**URQ-1120 series power line carrier data transceiver module**

URQ-1120F + is a 9-pin single row of small volume high-performance the zero carrier data transceiver module. Is designed for 220V AC, strong interference, strong attenuation, long-range requirements of the environment, the reliable transmission of data and high cost of specially designed and developed carrier module. Suitable for meter reading, street lighting, smart home, fire, building control and other applications that require power lines to transmit data.

URQ-1120E + / K + is also a single row 9-pin small footprint and high performance carrier data transceiver module. DSP processing module further improve anti-jamming capability, designed specifically for the 0V-220V AC-DC, power outages, and no power environment (such as pipes and the earth, a signal line and the earth, two signal on the basis of the URQ-11200E line, 12V AC and DC power cord, etc.), the reliable transmission of data and the high cost of the specially designed and developed carrier module. Suitable for industrial control, railway, intelligent, smart home, building control and the need for carrier data transfer applications. The URQ-1120F + carrier rate is 100BPS the highest carrier rate URQ-1120E + 400BPS highest carrier rate the URQ-1120K + 2400BPS.

First, the performance of the URQ-1120 series modules:

- Integrated URQ-1120 module, and peripheral circuits of the carrier plate, without the rest of the coupling element, directly connected to a 220V AC use. Dimensions 53 × 38 × 17 mm (L × D × H), single row pin leads (see below) 1,2 pin 220V AC power direction (1 foot, 2 feet spacing 2X0.1 inch) 2 feet, 3 feet spacing of 1.1 inches, 0.1 inches spacing between the rest of the foot.
- Operating frequency 120 ~ 135KHZ, interface baud rate of 9600bps. A start bit, 8 data bits, one stop bit
- Temperature range: -25 °C ~ +70 °C Humidity ≤ 90%
- A continuous transmission ≥ 253 bytes in length, the byte length from 1 to 253 defined by the user, the module does not send redundant data
- Receiver sensitivity ≤ 1mV
6. ≥ 60 dB suppression band
7. Bandwidth ≤ 10 KHZ
8. Insulation resistance 500V ≥ 500MΩ
9. Power supply: DC +5 V reception: ≤ 12mA
   DC +12 v sent: ≤ 450mA
Second, specifications and models:
URQ-1120F +:
URQ-1120 after the first letter is defined as:
F +: over zero transmission type
E +: carrier rate to 400BPS full-wave carrier module
K +: carrier rate 2400BPS full-wave carrier module
URQ-1120 Pin Description: front from left to right, from 1 to 9 feet:

1P-AC: 220V AC voltage of the line of fire (or zero line)
2P-AC: 220V AC voltage zero line (or FireWire)
3P-+12 V: +12 V to send power (450mA), single income data can be vacant reduce power consumption
The 4P-GND: Digital circuit ground
5P-+5 V: +5 V operating supply 11mA
6P-RX: TTL level, carrier data into, then MCU TXD
7P-TX: TTL level, carrier data out, then the microcontroller RXD
8P-MODE: mode selection, vacant or connected to 5V high ground is low
9P-NC/RST: reset pin (active low) only work when frequent switching mode. Do not need this feature, the pin should be left

Note, URQ-1120 Series module programming
The module interface baud rate of 9600bps, user module communication 9600BPS asynchronous mode, the format of a start bit, 8 data bits, 1 stop bit format.
The module by the MODE pin control module using a transparent way (high), or custom operating modes (low). Transparent operating mode MODE high (vacant), low (ground), custom mode.
In transparent mode: programming module is not required for initialization, similar to ordinary RS-485 communication. However, due to the power line of the load is more, the harmonics generated by the electrical did not avoid coupling to the power line, this module is a high sensitivity of the carrier module, in the all-carrier module are in the receiving state, the power line will all be harmonics generated by the electrical appliances are covered, then the module will demodulate noise data output from the TX end. Therefore, sending and receiving data synchronization code should be introduced in order to distinguish between the real transmission data.
Note: send buffer (253 bytes) expires without receiving new data in the module. Is a send byte less than 253 bytes. A data user, please uninterrupted sent to the module, if the pause longer than the module has been sent to all the time (cache is empty, the last byte has been completely transmitted), the the recipient module may insert noise data.
Continuous transmission as the RX side: 5A 5A 5A 34 56 78 12 45 67 in the other receiver module may output
FE FD EF 5A 5A 5A 34 56 78 12 45 67 85 DE EF. Plus black byte is no transmission data in all the modules, the receiver module receives the noise data.
Receive data or 9600BPS asynchronous mode, the format of a start bit, 8 data bits, 1 stop bit format, sent from the TX, but about to be sent every 0.09 seconds. In custom mode equivalent.

Custom work mode: the user define the transmission of data in accordance with the company, a transmission of data is defined as follows:

The first byte: To transmit a number of bytes 0-250 (excluding the first byte)
The second byte to the first n +1 bytes: byte data the user needs to be transmitted
Note: when the module has not transmitted a data does not receive the next frame data.

Receive data and transmit data equivalent.

If sent to the RX side output in other modules TX: 02 AE 87 02 AE 87
02 is a byte length, and this indicates that the following two bytes of data.

If sent to the RX side: 0,901,020,304,050,607 08 09
Output in the other module TX 08 09 0,901,020,304,050,607
09 is a byte length, which means that there are nine bytes of data behind.
The largest byte length to 253.

If sent to the RX side: FD 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E ... FD
In other modules TX output FD 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E ...
FD
The valid data can be to the 253.

URQ-1120 series modules distinction:

URQ-1120F + is specifically for AC 220V/110V 50HZ/60HZ strong interference design based on the exchange of zero transmission scheme carrier module, mains above transmission effect, transmission distance. To transfer data in the case of AC power, the carrier rate is 50HZ/100BPS, 60HZ/120BPS our by optimization nine BIT can send a byte.

URQ-1120E + is a full-wave carrier module, the transmitted data has nothing to do with the 0:00. Carrier demodulation, digital filtering to improve the anti-jamming capability of its carrier data rate the lower the better.

URQ-1120E + 0V-220V AC and DC pressure the carrier communications carrier communication, such as: 220V, 110V, 80V, 48V, 36V, 24V, 12V AC and DC
voltage and power outages. URQ-1120E + highest rate 400BPS, can improve the anti-jamming capability select 100BPS communications, but also 100BPS, URQ-1120E + AC power communication no URQ-1120F + good, comprehensive test only URQ-1120F + third communication The distance around. Communication and URQ-1120K + URQ-1120E + the same, the only difference is the actual rate of carrier can do 2400BPS. Suffix without the +, URQ-1120F, URQ-1120E, URQ-1120K is a small power transmission module transmission voltage is only 5V of case, continuous long time to send data.

URQ-1120 series modules in common:
All URQ-1120 Series module with microcontroller / microprocessor interface are the same, the same means of communication. With the rate of the serial interface of the microcontroller / microcomputer 9600BPS, one start bit, eight data bits and one stop bit. The same transparent mode or custom mode.

**URQ-1120 series power line carrier data transceiver module picture:**
URQ-1120 series power line carrier data transceiver module with microcontroller connection diagram:
URQ-1120 series power line carrier data transceiver module with the microcomputer 9-pin RS232 port connection diagram:

URQ-1120 series power line carrier data transceiver module connection on the diagram with the microcomputer 9-pin RS232 serial debugging assistant test chart: MODE = 1 high level: