



# Industrial Grade HD-PLC

## KS910L Three-phase withdrawal of electricity type manual1.1



Power supply: On-line power supply

Communication interface: Network port and RS485

Power lines: Single-phase, three-phase, DC

Channel port voltage: AC85-500V or DC 100-700V

Industrial grade Operating Temperature: -40~85°C



# Catalogue

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## Product Introduction

High Definition- Power Line Communication KS910L , is an industrial-grade bandwidth power line carrier communication device based on IEEE P1901, adopting OFDM modulation and demodulation technology and conforming to the European Union EN-50561 standard specification. PLC uses the existing power line or slip contact core as the information transmission medium for high-speed long-distance data transmission, featuring high communication rate, bidirectional transparent transmission, good transmission stability, scalability and strong anti-interference.

HD-PLC KS910L is self-contained routing algorithm , automatic networking , built-in LDPC error correction codec , AES-128 bit encryption algorithm , fully transparent dissemination of data. Hundred megabit bandwidth with 10Mbps/100Mbps communication rate adaptive bandwidth. Long transmission distance, power line point-to-point transmission distance up to 500 metre, coaxial cable transmission distance up to two or three kilometre. Networking mode supports bus, star, tree, and hybrid network topologies, hot-swappable, plug-and-play.

The KS910L is available in several versions for different applications, hardware versions include standard version, high-bandwidth version, long-distance version, and broadcast versions, and software versions include high-performance version, relay version, and specialised versions for slid contact cord. With independent dual-channel data interface, support network port and serial RS485 data at the same time on the power line carrier communication.

HD-PLC KS910L conforms to industrial grade standards , guide rail mounting method. Supports carrier communication on AC 85-500V or DC 100-700V power lines or slip contact cord , simultaneously picking up power on the power lines , no separate power supply required. Full utilisation of existing power line network , no rewiring required , optimise cumbersome cabling for network networking to the maximum extent possible. The products have been widely used in various industries, including intelligent warehousing, three-dimensional parking garage, logistics sorting system, intelligent overhead crane, inspection robot, new energy power exchange, automation control and PLC control system and so on.



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## Technical data

Classification	Technical indicators
PLC Signal port	AC 85-500V or DC 100-700V power line、 slip contact cord
Modulation type	OFDM modulation type
Carrier frequency	2 ~ 28 MHz
Ethernet bandwidth	10M/100Mbps self-adaption
Serial port RS485	Modbus-RTU, baud rate 1200~115200bps
Transmission distance	500 metres of point-to-point power lines ,maximum class 10 relay ,up to 3-5 kilometres
Data delay	Within 10ms
Packet loss probability	Less than 0.1‰
Overall power consumption	≤3W
Standard agreement	TCP/IP, UDP, Profinet, Home Plug, Modbus-TCP, Modbus-RTU, IEEE 802.3, IEEE 802.3U, IEEE 802.3ab, IEEE 1905.1, IEEE 1900, IEEE 1901etc
Way of encryption	AES-128bit
Multicast	Support IGMP multicast protocols,the maximum number of nodes is 128
Exterior dimensions	Size: 90*35*130mm (L*W*H) Weight: 400g Install: RAIL TS35/TS35 slideway
Environmental requirement	Operating temperature: -40°C ~ 85°C Operating humidity: 20%-95% (No condensation) Storage temperature: -40°C ~ 85°C
Working time	Industrial grade, supports 7*24 hours all-weather work



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## Interface specification



<p><b>power port channel interface</b></p>	<p>Support AC 85-500V or DC 100-700V power line and sliding contact line carrier communication. Single phase/DC : Connect L1 and N phases, L2 and L3 are suspended; Three-phase power: N,L1 must be connected, L2,L3 can be suspended.</p>	<p><b>RS485 Serial port</b></p>	<p>A: External equipment DATA+ B: External equipment DATA-</p>
<p><b>LED indicator</b></p>	<p>Master: Green light is the host' s indicator, the indicator of host is on,the indicator of the slave is off. Power :The red light is the power indicator, Lights on with power, lights off without power.</p>	<p><b>Master-slave dip switch</b></p>	<p>Master-Slave Setup Switch, Dialing to M is the host, Dialing to S is the slave. Set up the master and slave before powering up.</p>
<p><b>RJ45 network port</b></p>	<p>Connect network devices such as computers, switches, network cameras, PLC devices, etc; E_link: Ethernet connection indicator, connected device normal green light flashes; P_link: PLC network indicator, network success yellow light is always on, otherwise the light does not light up.</p>	<p><b>Grounding terminal</b></p> <p><b>Install way</b></p>	<p>M4 screw earth wire connection</p> <p>TS35 rail mounting</p>



