



# Industrial Grade HD-PLC KS810N Long strip type manual1.1



Hundred megabit bandwidth  
 Highly versatile  
 Ultra-small width  
 Independent dual channel  
 Industrial grade standards



**ASY Electronics (Jiaxing) Co., Ltd**

Business inquiries: +86 181 5734 3325

E-mail: [sales@king-sen.com](mailto:sales@king-sen.com) Website: [www.asyix.com](http://www.asyix.com)

Address: Room 302, Building 11, No. 79 Jinsui Road, Economic and Technological Development Zone, Jiaxing , Zhejiang P.R. China

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## **Product Introduction**

High Definition- Power Line Communication KS810N is an industrial-grade, high-bandwidth, long-distance transmission power carrier communication device with excellent performance, based on IEEE P1901, using OFDM modulation and demodulation technology, industrial-grade bandwidth power line carrier communication equipment compliant with the European Union's EN-50561 standard specification. HD-PLC utilize existing power lines or slip touch cord as the information transmission medium for high-speed, long-distance data transmission.

It is characterized by high communication rate, bi-directional transparent transmission, good transmission stability, strong scalability and strong anti-interference.

HD-PLC KS810N built-in LDPC error correction codec, AES-128bit data encryption, encrypted and transparent dissemination of data. Support network port data and RS485 serial data dual-channel transparent transmission, the network port and serial port can be transmitted simultaneously, data independent transmission, no mutual influence. Carrier rate up to 100 megabits, transmission distance up to 500 meter over normal power lines, coaxial cable can transmit 2-3 kilometre. Version supports up to 10 levels of trunking, transmits up to 5 kilometre.

HD-PLC KS810N one-touch setting of master and slave via master-slave dip switches, M-side is the host, S-side is the slave. One host can with one slave, also can with multiple slaves. Flexible networking, supports bus, star, tree, and hybrid network topologies structure. Self-contained routing algorithm, self-organized network, fully transparent dissemination of data, supports hot swapping, plug-and-play.

HD-PLC KS810N is divided into general type KS810NT and DC type KS810NS. General type KS810NT is required DC power supply, power supply range is DC12-48V, suitable for AC 0-220V or DC 0-400V carrier communication on power lines or slip touch cord, PLC channel ports do not distinguish phase sequence or positive and negative poles. DC type KS810NS is suitable for DC 12-48V power line



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carrier communication, PLC channel port supports online power fetching, no separate power supply is required for the power port.

HD-PLC KS810N is industrial standard, the length, width and height is 160\*35\*26mm, the width is only 35mm. It is hundred megabit bandwidth, long transmission distance, suitable for carrier communication on DC, AC and other power lines or slip contact cord. Products have been widely used in various industries, including logging drilling rods, inspection robots, slide robots, pipeline robots, underwater robots, intelligent charging piles, industrial automation and other fields.

Technical data	
Classification	Technical indicators
Power supply	DC 12-48V
PLC Signal port	NS type: DC12-48V      NT type: AC 0-220V or DC 0-400V
	Any two-core cables, power line, slip contact cord, slip ring cables
Modulation type	OFDM modulation type
Carrier frequency	2 ~ 28 MHz
Ethernet bandwidth	10M/100Mbps self-adaption
Transmission distance	Ordinary power lines is 500 meter, coaxial cable 2 kilometer, class 10 relay up to 3-5 kilometre
RS485	Support Modbus RTU agreement, baud rate configurable 1200~115200bps
Data delay	Within 10ms
Packet loss probability	Less than 0.1‰
Overall power consumption	≤3W

