

05-JUL-2019 56312E30

RYWB116

Client Mode User Guide





1. SOFTWARE INSTALLATION

- [1] Hercules: <u>https://www.hw-group.com/</u>
- [2] RS232 terminal (Below operation is using Docklight): <u>https://docklight.de/</u>

2. RYWB116 SETUP AND CONNECTION

1. UART Baud Rate Setting

When the RYWB116 module is powered on, use Docklight to set the required UART Baud Rate, then transmit 1C (Hex code). When the module sends back, transmit 55 (Hex code). When the module sends back again, transmit 31 (Hex code). (As shown in the screenshot below)

Docklight V2.1 - Project: 20190325_PowerSave_RS9116 File Edit Run Toole, Help Stop Communication (F6)	- 🗆 X
L→→ Communication port open	Colors&Fonts Mode COM117 115200, None, 8, 1
Send Sequences	Communication
Send Name Sequence	ASCII HEX Decimal Binary
IC <fs> IC <fs> IC <fs> IC <fs> IC <fs> IC <fs> IC <fs> IC <fs> IC <fs> IC <fs> IC <fs> IC IC</fs></fs></fs></fs></fs></fs></fs></fs></fs></fs></fs>	2019/5/3 12:48:04.030 [TX] - <f5> 2019/5/3 12:48:04.069 [RX] - U 2019/5/3 12:48:05.263 [TX] - U 2019/5/3 12:48:05.277 [RX] - <cr><lf> WELCOME TO REDPINE SIGNALSCR BootLoader Version 1.0<cr><lf> <cr><lf> I Load Default Wireless Firmware(CRage No : 0-f)<cr><lf> B Burn Wireless Firmware (Image No : 0-f)<cr><lf> S Select Default Wireless Firmware (Image No : 0-f)<cr><lf> S Select Default Wireless Firmware (Image No : 0-f)<cr><lf> S Select Default Wireless Firmware (Image No : 0-f)<cr><lf> Z Isable GPIO Based Bypass Mode<cr><lf> Q Update KFY<cr><lf> Z JTAG Selection<cr><lf> 2019/5/3 12:48:06.221 [TX] - 1 2019/5/3 12:48:06.213 [RX] - 1<cr><lf> Loading Done<cr><lf></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr></f5>

2. Associate to an Access Point (with WPA2-PSK security) as a client

Input commands into Docklight in the following order:

- (1) at+rsi_opermode=0,5,4,2147483648,524288
- (2) at+rsi_band=0
- (3) at+rsi_feat_frame=0,1,0,0,1,49
- (4) at+rsi_init
- (5) at+rsi_scan=0
- (6) at+rsi_psk=1,<your password>
- (7) at+rsi_join=<your ssid>,0,2,2,2,1000,0,0
- (8) at+rsi_ipconf=1,0,0,0

Docklight V2.1 - Project: 20190325_PowerSave_RS9116	- 🗆 X
File Edit Run Tools Help Stop Communication (F6)	
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Communication port open حصط	Colors&Fonts Mode COM117 115200, None, 8, 1
Send Sequences	Communication
Send Name Sequence	ASCII HEX Decimal Binary
	I CNUESI
> test at+rsi_snd=1,14,0,0,This is a test <cr> <lf></lf></cr>	2019/5/3 12:54:38.913 [TX] - at+rsi_psk=1,1234567890 <cr><lf></lf></cr>
> fw at+rsi_fwversion? <cr> <lf> > 0</lf></cr>	2019/5/3 12:54:38.927 [RX] - OK <cr><lf> 2019/5/3 12:54:46.096 [TX] - at+rsi_join=Reyax_sheng,0,2,2,2,1000,0,0<cr><lf></lf></cr></lf></cr>
Receive Sequences	2019/5/3 12:54:47.163 [RX] - OKC <cr><lf></lf></cr>
Active Name Sequence Answer	2019/5/3 12:54:48.736 [TX] - at+rsi_ipconf=1,0,0,0 <cr><lf> 2019/5/3 12:54:52.091 [RX] - OK??_{v<soh> p?<dc4> <lf> <ht> yyy??<dc4> <lf> <soh> <cr><lf></lf></cr></soh></lf></dc4></ht></lf></dc4></soh>}</lf></cr>

3. OPEN TCP SOCKET TO TRANSMIT DATA

(1) Switch the display of Docklight to Decimal (DHCP IP will be obtained after Ipconfig and displayed in Decimal.)

