

Manual

1. Introduction:

This product is an embedded module based on the universal serial interface and conforms to the network standard. It has built-in TCP/IP protocol stack, which can realize any transparent conversion between three interfaces of user serial port, Ethernet and wireless network (WIFI).

With the HLK-RM04 module, traditional serial devices can transfer their data over the Internet without changing any configuration. Provides a quick solution for the user's serial device to transmit data over Ethernet

2. Feature:

1. Serial to WIFI module, serial to Ethernet module, Ethernet to WIFI multi-function WIFI module, serial server module, make your serial device easy to network, full transparent two-way data transmission, to ensure high ease of use and compatibility.
2. Module integrated 10/100M adaptive Ethernet interface: serial communication high baud rate up to 230.4Kbps
3. Reliable system core for security and long-running system applications
4. Small size: 40*29mm
5. Working temperature: industrial grade: -25~75 °C.
6. Built-in 360M MIPS CPU, 16M RAM and 4M FLASH and wireless baseband and RF front-end and multiple peripheral buses
7. CE and FCC certification, support IEEE 802.11 b/g/n, support transparent protocol data transmission mode
8. Support most WIFI encryption methods and algorithms, WEP/AVAP-PSK/AVAP2-PSK/AVAPI, encryption type WEP64/AVEP128/TKIP/AES
9. Provide AT-instruction set configuration, provide friendly web configuration page, configure through webpage
10. External antenna
11. Support wireless work in AP mode and node mode, real hardware AP, support all wifi connections such as ios system and android system, support AP and station simultaneous online functions
12. Optional TCP Server TCP Client/XJDP working mode, support network protocol: TCP/OJDP ARP/ICMP HTTP/DNS/DHCP
13. Supports DHCP to automatically obtain IP, and supports IP allocation for slave devices when working in AP mode.
14. Serial port speed adjustable, support 230400

3. Technical specifications:

3-1: Product technical specifications

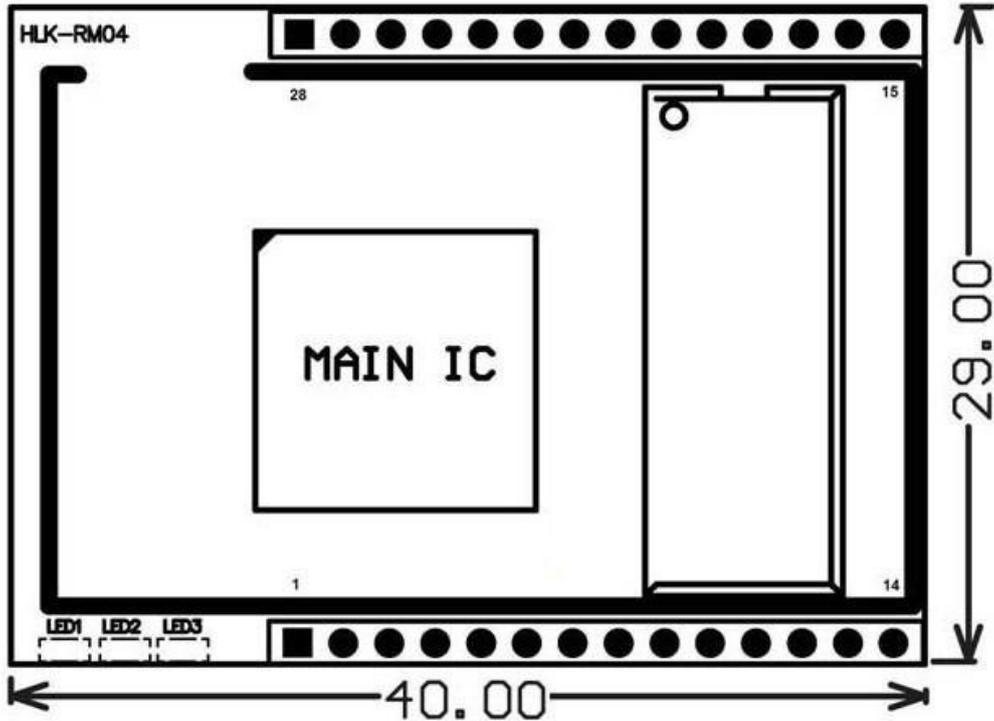
Product number		HLK-RM04
Supported standards and protocols		IEEE 802.11n, IEEE 802.11g, IEEE 802.11b, IEEE 802.3, IEEE 802.3u, CSMA/CA, CSHA/CD, TCP/IP, DHCP, ICMP, NAT, PPPoE
Port	WAN	one 10/100M adaptive RJ45 port
	LAN	one 10/100M adaptive RJ45 port
Wireless parameter	Frequency Range	2.4 to 2.4835GHz
	Transmission rate	11n: 270/243/216/162/108/81/54/27Mbps 135/121.5/108/81/54/40.5/27/13.5Mbps 130/117/104/78/52/39/26/13Mbps 65/58.5/52/39/26/19.5/13/6.5Mbps IEEE 802.11g: 54/48/36/24/18/12/9/6 (Adaptation) IEEE 802.11b: 11/5.5/2/1M (adaptive)
	Number of working channels	13
	Spread spectrum technology	DSSS (Direct Sequence Spread Spectrum)
	Data modulation	DBPSK, DQPSK, CCK and OFDM (BPSK/QPSK/16-QM/64-QAM)
	Sensitivity @ PER (packet rate)	1500H: -68dBm@10% PER 130M: -68dBm@10% PER; 108M: -68dBm@10% PER; 54M: -72dBm@10% PER 11M: -85dBm@8% PER; 6M: -88dBm@10% PER 1M: -90dBm@8% PER; (typical)
	Transmission distance	The indoor distance is up to 100 meters; the outdoor is as long as 360 meters (depending on the environment)
	RF power	>=14.5dBm (11n)/ >=16.5dBm (11b/11g)EIRP
	antenna	External antenna
	Network medium	
Wi-Fi work type r		Client/AP/Route
QoS management		Set up upstream bandwidth management Set up downlink bandwidth management
System service		Virtual server: set up internal server for Internet user access DMZ: When the deployment port of the virtual server that needs to be set is uncertain, you can set it as a DMZ host. Port Trigger: It can realize that the wireless router automatically releases the inbound service port according to the port accessing the Internet by the LAN.

