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# Industrial Grade HD-PLC

## KSF900Q DC Filter type manual 1.1



Industrial grade standards

Built-in filtering function

Independent dual-channel network ports and RS485

DC wide voltage is DC12V ~ 48V

Operating temperature-40~85°C



# Catalogue

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## **Product Introduction**

High Definition- Power Line Communication KSF900Q , 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 cord 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 KSF900Q is built-in LDPC error correction codec, AES-128 bit encryption algorithm, self-contained routing algorithm, automatic networking, fully transparent dissemination of data. Hundred megabit bandwidth, the communication rate is 10Mbps/100Mbps, 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 kilometers. Flexible networking, supports bus, star, tree, and hybrid network topologies structure. Supports hot swapping, plug-and-play.

HD-PLC KSF900Q 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 sliding contact core. With independent dual-channel data interface, support network port and serial RS485 data at the same time on the power line carrier communication. Fully transparent dissemination of data, no configuration required.

The configuration of HD-PLC KSF900Q is simple, one-touch setting of master and slave via master-slave dip switches, a master can take one slave or multiple slaves. A network has and can only have one host.

HD-PLC KSF900Q internal integrated filtering function. HD-PLC need to be used with filters, when the load current is less than 5A, integrated filtering can be used, save external filters. When the load current is greater than 5A, power lines require additional external filters.

HD-PLC KSF900Q is conforms to industrial grade standards, rail mounting method, operating voltage is DC12-48V. The products are suitable for DC power line or slid contact cord carrier communication, including inspection robots, underwater robots, pipeline robots, DC slid contact cord and other fields.



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## Technical data

Classification	Technical indicators
PLC Power supply	DC 12-48V
PLC Signal port	DC 12-48V power line、 slip contact cord
Overload current	≤5A
Modulation type	OFDM
Carrier frequency	2 ~ 28 MHz
Ethernet bandwidth	10M/100Mbps
Serial port RS485	Modbus-RTU,baud rate is 1200~115200bps
Transmission distance	500 metres of point-to-point power lines
Data delay	Within 10ms
Packet loss probability	Less than 0.1‰
Overall power consumption	≤3W
Standard agreement	TCP/IP, UDP, Profinet, Home Plug, Home Plug AV, 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</b></p> <p><b>Channel interface</b></p>	<p>Power port : power input and output, DC12 ~ 48V.</p> <p>Positive left and negative right.</p> <p>PLC channel port : Carrier signal communication port.DC12 ~ 48V.</p> <p>Positive left and negative right.</p> <p>Pay attention to distinguish the positive and negative poles.</p>	<p><b>RS485 Serial port</b></p>	<p>A: External equipment DATA+</p> <p>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.</p> <p>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;</p> <p>E_link: Ethernet connection indicator, connected device normal green light flashes;</p> <p>P_link: PLC network indicator, network success yellow light is always on, otherwise the light does not light up.</p>	<p><b>Grounding termin</b></p> <p><b>Install way</b></p>	<p>M4 screw earth wire connection</p> <p>TS35 rail mounting</p>

## Connection schematic diagram

The voltage of HD-PLC KSF900Q is DC12~48V, integrated filter function, support network port, RS485 signals in the power line or slid contact cord carrier communication, high communication rate、bidirectional transparent transmission, excellent transmission stability、highly scalable.KSF900Q need to set the host and slave, one-touch setting of master and slave via master-slave dip switches, dial switch to M for the host, dial to S for slave.Please be sure to set up the host and slave machine before power on, a network has and can only have one host.According to the load size, there are two types of wiring: internal filter and external filter.

**1、 Built-in filter wiring method: Load up to 5A, power port for DC power supply or load, channel interface P+,P- are paralleled on the power line, need to distinguish between positive and negative poles.Wiring diagram, as shown in figure 1:**

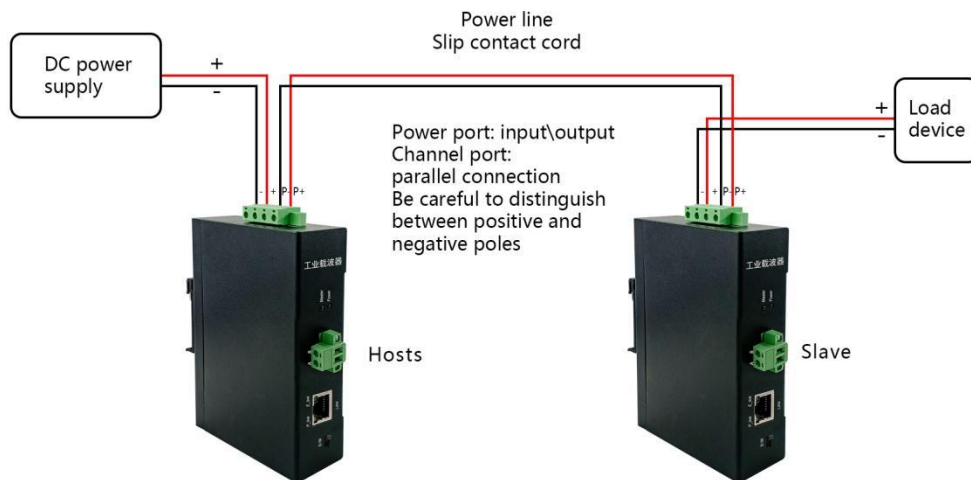


Figure 1

**2、 External filter wiring method: Load is greater than 5A, the power line requires a series filter at both ends, channel port P+, P- are parallel to the power line, need to distinguish between positive and negative poles.The power supply port is suspended and not connected.Wiring diagram, as shown in figure 2:**