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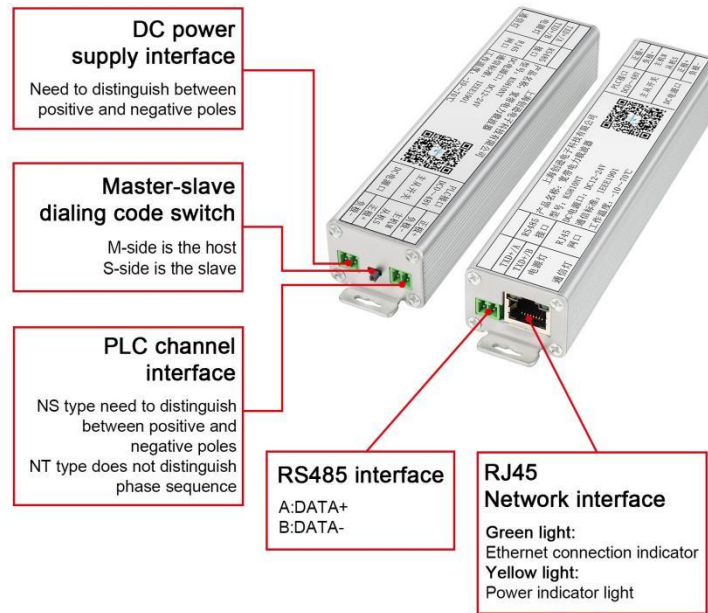
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<b>Standard agreement</b>	TCP/IP, UDP, Profinet, Home Plug, Home PlugAV, Modbus-TCP, IEEE 802.3, IEEE 802.3U, IEEE 802.3ab, IEEE 1905.1, IEEE 1900, IEEE 1901 etc
<b>Way of encryption</b>	AES-128bit
<b>Multicast</b>	Support IGMP multicast protocols,the maximum number of nodes is 128
<b>Exterior dimensions</b>	Size: 160*35*26mm (L*W*H) Weight: 250g Install: Earhook
<b>Environmental requirement</b>	Operating temperature: -40°C ~ 85°C Operating humidity: 20%-95% (No condensation) Storage temperature: -40°C ~ 85°C
<b>Working time</b>	Industrial grade, supports 7*24 hours all-weather work



## Interface specification



<p><b>PLC channel interface</b></p>	<p>NS type:Suitable for DC 12-48V power lines or slip touch cord, need to distinguish between positive and negative poles; NT type:Support AC 0-220V or DC 0-400V, AC、 DC、 or uncharged dedicated lines are available, Channel port does not distinguish between phase sequence or positive and negative polarity.</p>	<p><b>DC power interface</b></p>	<p>Voltage power supply DC:12-48V Note: Distinguish between positive and negative poles.</p>
<p><b>RJ45 network port</b></p>	<p>Connect network devices, such as computers, switches, network cameras, PLC devices, etc; Network port green light: Ethernet connection indicator, connected device normal green light blinking; Network port yellow light: Power indicator light, with power the light on.</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>RS485 serial port</b></p>	<p>A: External equipment DATA+ B: External equipment DATA-</p>	<p><b>Install way</b></p>	<p>Earhook: M3 screws*2pcs</p>



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## Connection schematic diagram

Carrier module KS810N is divided into DC type KS810NS and general type KS810NT , supports bus, star, tree, and hybrid network topological structure.

DC type KS810NS is suitable for DC12-48V carrier communication on power lines , according to the power line with load is divided into two types of wiring, with load and without load dedicated line.

**1. DC type KS810NS power line with load , need to be used with filter.The power supply port is suspended and not connected, PLC channel port is connected in parallel to the DC power line, be careful to distinguish between positive and negative poles.Reference wiring schematic:**