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## Connection schematic diagram

HD-PLC KS910L is suitable for AC85-500V or DC100-700V power line carrier communication, simultaneous on-line power pick-up, no separate power supply required. KS910L need to set up master and slave, one-touch setting via master-slave dip switches, setting of master and slave, the dip switch is dialled to M for the master and S for the slave. One master can take one slave, also can take multiple slaves. Be sure to set up the master and slave before powering up, a network must have one and only one host.

Depending on the power line, the physical connection of the carrier is wired in both single-phase or DC and three-phase electricity.

**1、 Single-phase/DC: N,L1 of the carrier is connected in parallel to the power line, no distinction is made between phase sequence or positive and negative poles. The wiring schematic is shown in figure 1.**

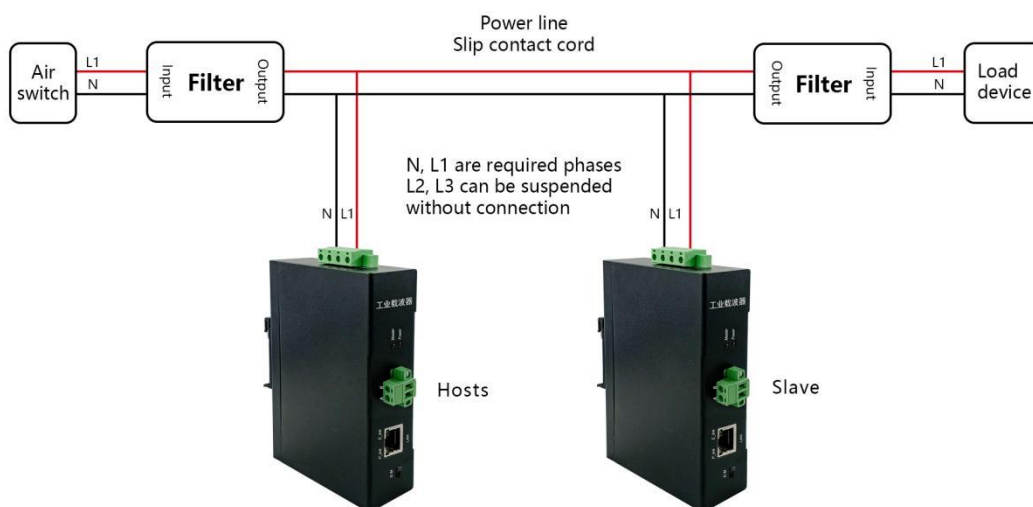


Figure 1

**2、 Three-phase power line: Carrier's N,L1,L2,L3 are connected in parallel on three-phase four-wire , N,L1 port must be connected , L2,L3 ports can be suspended not connected or connected in parallel to the power line , no distinction between phase sequence. Wiring diagram, as shown in figure 2:**