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Communication port open Colors&Fonts Mode COM117 115200, Nc Send Sequences Sequence Communication ASCII HEX Decimal Binary	□ ☞ 🗟 🗇 🔸 🖬 😰 🎉 🖄 🚞						
Send Sequences Communication Send Name Sequence Sequence Binary > 1C 0.28 Send 0.49 Send 0.4111111111111111111111111111111111111		Communica	tion port open	Colors&Fonts Mode	COM117 115200, None, 8, 1		
55 085	Send Ser	uences Id Name	Sequence 028	Communication Binary ASCII HEX Decimal Binary 069 089 065 088 095 090 000	000 000 000 000 000 000		
Active Name Sequence Answer OK 079 075 test 079 075 test		 > 55 > 1 reset opermode band feat_frame init scan psk join ipconf > kcp psm2 test fwv 0 	085 049 097 116 043 114 115 105 095 114 101 115 101 116 013 010 097 116 043 114 115 105 095 111 112 101 114 109 111 100 101 061 048 044 053 097 116 043 114 115 105 095 098 097 110 100 061 048 013 010 097 116 043 114 115 105 095 102 101 097 116 095 102 114 097 109 101 061 048 097 116 043 114 115 105 095 102 101 097 116 045 102 114 097 109 101 061 048 097 116 043 114 115 105 095 105 111 015 116 013 010 097 116 043 114 115 105 095 105 112 115 107 061 049 044 049 050 051 052 053 054 097 116 043 114 115 105 095 105 112 099 111 100 102 061 049 044 048 044 048 097 116 043 114 115 105 095 105 112 099 111 100 102 061 049 044 048 044 048 097 116 043 114 115 105 095 105 112 099 111 100 102 061 049 044 043 044 048 097 116 043 114 115 105 095 108 116 099 112 061 053 048 049 044 053 044 097 116 043 114 115 105 095 112 119 1091 111 00 101 061 050 044 049 044 048 097 116 043 114 115 105 095 112 119 1091 111 00 101 061 050 044 049 044 048 097 116 043 114 115 105 095 112 119 1091 111 00 101 061 050 044 049 044 048 097 116 043 114 115 105 095 102 119 118 101 114 115 105 111 110 063 013 010 048	000 000 <td>000 244 040 083 095 177 100 105 117 115 000 000 000 000 000 000 000 000 000 000</td>	000 244 040 083 095 177 100 105 117 115 000 000 000 000 000 000 000 000 000 000		
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2019/5/3 12:54:48.736 [TX] - 097 116 043 114 115 105 095 105 112 099 111 1 102 061 049 044 048 044 048 044 048 013 010 2019/5/3 12:54:52.091 [XX] - 079 075 136 218 026 118 001 112 172 020 010 0	Acti	Ve Name OK	Sequence Answer 079 075 test	1082 1091 121 097 120 095 115 104 101 110 103 044 045 044 049 048 048 048 044 048 044 048 013 010 2019/5/3 12:554:47.163 [XX] - 079 075 067 013 010 2019/5/3 12:554:48.736 [XX] - 097 116 043 114 115 10 102 061 049 044 048 044 048 044 048 013 010 2019/5/3 12:554:20 01 [XX] - 079 075 136 218 026 11	044 050 044 050 044 050 15 095 105 112 099 111 110 18 001 112 172 020 010 009		

- (2) The module obtains DHCP IP: Ex. 172.20.10.9(Decimal).
- (3) Input below command into Docklight and open TCP socket port 5001.

at+rsi_ltcp=5001,5,0

(4) Open Hercules as a Server on the computer to enable the data transmission between Hercules SERVER and RYWB116 CLIENT.

(5) After inputting DHCP IP and TCP socket port of the module into Hercules, click "Connect".