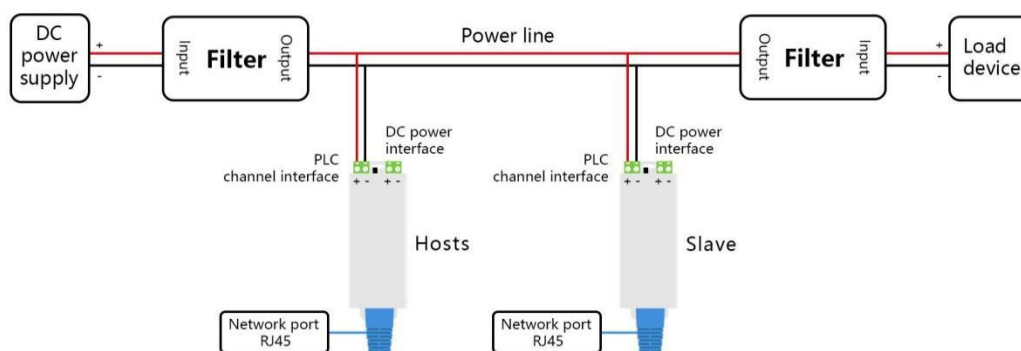


Figure 1

**2. DC type KS810NS power lines without loads go on dedicated lines, the power port of the carrier on the power supply side is connected to a DC12-48V power supply, other carrier power supply port is suspended and not connected, the channel ports of all carriers are connected in parallel to the DC power line, be careful to distinguish between positive and negative poles.Reference wiring schematic:**

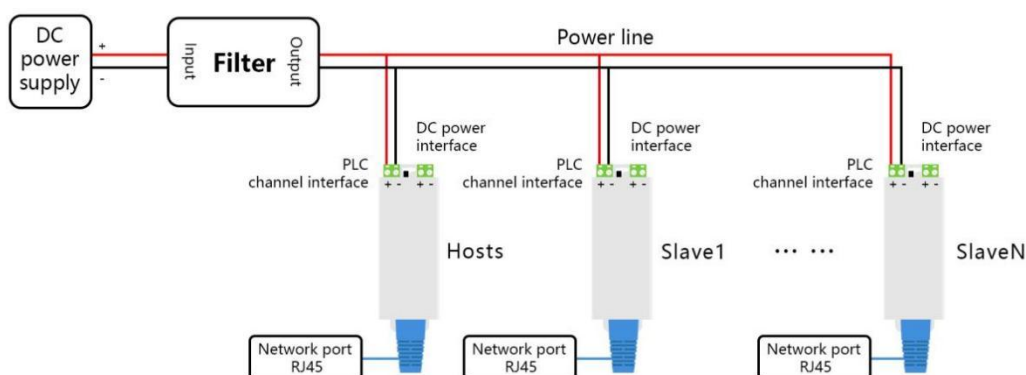


Figure 2



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General type KS810NT is suitable for alternating current AC 0-220V or direct current DC 0-400V power line carrier (PLC) communications , AC, DC, or uncharged dedicated lines are available. The PLC need separate power supply , supply voltage is DC 12-48V. According to the power line with the load situation is divided into two types of wiring, with load and without load dedicated line.

**3. General type KS810NT power line with load, need to be used with filter. The power port connects to a DC12-48V power supply , distinguish between positive and negative poles; PLC channel port is connected in parallel to the DC power line, no need to distinguish between phase sequence or positive and negative polarity. Reference wiring schematic:**