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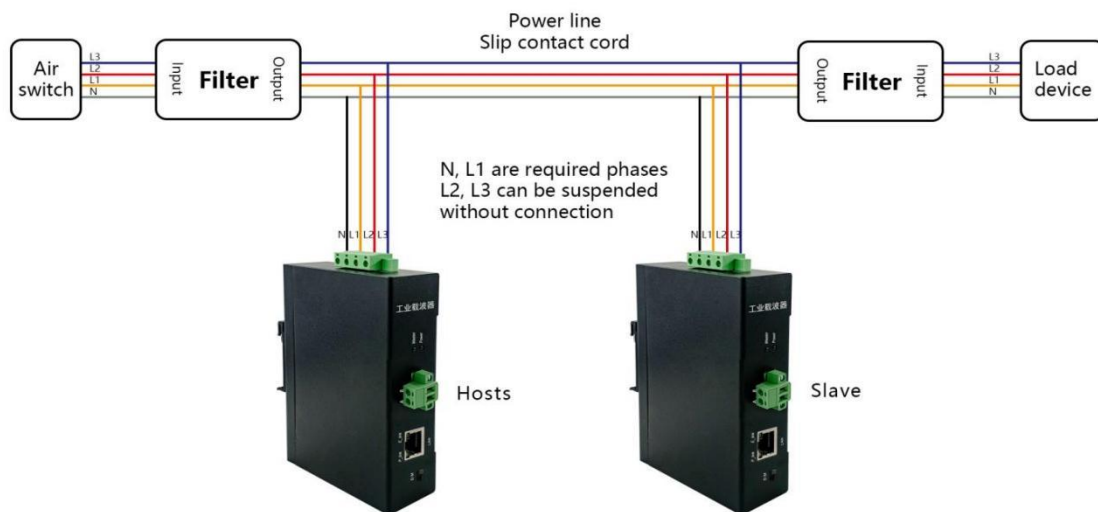


Figure 2

**Notice:**

1. The PLC is divided into master and slave, be sure to set up the master and slave before powering on the machine. If you set the master and slave after powering up, need to power down and restart the carrier, master and slave can only be networked. A network must have one and only one host.
2. PLC need to be used with power filter, filters need to be orientated differently, the input side of filter is connected to power input or load, output side is facing to PLC.
3. Especially note that the input and output of the load-side filter should be reversed, output side is facing to PLC, input side is connected to load.
4. If the load has a servo or inverter, please use special filter for inverter. Shielded wire is recommended for the carrier's power lines, and must not be parallel or cross-wired with the inverter output lines.
5. Do not operate with electricity, do not touch the output terminals directly, and do not short the output terminals or connect them to the housing.
6. The product is not designed to be waterproof, please ensure that the product is used in a dry environment.
7. If the product is malfunctioning, do not disassembled and repaired by yourself, please contact the manufacturer or purchase channel in time to deal with it.



## **Common problems troubleshooting**

When installing and using a PLC , if the carrier network is disconnected or the communication is unstable , please follow these precautions , and as a reference to common problems troubleshooting , in order to minimize malfunctions and maintenance work during use.

1. Please connect correctly according to the connection diagram , the wiring should be secure.If the connection is wrong or loose, the network will be disconnected.

2. Check that the master and slave settings are correct.The master-slave dialing switch dialing to the M end is the host, and the switch dialing to the S end is the slave.Setting up the master and slave before powering up, if setting up a master-slave with power, be sure to power down and reboot the entire network.Ensure that the network has one and only one host and can have one or more slaves.

3. Check whether the power filter is correctly connected.PLC needs to be used with a special power filter , and the PLC mustn' t be separated from each other by power filters.The power filter needs to distinguish directions , the input end is connected to the power input or load, and the output end is facing the PLC.Pay special attention to the load side filter to reverse wiring , that is, the output side is facing the PLC , the input side is connected to the load.

4. Check that the power lines for carrier communication are on the same loop.PLC must be used under the same transformer , master and slave must be connected on the same loop , and the less branches the better.Try not to pass the electric meter , through the number of air switches, contactors, etc, the less the better.

5. Check whether there are strong interference sources such as frequency converters and large capacitors on the line.In strong interference environments, it is recommended to use shielded cables for power lines and data signal lines for carrier communications,and do not parallel or cross-wire with the source of interference, as far as possible away from the source of interference.

If you encounter problems in the process of use, you can always contact the manufacturer for technical support and assistance.Manufacturers provide professional technical support, including telephone, wechat, email, online remote support and other ways.



