

Hardware Group LTD.

3 Tsar Ivan Shishman Street
 Plovdiv, 4000, Bulgaria
 +359 883 364 469
info@irdroid.com
<http://www.irdroid.com>

All prices are subject to change

Irdroid WiFi Relay Board | WIFI_RLY1

Description

The Irdroid WiFi Relay development board is a home automation board that will allow you to rapidly design WiFi home automation systems. The development board has 5 110/240 V 5A Relays which can be controlled wirelessly **via the on board WiFi 802.11n WiFi module**. The WIFI Relay Board also features a RTC (Real Time Clock) and the current firmware revision of the board will allow you to set on / off schedules for every single relay. These on / off schedules are not dependent on the device connected to the WIFI board. The WiFi Relay Board can be powered by 12V 1A DC Power source. Once it is powered on the WiFi module will act as an WiFi 802.11n Access point. Once you connect to it you can use the FREE and Open Source Android App that comes with the board to communicate / trigger the relays and /or to set up on/off schedules for the relays. The relay Board RTC is battery backed up.

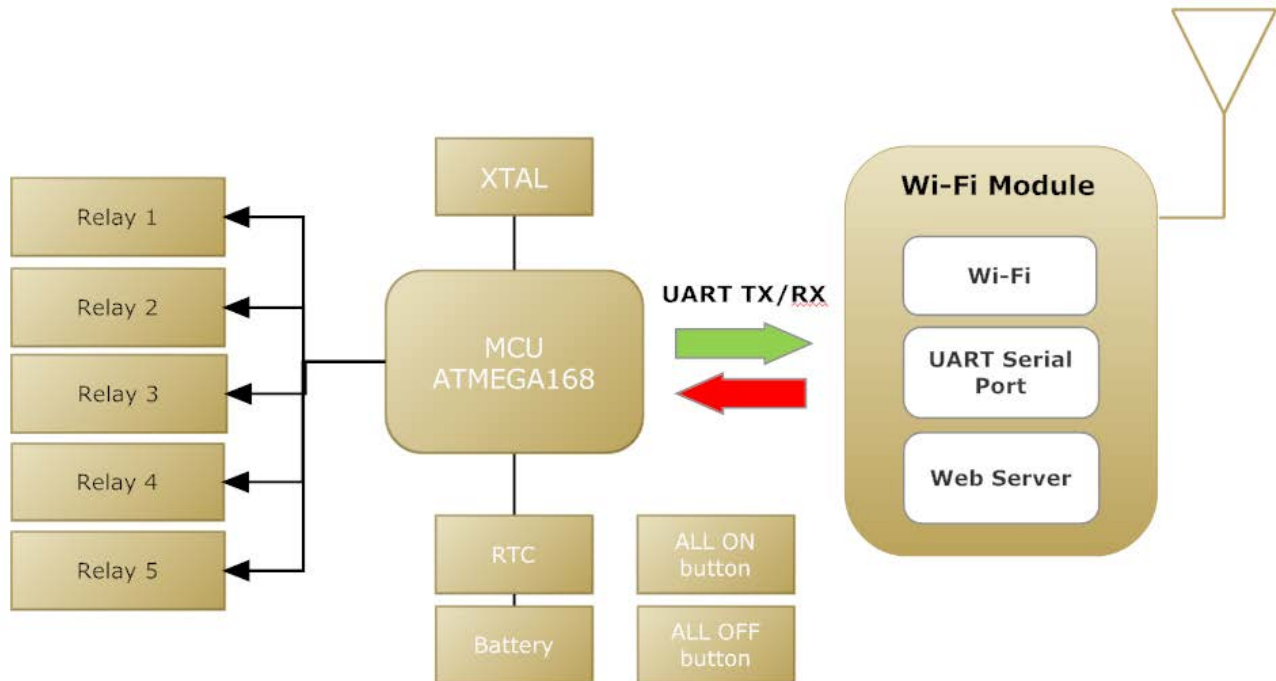
Applications

- WiFi Relay Control
- Home Automation / Industrial automation
- Building Automation
- WiFi Remote Garage door control
- Garden lighting control and automation
- Garden watering systems and automation

Pricing

Order Code	Description	Qty 1- 10	Qty. 10 - 100	> 100
1345	Irdroid WiFi Relay Board	\$100	\$95	\$88

Block Diagram



The Microcontroller is connected to the WIFI module via Serial UART Interface. The microcontroller runs a Modbus protocol stack, configured to communicate with the WiFi to Serial UART module @ 9600 bps, 8 , N , 1 . The WiFi to Serial UART module “listens” and redirects all the TCPIP traffic that comes to the module @ TCP port 8080 to the WIFI module UART and respectively to the microcontroller.