6	Docklight V2.1 - Project: 20190325_Pow	erSave_RS9116	- 🗆 X
Fi	ile Edit Run Tools Help StopCon	nmunication (F6)	
A Hercules SETLIP utility by HW-group com		j 🛱 🚔	
Thereares service and you have been a		`	Colors&Fonts Mode COM117 115200, None, 8, 1
UDP Setup Serial TCP Client TCP Server UDP Test Mode Ab	sout		Communication
Received/Sent data	- TCP	Sequence	ASCII HEX Decimal Binary
Connected to 172.2010.9	Module IP Part [172:20:10:9] Soot Ping X Disconne TEA key 1:0120304 1:0120304 2:05060708 4:05060708 4:02000F10 Authorization code 0	<pre><pre><pre><pre><pre><pre><pre><pre></pre></pre></pre></pre></pre></pre></pre></pre>	Exact: Exac: Exac: Exac:
	PotStore test PotStore test NVT disable Received jest data T Redirect to UDP	x_sheng.0,2,2,2,1000,0,0 <cr> <lf> 0,0,0 <cr> <lf> 2,1,0 <cr> <lf> 0,0,7 his is a test <cr> <lf> 7 <cr> <lf></lf></cr></lf></cr></lf></cr></lf></cr></lf></cr>	2019/5/3 14:29:15.127 [TX] = at+rsi_joln=Reyax_sheng,0,2,2,2,1000,0,0 <cr><lf> 2019/5/3 14:29:16.141 [RX] = OKC<cr><lf> 2019/5/3 14:29:17.613 [TX] = at+rsi_ipconf=1,0,0,0<cr><lf> 2019/5/3 14:29:17.613 [TX] = oK??_{v<soh> p?<dc4> <lf> <ht> 950720C4> <lf> <soh> <cr><lf></lf></cr></soh></lf></ht></lf></dc4></soh>}</lf></cr></lf></cr></lf></cr>
Send 123	HEX Send HEX Send HEX Send HEX Send Version 3.2.1	Answer	2019/5/3 14:29:22.063 [TX] - at+rsi_ltcp=5001,5,0 CCC 2019/5/3 14:29:22.076 [RX] - 0K OK CCC 2019/5/3 14:29:22.076 [RX] - 0K OK CCC CCC4 CCC CCC CCC5 CCC5 CCC5 CCC5

(6) When TCP connection is successful, the module will reply socketDescriptor and Server IP. (As shown in the screenshot below in Decimal) socketDescriptor =1, Server IP =172.20.10.2

