ASY Electronics (Jiaxing) Co., Ltd

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Industrial-grade power line carrier KS510L Three-phase electricity charge model manual1.0

PLC channel port online electricity consumption

The maximum range extends up to 3 kilometres.

Support up to 1,000 nodes

Supports RS485 serial port data

Operating voltage：AC220V、AC380V

DC output：DC24V or DC12V

Industrial-grade standard：-40℃~85℃

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Catalogue

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Product Introduction

The KS510L Power Line Carrier is a high-performance industrial-grade power line carrier communication device based on an SOC processor. Employing OFDM modulation technology, its subcarriers support BPSK, QPSK, and 16QAM modulation. Compliant with the European Union's EN-50561 standard specification, its carrier frequency band spans 700kHz to 12MHz. It utilises existing power lines as the transmission medium for high-speed, long-distance data transfer, offering features such as high communication rates, bidirectional transparent transmission, excellent transmission stability, and strong scalability.

The KS510L power line carrier device supports long-distance communication of serial RS485 data via power lines. It incorporates routing algorithms for automatic network formation, features built-in LDPC error correction coding, employs an AES-128bit encryption algorithm, ensures full data transparency, and offers plug-and-play functionality. Point-to-point transmission over power lines extends up to 3000 metres. Supported network topologies include bus, star, tree, and hybrid configurations.

The KS510L power line carrier device complies with industrial-grade standards, enabling power extraction directly from AC power lines without requiring a separate DC power supply. It supports carrier communication over AC 220V and AC 380V power lines, fully utilising existing electrical networks without necessitating new cabling. This approach significantly optimises network deployment by eliminating the complexity of additional wiring.

Serial carrier communication is primarily employed in scenarios requiring low-cost, wiring-free solutions that utilise existing power lines for serial data transmission. It is particularly well-suited for applications in industrial control, smart device management, and remote monitoring.

The following are the primary application areas:

Smart Grid: Remote Meter Reading, Distribution Automation, Grid Monitoring

Industrial Control: PLC Communication, Production Line Data Acquisition, Equipment Monitoring

Smart Cities: Intelligent Street Lighting, Car Park Management, Building Automation

Smart Homes: Home Appliance Control, Security Systems, Energy Management

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Technical data

Classification	Technical indicators
Channel interface	AC220V、AC380V power line
Data interface	RS485
Output power supply	DC24V，DC12V
Modulation type	OFDM，BPSK、QPSK、16QAM
Carrier frequency	700KHz~12MHz
Communication speed	2400bps-1Mbps
Transmission distance	Power line point to point 2000 meters
Networking capability	The maximum support for 1000 nodes
Gain	100dB
Overall power consumption	≤2W
Way of encryption	AES-128bit
Exterior dimensions	Size: 79.3x35x100mm （L*W*H） Weight：280g
Environmental requirement	Operating temperature：-40℃～85℃ Operating humidity：20%-95%（Non-condensation） Storage temperature：-40℃～85℃
Working time	Industrial grade, supports 7*24 hours all-weather work

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Interface specification

Channel interface	AC220V and AC380V require no distinction between phase sequence or polarity (N and L1 are mandatory phases).	**Serial port**	RS485:A versus A, B versus B;
Master-Slave	Factory-set primary and subordinate hosts MASTER for the host SLAVE for the slave	**Output power supply**	DC24V or DC12V
LED indicator	TXD:Transmission indicator RXD:Receive indicator Power:Power indicator	**Installation method**	TS35 Guide rail installation

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Connection schematic diagram

Key Features of the KS510L Power Line Carrier Device：

Wide-voltage adaptive: Supports AC 220V and AC 380V power line carrier, compatible with global power grids;

Power extraction from power lines: Power supply and PLC channel ports are integrated within the same cable, eliminating the need for separate power sources and incurring zero additional wiring costs.