The Microcontroller firmware also features a timer / schedule functionality , which allows you to set on / off timers for every single relay. You can setup the on / off timers/schedules to run on a dayly basis or on a specific day of the month.

Microcontroller <> WIFI module connection Parameters:

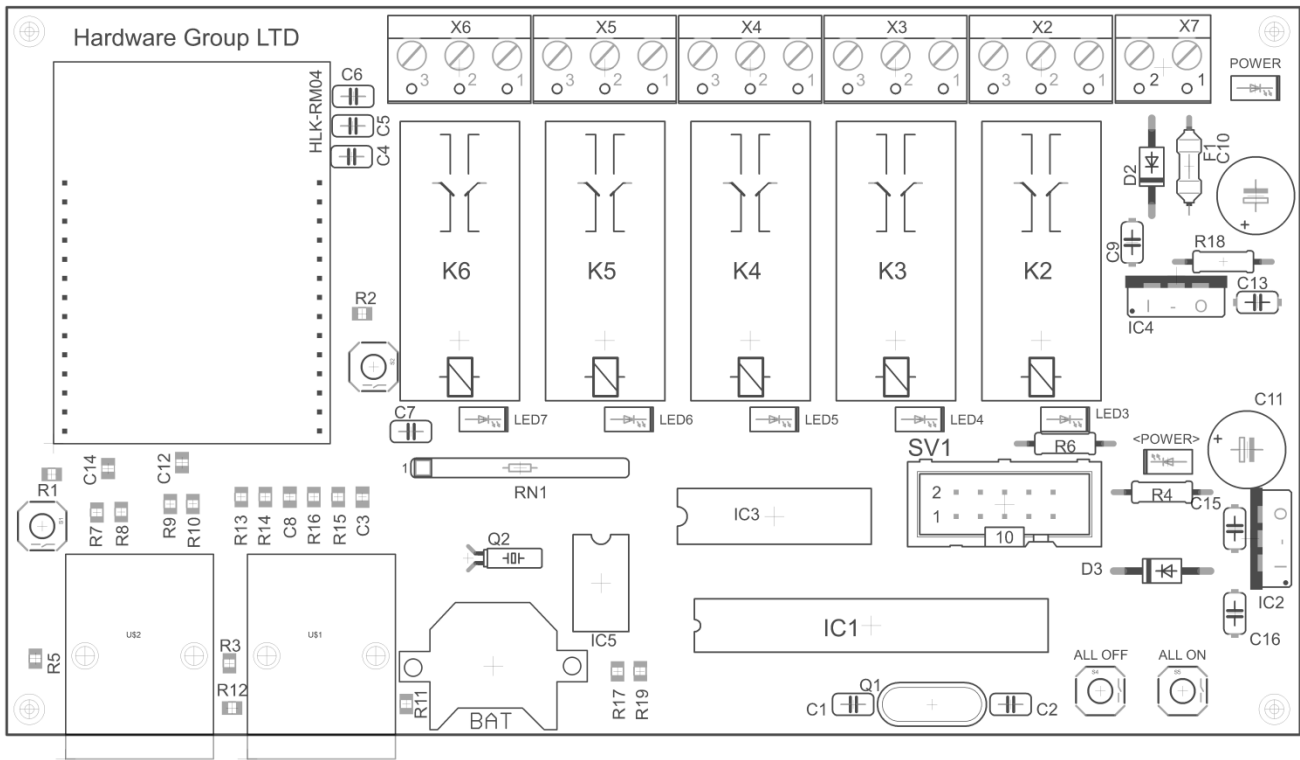
- UART Serial 9600 / 8 / N / 1
- Modbus RTU serial connection