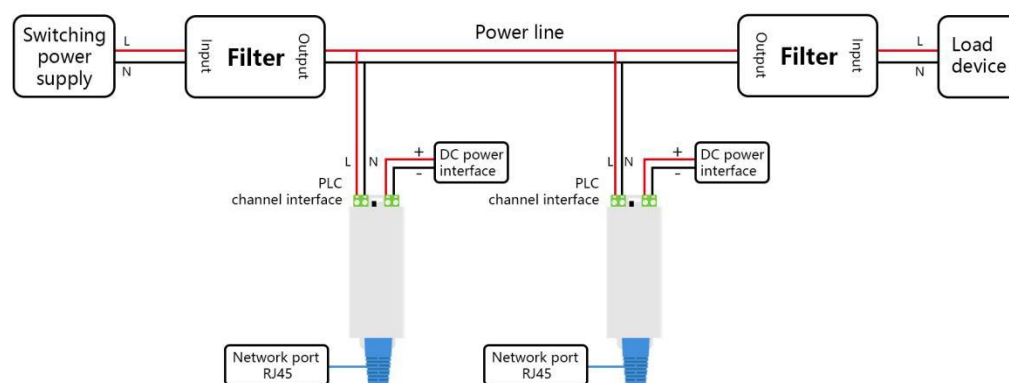


Figure 3

**4. General type KS810NT power lines without loads go on dedicated lines, power port for DC12-48V power supply , distinguish between positive and negative poles; PLC channel port is connected in parallel to the DC power line , no need to distinguish between phase sequence or positive and negative polarity. Reference wiring schematic:**

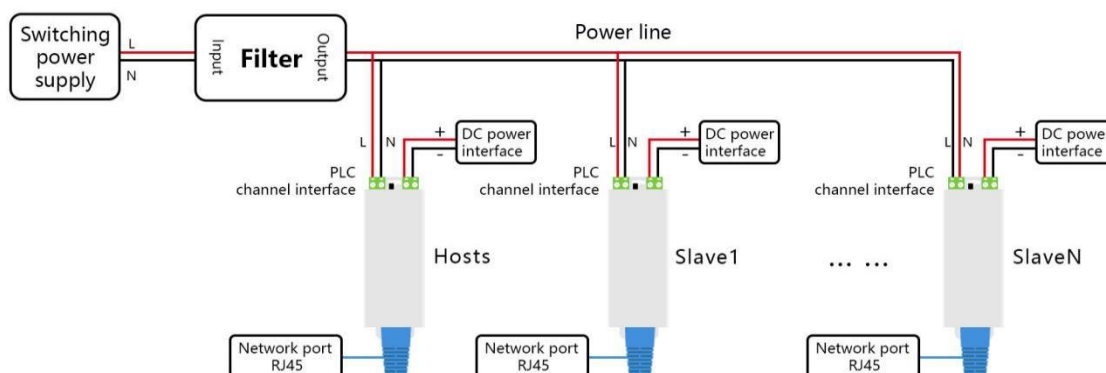


Figure 4



## **Notice:**

1. PLC is include host and slave machine , set up the master and slave before powering up.If you set the master and slave after powering up, need to power down and restart the carrier,Master-slave can networked.A network must have one and only one host.

2. The minimum operating voltage of PLC KS810N is DC12V , the maximum voltage is DC48V, ensure that each carrier is used within the specified voltage range. If the voltage is too low, the carrier will not work properly, and if the voltage is too high, the carrier will be damaged.

3. PLC need to be used with a power filter , the filter added to the outside of the carrier , no filters on power lines between carriers

4. Filters need to be orientated differently, the filter input side is connected to power input or load , the output side is facing the carrier.Especially note that the input and output of the load-side filter should be reversed, the output side is facing the carrier, the input side is connected to the load.

5. Please connect correctly according to the connection diagram, and the wiring should be reliable.If wiring is incorrect or loose, the network will not work.

6. 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.

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.

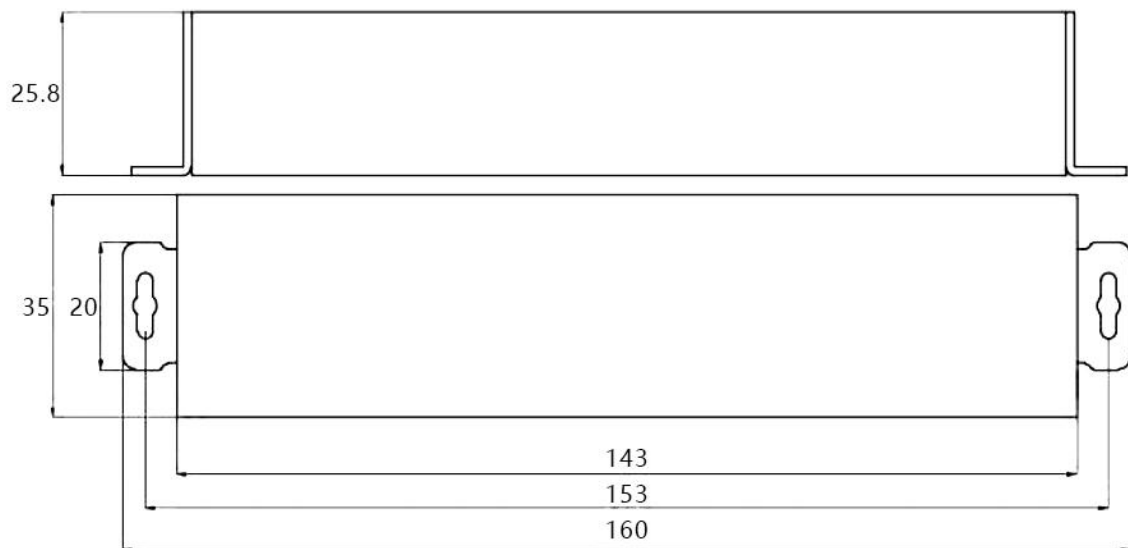
If you encounter problems in the process of use, you can always contact the manufacturer for technical support and assistance.Manufacturers provide professional technical support, including telephone, wechat, email, online remote support and other ways.



## Exterior dimensions

PLC KS810N' s length, width and height are: 160\*35\*25.8 mm(with fixed ear), fixed hole spacing is 153mm, fix with 2pcs M4 screw.

KS810N dimensional drawing:





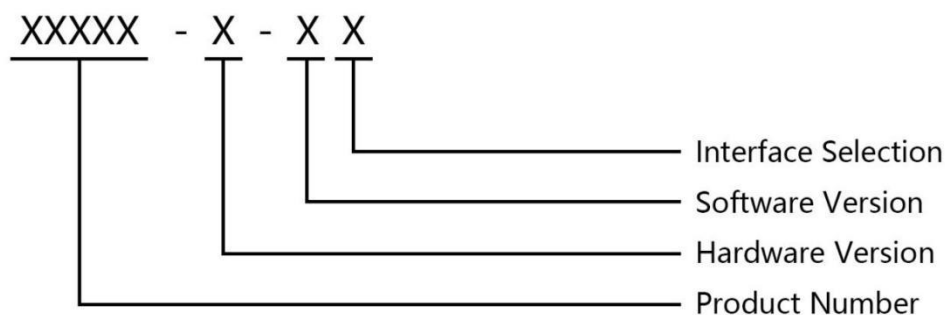
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## Model selection guide

Model specification description:



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

<b>Product Type</b>		
General type: KS810NT	Operating voltage DC 12~36V	PLC channel interface: AC 0-220V or DC 0-400V
DC type: KS810NS	Power on and obtain power DC 12~48V	PLC channel interface: DC 12-48V
<b>Hardware Version</b>		
B: Standard module	Point-to-point 500 meters	Bandwidths: 10/100Mbps
C: High bandwidth module	Point-to-point 300 meters	Bandwidths: 10/100Mbps
D: Long distance edition	Point-to-point 1000 meters	Bandwidths: 10/50Mbps
E: Broadcast version	Point-to-point 500 meters	Bandwidths: 10/100Mbps
F: Extreme edition	Point-to-point 500 meters	Bandwidths: 10/100Mbps
<b>Software Version</b>		
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	
<b>Interface Selection</b>		
1.Single network RJ45	2.Network port+serial port RS485	

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## Contact Us



Business Phone: 18157343325 Lila Xu

Technical Phone: 18057302496 Wailly Yang

E-mail: [sales@king-sen.com](mailto:sales@king-sen.com)

Office website: [www.asyjx.com](http://www.asyjx.com)

Address: Room 302, Building 11, No. 79 Jinsui Road,  
Economic and Technological Development Zone,  
Jiaying , Zhejiang P.R. China

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