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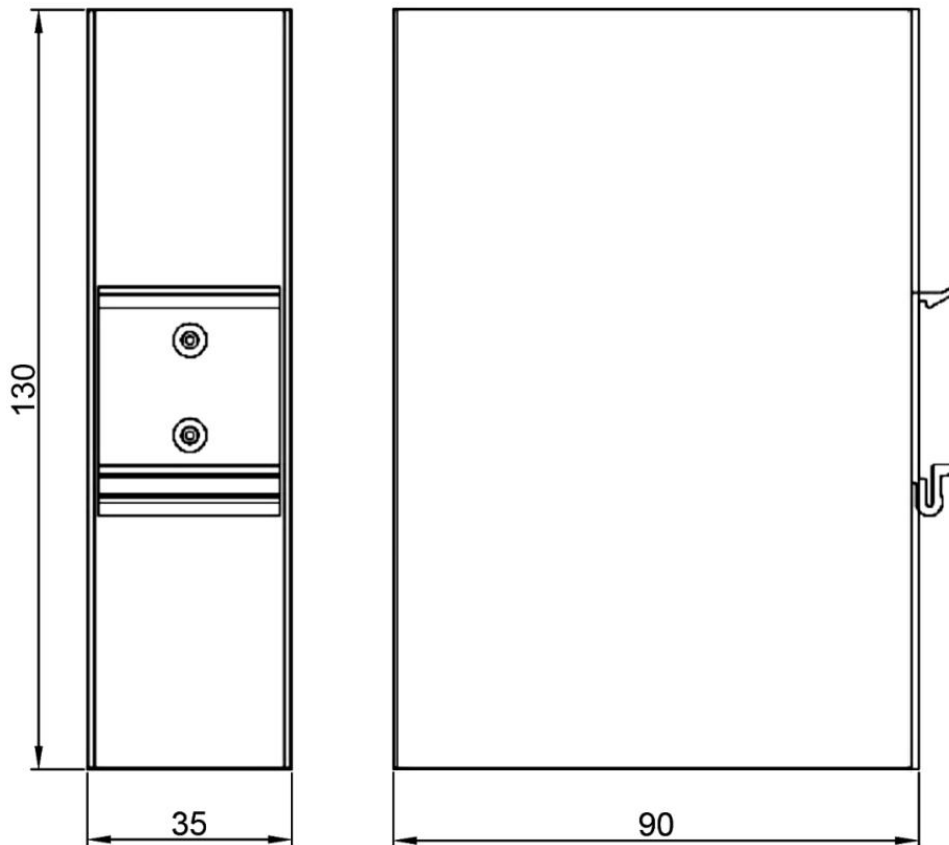
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## Exterior dimensions

The PLC ' s length, width and height are: 90x35x130mm (Without terminal) ,  
TS35 rail mounting method,

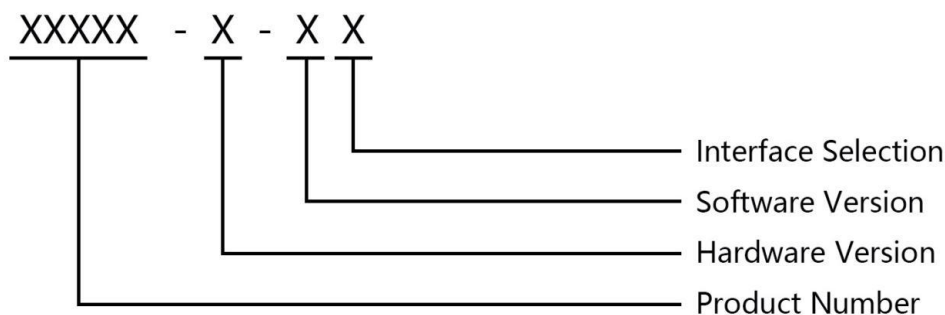
Dimensional drawings are as follows:





## Model selection guide

Model specification description:



According to the actual application, you can refer to the following steps to select the model:

### Product Type

Three-phase withdrawal of electricity type: KS910L	Operating voltage: AC 85-500V or DC 100-700V
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### Hardware Version

B: Standard module	Point-to-point 500 meters	Bandwidths: 10/100Mbps
D: Long distance edition	Point-to-point 1000 meters	Bandwidths: 10/50Mbps
F: Extreme Edition	Point-to-point 500 meters	Bandwidths: 10/100Mbps

### Software Version

E: High performance edition	The number of communication nodes is within 16 pcs
R: Relay version	The number of nodes ranges is from 16 to 999 pcs
W: Sliding touch version	Special for sliding touch line

### Interface Selection

1.Single network RJ45	2.Network port+serial port RS485
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