1. Specifications (Supply Voltage DC 12V @ 25 Celsius):

Typical DC Characteristics		Notes
Power Consumption All OFF	TBD	All Relays Switched OFF
Power Consumption All ON	TBD	All Relays Switched ON
Board nominal Current	TBD	The nominal current of the board
Board nominal Voltage	12V DC	The nominal voltage of the board
Relay 1 – 5 Power rating		
WiFi current	140mA	Wifi to serial,AP mode or Client mode
One rj45 current	120mA	Serial to RJ45.
Two rj45 current	135mA	One is Wan another is LAN
WiFi and two rj45	160mA	Default Mode/Factory Mode
Centre frequency accuracy	+/-25ppm	Additional +/-15ppm allowance
Typical RF Characteristics		Notes
Receive sensitivity	-70dBm	
Maximum Transmit power	18dBm/15dBm/13.5dBm	802.11b/g/n
RF Port impedance – IPEX connector	50 ohm	2.4 - 2.5GHz
VSWR (max)	2:01	2.4 - 2.5GHz
Centre frequency accuracy	+/-25ppm	Additional +/-15ppm allowance
Peripherals		Notes
DS1307 Realtime clock	1pcs	Dallas semiconductor Realtime clock
WiFi Relay module 802.11n	1pcs	Android Wifi Relay module
Ethernet port WAN	1pcs	100mbps
Ethernet port LAN	1pcs	100mbps