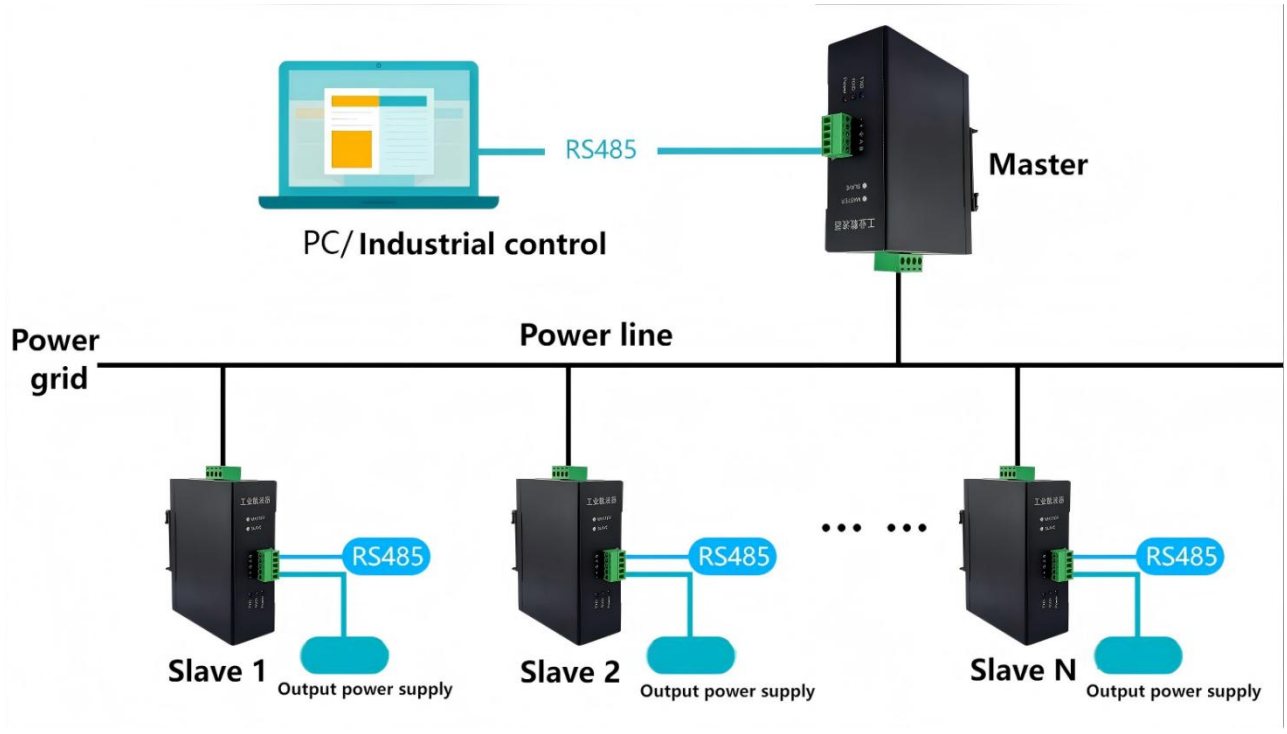
Intelligent Networking: Fixed master-slave architecture, self-organising networks, self-routing.A network must have exactly one master host; a master host may have one slave host or multiple slave hosts.

Data port: Supports RS485 data transmission;

Output power supply：DC24V or DC12V；

Transparent transmission: Supports data pass-through and serial communication.（Protocol MODBUS RTU）.

Refer to the wiring diagram as shown below:



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Notice:

1．The carrier device comprises a master unit and a slave unit. The master-slave configuration is pre-set at the factory, with each network having exactly one master unit.

2．Should significant sources of interference exist on the power lines—such as frequency converters, large motors, or substantial capacitors—a power supply filter must be installed to isolate these interference sources.

3．Do not operate while energised. Do not touch the output terminals directly. Never short-circuit the output terminals or connect them to the casing.

4．This product is not waterproof. Please ensure it is used in a dry environment.

5. Should the product malfunction, do not attempt to disassemble or repair it yourself. Please contact the manufacturer or your point of purchase promptly for assistance.

Common problems troubleshooting

When installing and using the carrier device, should the carrier network be unavailable or communication unstable, please observe the following precautions and use them as a reference for troubleshooting common issues. This will help minimise faults and maintenance work during operation.

1. Please connect the cables correctly according to the wiring diagram, ensuring all connections are secure. Incorrect or loose wiring will result in a network failure.

2. Verify the correct wiring of the power supply filter. The carrier unit must be used with a dedicated power supply filter, and no additional power supply filters may be interposed between carrier units. Power supply filters require directional orientation: the input terminal connects to the power supply input or load, while the output terminal faces the carrier unit. Note particularly that the load-side filter must be wired in reverse, i.e. the output terminal faces the carrier unit and the input terminal connects to the load.

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3. Verify that the power lines for carrier communication are within the same circuit. The carrier devices must operate under the same transformer, with the master and slave units connected to the same circuit. Minimise the number of branch circuits. Avoid routing through electricity meters where possible, and minimise the number of circuit breakers, contactors, or similar components traversed.

4. Inspect the wiring for potential sources of strong interference, such as variable frequency drives or large capacitors. In environments with significant interference, it is advisable to use shielded cables for both carrier communication power lines and data signal lines. These cables should not run parallel to or cross paths with interference sources and should be routed as far away from such sources as possible.

Should you encounter any issues during use, you may contact the manufacturer at any time to obtain technical support and assistance. The manufacturer provides professional technical support through multiple channels, including telephone, WeChat, email, and online remote support.

