with a numerical or graphical representation of data size. At the same time, buttons can be provided to control the device in the configuration interface.

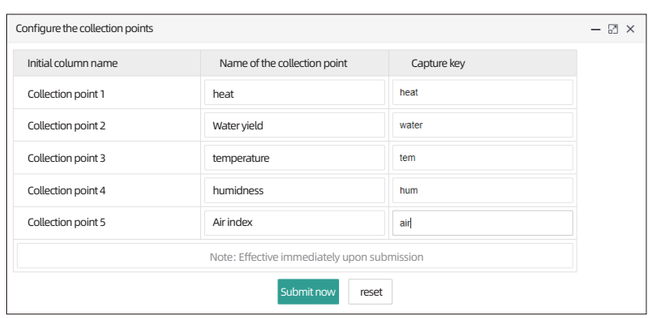


Crude oil monitoring project state control

When using, log in ZLAN Cloud,, add ZLAN Cloud, device to ZLAN Cloud,, and then enter device management → Configuration template → Edit configuration.

1. Screen design: Drag and drop the configuration component, customize the style you want, and then drag the "data bit" component to bind the device point (collection point), select and click bind data point.
2. Deliver the button: Drag the "Switch" component, select the device, type the "on" and "off" instructions, and click "Save".
3. Save the interface: Finally click the blue save button to save the configuration editing, and then return to the list to select the configuration that needs to be placed at the top to complete the operation. The page with the "Configuration" name in the left tree of the ZLAN cloud, will display the configuration page at the top.

The configuration interface data is associated with JSON keywords, which in turn can be associated with a register of Modbus RTU device, DLT-645 device and custom serial port device through the configuration of Zlvircom gateway. For example, the JSON data in the figure above is:



Sent JSON data
{
deviceID: Device id,
heat: "Data 1",
"water": "Data 2"
tem: Data 3,
hum: "Data 4",
"air": "Data 5"
}

More content: http://www.zlmcu.com/document/yunzutai.html