2. Pinout Configuration:

X2, X3, X4, X5, X6 – Relay Terminal Blocks



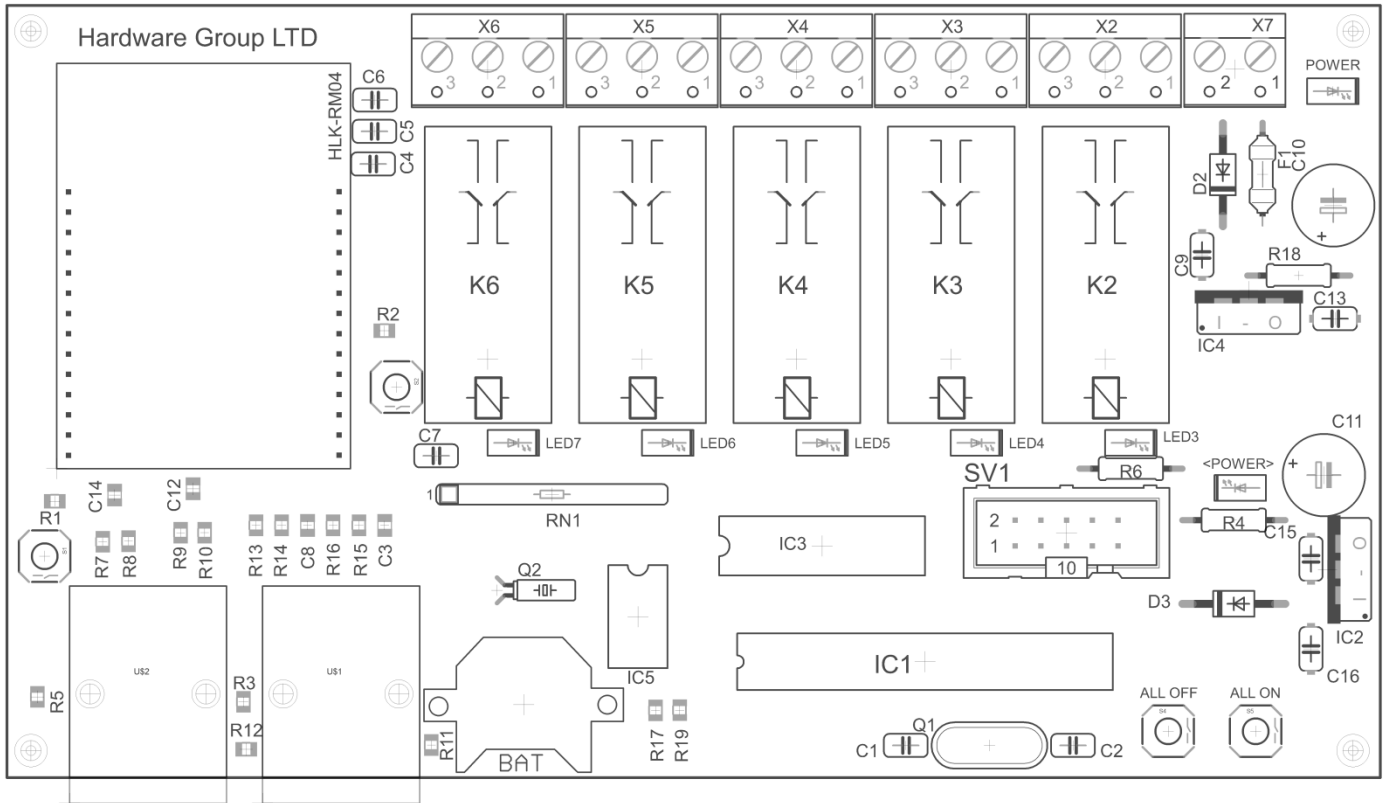
3. Pin Assignment

Pin No	Signal Type	Description
X2 1-2	NO Relay contact	Normal open relay contact
X3 1-2	NO Relay contact	Normal open relay contact
X4 1-2	NO Relay contact	Normal open relay contact
X5 1-2	NO Relay contact	Normal open relay contact
X6 1-2	NO Relay contact	Normal open relay contact
X7 1-2	Power Supply	DC Power supply 12V

4. Electrical Characteristics (WiFi Module)

Parameter	Min	Max
Module supply voltage VCC	3.9V	5.5V
Module Voltage Output VO3.3	3.1V	3.5
Module Voltage Output VO1.8	1.65V	1.9
GPIO Voltage	3.1V	3.5V
Storage temperature	-40°C	95°C

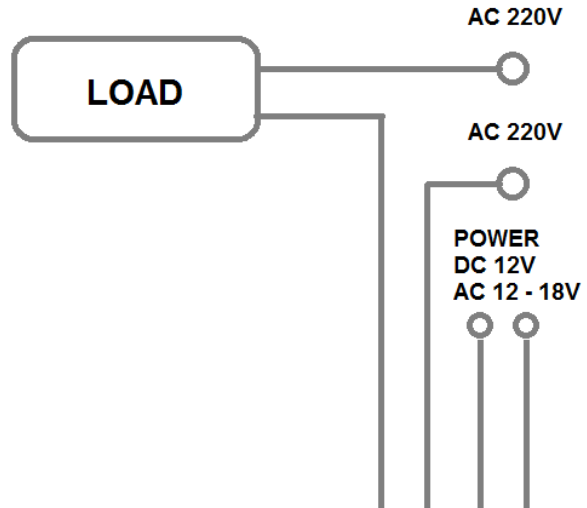
5. Outline Drawing



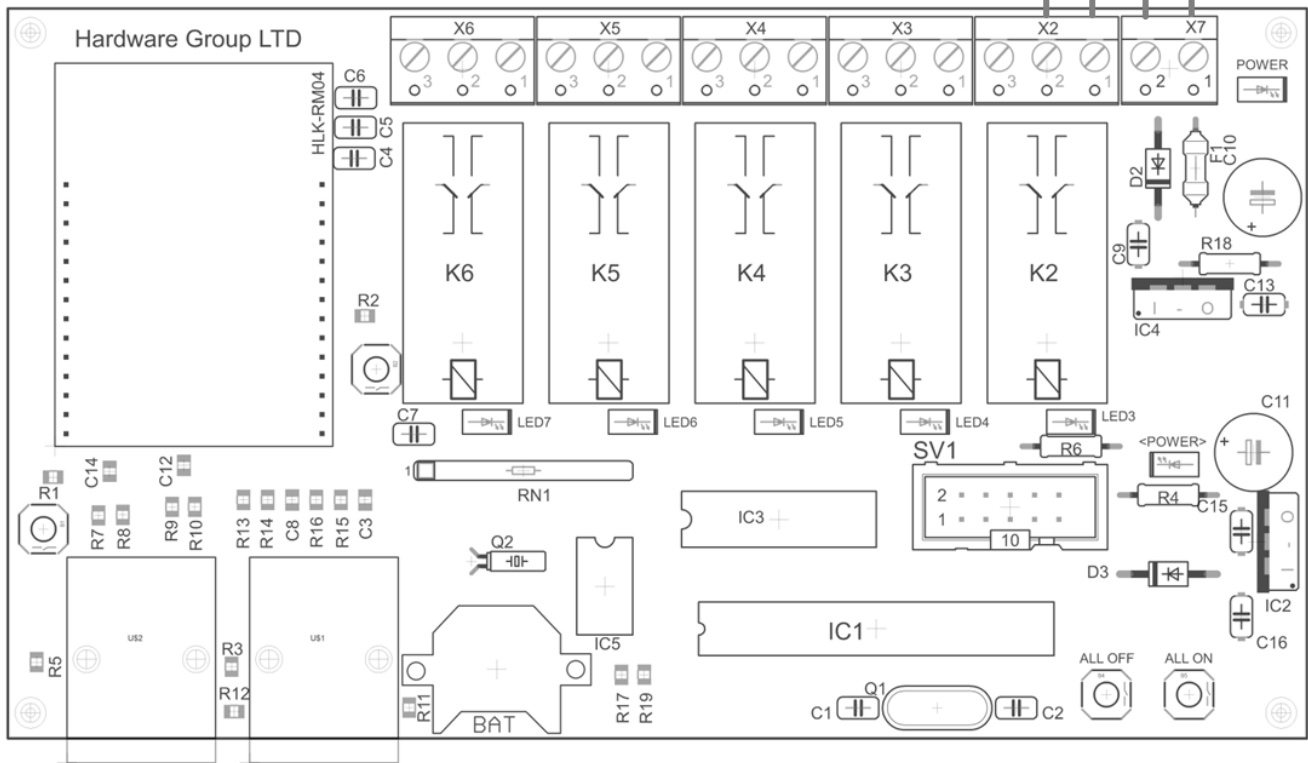
Board dimensions:

- 136.56 x 76.18mm
- X2, X3, X4, X5, X6 – Relay Terminal Blocks
- X7 – Power Supply Terminal Block

6. Typical Application Circuit



Typical Application Circuit 220 - 240V



7. Modbus Input Output List

Modbus Coil Address	Name	Modbus Data Type
999	Relay 1	Boolean true / false
1000	Relay 2	Boolean true / false
1001	Relay 3	Boolean true / false
1002	Relay 4	Boolean true / false
1003	Relay 5	Boolean true / false
Modbus Holding Registers		
1999	Timer Active Relay 1	1 or 0 (1 Active 0 inactive)
2000	Timer Active Relay 2	1 or 0 (1 Active 0 inactive)
2001	Timer Active Relay 3	1 or 0 (1 Active 0 inactive)
2002	Timer Active Relay 4	1 or 0 (1 Active 0 inactive)
2003	Timer Active Relay 5	1 or 0 (1 Active 0 inactive)
2004	On Hour 1	example 17
2005	On Minute 1	example 22
2006	On Second 1	example 30
2007	On Hour 2	
2008	On Minute 2	
2009	On Second 2	
2010	On Hour 3	
2011	On Minute 3	
2012	On Second 3	
2013	On Hour 4	
2014	On Minute 4	
2015	On Second 4	
2016	On Hour 5	
2017	On Minute 5	
2018	On Second 5	
2019	Off Hour 1	example 17
2020	Off Minute 1	example 22
2021	Off Second 1	example 30

2022	Off Hour 2	
2023	Off Minute 2	
2024	Off Second 2	
2025	Off Hour 3	
2026	Off Minute 3	
2027	Off Second 3	
2028	off Hour 4	
2029	Off Minute 4	
2030	Off Second 4	
2031	Off Hour 5	
2032	Off Minute 5	
2033	Off Second 5	
2034	Day 1	example 17
2035	Month 1	example 3
2036	Year 1	example 14
2037	Day 2	
2038	Month 2	
2039	Year 2	
2040	Day 3	
2041	Month 3	
2042	Year 3	
2043	Day 4	
2044	Month 4	
2045	Year 4	
2046	Day 5	
2047	Month 5	
2048	Year 5	
2049	date1 active	1 true 0 false
2050	date2 active	1 true 0 false
2051	date3 active	1 true 0 false
2052	date4 active	1 true 0 false
2053	date5 active	1 true 0 false
2054	time setting hr	sample 17
2055	time setting min	sample 22
2056	time setting sec	sample 45
2057	day setting day	22
2058	month setting month	3
2059	year setting year	14
2060	current hr	

2061	current min	
2062	current sec	
2063	current day	
2064	current month	
2065	current year	

Hardware Group LTD.
3 Tsar Ivan Shishman Street
Plovdiv, 4000, Bulgaria
+359 883 364 469
info@irdroid.com
<http://www.irdroid.com>