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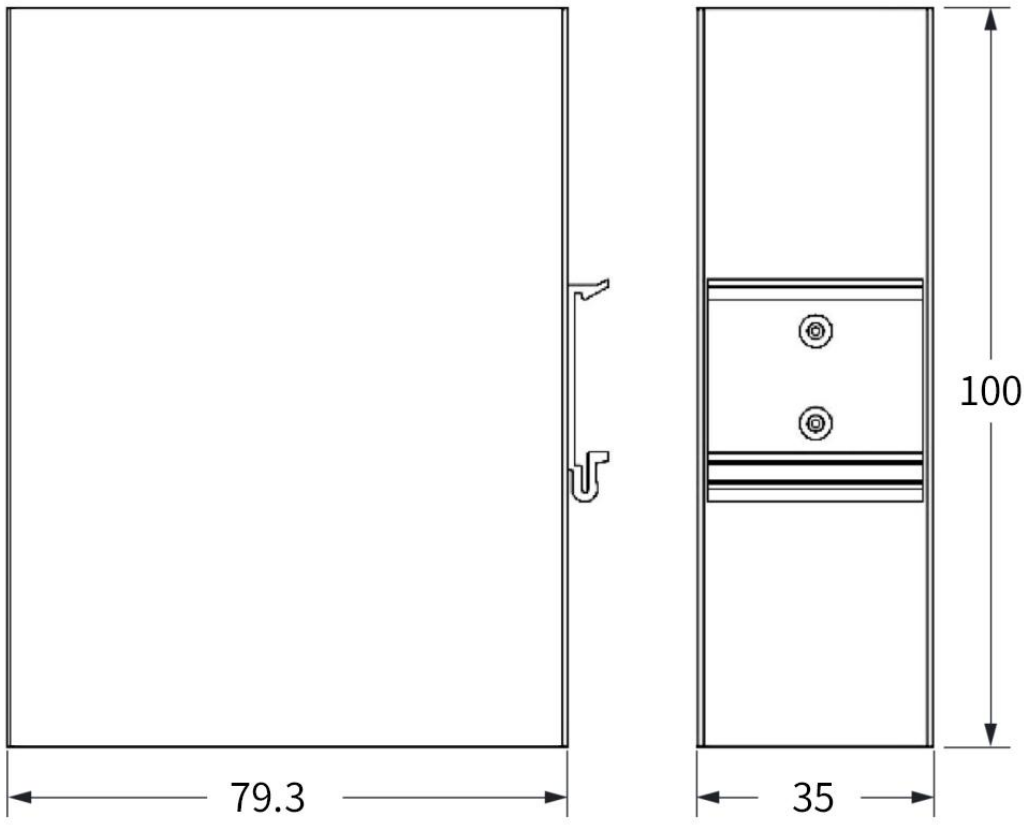
Exterior dimensions

The PLC ' s length, width and height are：size 79.3x35x100mm（Without terminal），

Dimensional drawings are as follows：



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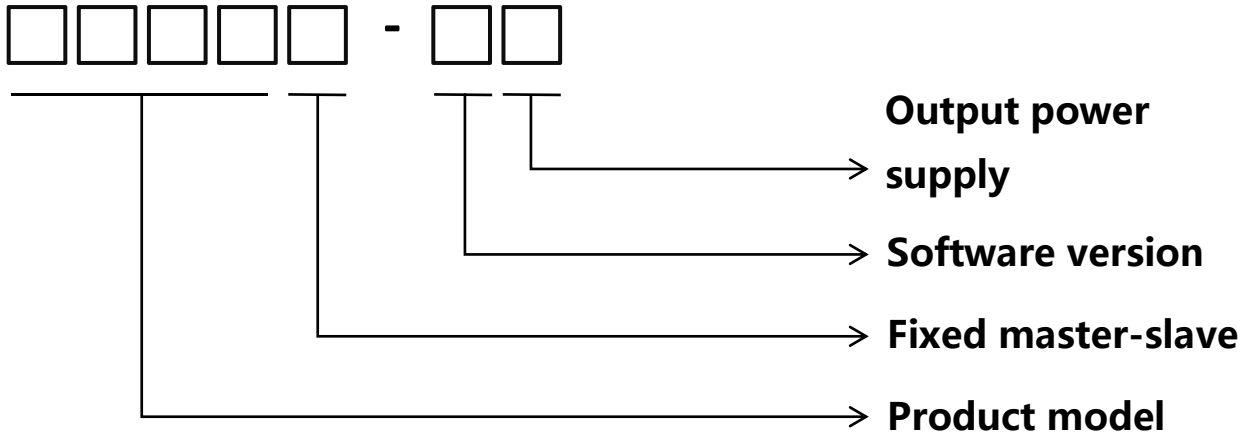
Model selection guide

Model Specifications：



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

Product Type	
Serial port electricity charge type Master：	KS510LP
Serial port electricity charge type Slaver：	KS510LS
Software Version	
E：High performance edition	The number of communication nodes is within 32 PCS
R：Relay Edition	The maximum number of nodes is 1000 PCS
Output power supply	
Default DC 24V or DC12V	

Contact Us

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