Equipment management	Regional setting NTP server settings Backup system settings information Restore settings information from a file Restore to factory settings Software upgrade Remote management Restart Change Password
WLAN security mode	Open System WPA-PSK WPA2-PSK WPAPSK WPA2PSK (ie WPA-PSK and WPA2-PSK mixed mode) WPAIWPA2 (WPA and WPA2 mixed mode)
High transmission rate	230400bps
TCP connection	Large connection number >20
UDP connection	Large connection number >20
Serial port baud rate	50~230400bps
Other parameters	
Status Indicator	Status indication
Environmental standard	Working temperature: -20-60 ° C
	Working humidity: 10%-90% RH (non-condensing)
	Storage temperature: -40-80 ° C
	Storage humidity: 5%-90% RH (non-condensing)
Other performance	Band bandwidth optional: 20MHz, 40MHz, automatic

4. With a full set of wireless router features:

- Supports AP (Wireless Access Point), Client (Wireless Client), Repeater (Wireless Relay), Bridge (Wireless Bridging), Router (Wireless Routing) five working modes
- AP mode - default mode of operation. In this mode, the device is a wireless access point that supports plug and play without configuration.
- Router mode — The device in this mode is equivalent to a wireless router, with the wired interface as the WAN and the wireless as the LAN. Multiple wireless clients can share a single broadband line to access the Internet.
- Repeater mode uses the wireless relay function of the device to relay and amplify wireless signals and form a new wireless coverage area, ultimately achieving the goal of extending the coverage of the wireless network.

- Bridge mode—Using the bridging function of the device, the RM04 first establishes a wireless connection with the front-end wireless network, and then sends a wireless signal to form a new wireless coverage, which can effectively solve wireless coverage problems such as weak signals and blind spots.
- Client mode - The AP working in this mode is a wireless client for the primary AP, which is equivalent to a wireless network card.



5. This product provides the pins shown above, as defined below:

PIN	Function	Direction	Description
1	VCC	Power In	5V power input
2	GND	GND	Power ground
3	WLAN_LED	0	WIFI start indication
4	VDD	Power Out	3. 3V power output
5	LINK2	0	Network port 2 connection indication
6	USB_P	I/O	USB signal +
7	USB_M	I/O	USB signal -
8	STA/GPIO_0	I/O	Status indication /GPIO_0
9	GPIO_1	I/O	GPIO——1
10	ES/RST	I	Exit transparent transmission / restore factory value
11	TXOP2	A	Network port 2 TX-P

12	TX0N2	A	Network port 2 TX-N
13	RXIP1	A	Network port 1 RX-P
14	RXIN1	A	Network port 1 RX-N
15	RXIN2	A	Network port 2 RX-P
16	RXIP2	A	Network port 2 RX-P
17	TX0N1	A	Network port 1 TX-N
13	TXOP1	A	Network port 1 TX-P
19	RTS_N/GPIO_2	I/O	Serial port 2 RTS
20	UART_RX	I	Serial port 1 RX
21	UART_TX	0	Serial port 1 TX
22	RXD/GPIO_3	I/O	Serial port 2 RX
23	LINK1	I/O	Network port 1 connection indication
24	CTS_N/GPIO_4	0	Serial port 1 CTS
25	WPS/RST	I	WPS key / restore factory value
26	TXD/GPIO_5	0	Serial port 2 TX
27	VDD_1_8	Power Out	Network port 1.8V output
23	VCC	Power In	5V input