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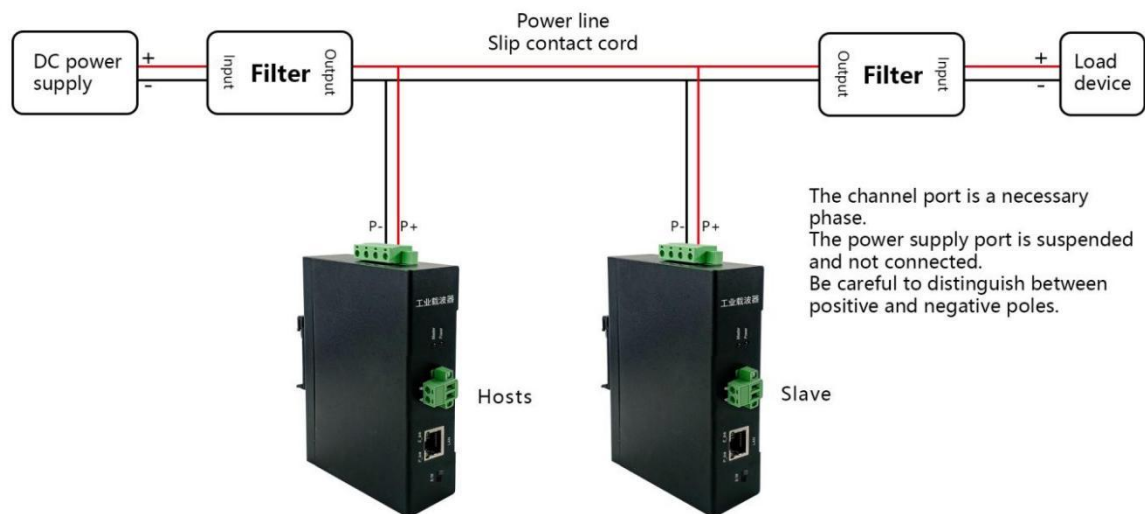


Figure 2

**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 PLC, setting parameters to take effect. A network has and can only have one host.

2. Power line load current is within 5A, PLC power port for power input or output, PLC channel port parallel connection.

3. Power line load current is greater than 5A, power lines need to be used with external filters. PLC channel port is connected in parallel to the power line, the power supply port is suspended and not connected.

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

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.

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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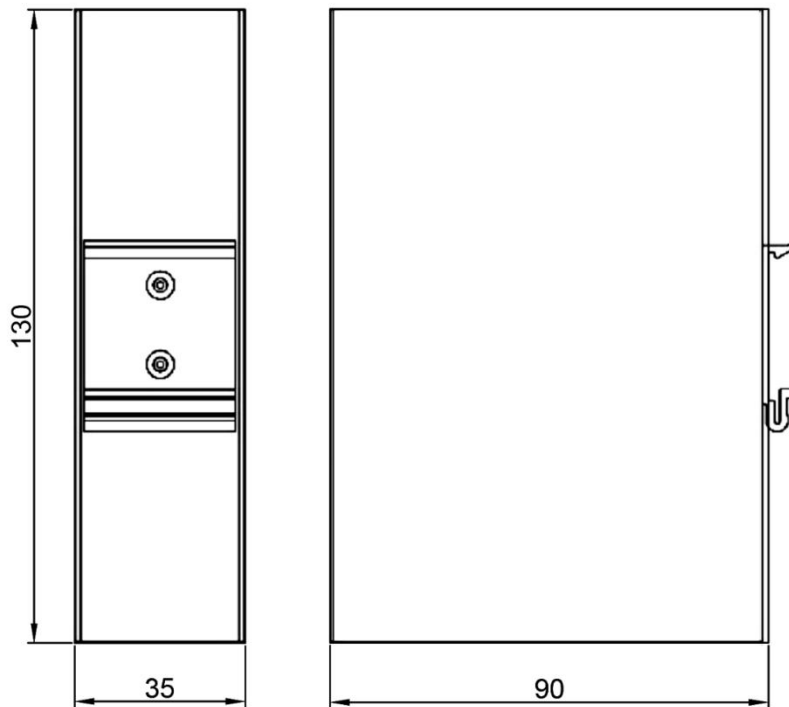
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## Exterior dimensions

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

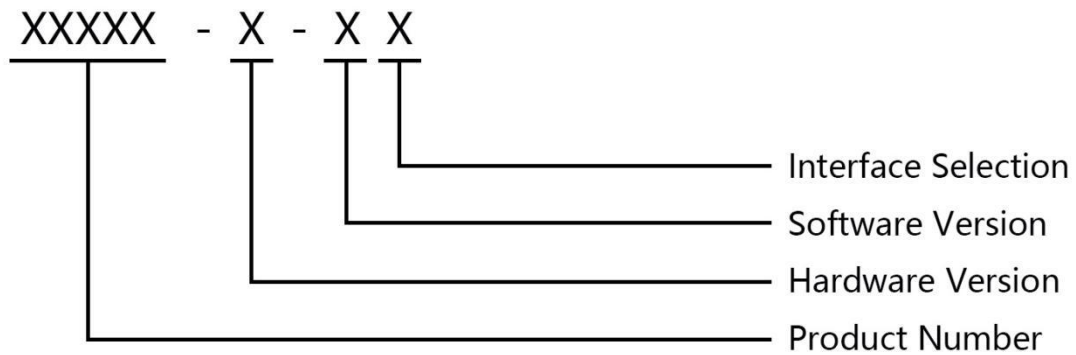
Dimensional drawings are as follows:





## Model selection guide

### Model specification description:



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

#### Product Type

DC filter type: KSF900Q

Operating voltage DC12~48V

#### 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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