← 設定				- 🗆 X								
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 關閉 	-	Source Docklight V2.1 - Province File Edit Run Too	oject: 20190325_PowerSave_RS9116 Is Help Stop Communication (F6)		_				12	- (o ×	
若您設定資料限制	Windows 將會為您設定計量		■ (m ²) / / / / / / / / / / / / / / / / / /				Colors RiFords N	terte C	014117	11520	V None 9	
的心府使用重江的。	ENGUIDARY -	Send Sequences	non por open	Communication			Colorser onts in	iode C	UNITY	11320	u, None, o,	
設定資料限制以協問	助控制此網路上的數據使用量	Send Name	Sequence	ASCII HEX	Decimal	Binary						
IP 設定		> 1C > 55 > 1	028 085 049	010 000 070 0 000 000 000 0 002 032 176 2 000 000 000 0	00 072 080 06 00 000 000 00 44 014 239 00 00 000 000 00	9 070 050 9 000 000 8 000 011 8 000 000	066 057 050 000 000 000 002 072 001 000 000 000	000 000 000 000 077 065 000 000	000 000 000 000 005 000 000 000	000 00 000 00 000 00	0 000 0 000 0 000	1
IP 指派: 编輯	自動 (DHCP)	> reset > opermode > band > feat_frame > init	097 116 043 114 115 105 095 114 101 115 101 116 013 010 097 116 043 114 115 105 095 111 112 101 114 109 111 100 101 061 048 044 05 097 116 043 114 115 105 095 098 097 110 104 0061 048 013 010 097 116 043 114 115 105 095 102 101 097 116 095 102 114 097 109 101 061 0- 097 116 043 114 115 105 095 105 110 105 116 013 010	000 000 000 0 53 001 074 083 0 000 000 000 000 0 48 000 000 000 000 0 119 101 109 1 1 1 1	000 000 000 000 167 045 084 08 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 196 11 040 027 116 044	8 000 114 8 069 045 9 000 000 2 074 001 8 000 000 0 031 150 9 000 000	187 233 097 051 000 000 000 000 000 074 083 067 000 000 000 002 097 000	059 033 000 000 000 000 045 084 000 000 000 005 000 005	000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000	011 00 000 00 064 15 045 05 000 00 001 11	2 073 0 000 5 205 3 071 0 000 2 098	
內容		> scan > psk > join	097 116 043 114 115 105 095 115 099 097 110 061 048 013 010 097 116 043 114 115 105 095 112 115 107 061 049 044 049 050 051 052 053 0 097 116 043 114 115 105 095 06 111 105 110 061 082 101 12 097 12 097 12 015 00 014 115 105 095 106 111 105 110 061 082 101 12 097 12 004 018 044	000 000 000 0 54 000 000 002 0 15 000 000 000 0 0 40 000 000 000 0 0 0	00 000 000 00 02 080 001 07 00 000 000 00 98 102 144 03	0 000 000 1 101 109 0 000 000 7 128 000	000 000 000 095 087 065 000 000 000 000 013 010	000 052 078 000 000 000	151 246 000 000 000 000	098 07 000 00 000 00	7 124 0 000 0 000	
SSID:	Reyax_sheng	> ltcp	097 116 043 114 115 105 095 108 112 099 111 110 102 061 049 044 048 049 044 05	40 2019/5/3 14:2 44 044 049 050 0	9:13.159 [TX] 51 052 053 05	4 055 056	6 043 114 11 057 048 013	010	112 115	107 0	61 049	
通訊協定:	802.11n	> psm2	097 116 043 114 115 105 095 112 119 109 111 100 101 061 050 044 049 044 04	49 2019/5/3 14:2 2019/5/3 14:2	9:13.172 [RX] 9:15.127 [TX]	- 079 07	5 013 010 6 043 114 11	5 105 095	106 111	105 1	10 061	
安全性類型:	WPA2-Personal	> test	097 116 043 114 115 105 095 115 110 100 061 049 044 049 052 044 048 044 04	48 082 101 121 0	97 120 095 11	5 104 101	110 103 044	048 044	050 044	050 04	4 050	
網路頻帶:	2.4 GHz	> tw	097 116 043 114 115 105 095 102 119 118 101 114 115 105 111 110 063 013 0 048	2019/5/3 14:2	9:16.141 [RX]	- 079 07	5 067 013 01	0				
網路通道:	1			2019/5/3 14:2 102 061 049 0	9:17.613 [TX]	- 097 11 8 044 048	6 043 114 11 013 010	5 105 095	105 112	099 1	11 110	
IPv6 位址:	2402:7500:55a:121d:1c30:5aa			2019/5/3 14:2	9:17.923 [RX]	- 079 07	5 136 218 02	6 118 001	112 172	020 0	10 009	
IPv6 DNS 伺服器:	fe80::cb8:1ce1:93cd:16a4%8	Active Name	Samuer	2019/5/3 14:2	9:22.063 [TX]	- 097 11	6 043 114 11	5 105 095	108 116	i 099 1	12 061	
IPv4 位址:	172.20.10.2		079.075 test	053 048 048 0 2019/5/3 14:2	49 044 053 04 9:22.076 [RX]	4 048 013 - 079 07	010 5 004 000 00	2 000 001	000 137	019 1	72 020	
IPv4 DNS 伺服器:	172.20.10.1			010 009 000 0	00 000 000 00	0 000 000 7 080 095	000 000 000 067 079 078	000 000 078 069	013 010 067 084	065 08	4 943	
製造商:	Intel Corporation			000 004 018 1	72 020 010 00	2 300 000	000 000 000	000 000	000 000	000 000	0 000	
描述:	Intel(R) Dual Band Wireless-	AC 7265		100 005 240 2	50 000 000 15	, 919 013	010					
驅動程式版本:	19.50.1.6											

(7) Input "123" into Hercules and click "Send". When the module receives the data, it will reply:

AT+RSI_READ 123 (As shown in the screenshot below, "123" is the data transmitted by Hercules.)

(8) Input below command into Docklight to transmit data from the module.

at+rsi_snd=1,14,0,0,This is a test

1= socketDescriptor(to identify which IP is connected from)

14= Data size 0= TCPsocket 0= TCPsocket This is a test =Data (size =14)

The module will reply "OK" upon successful transmission and Hercules will receive the data: This is a test (As shown in the screenshot below)



4. TRANSMIT DATA IN POWER SAVE MODE WITH RYWB116_EVB

The power consumption before entering Power save Mode:



(1) Input below command into Docklight to enter Power save Mode 2. at+rsi_pwmode=2,1,1

(The LED will flash when entering Power save Mode successfully.)





The power consumption after entering Power save Mode:

- (2) Data can be sent from Server to the module in Power save Mode at any time.
- (3) Press the button "ULP_WAKEUP_IN" continuously to send data from the module to Server.



5. TURN OFF POWER SAVE MODE WITH RYWB116_EVB

(1) Press the button "ULP_WAKEUP_IN" continuously and input below command into Docklight to turn off Power save Mode. at+rsi_pwmode=0

(2) The LED will be light continuously when Power save Mode is turned off successfully.



6. TRANSMIT DATA IN POWER SAVE MODE WITH RYWB116_LITE

- (1) Input below command into Docklight to enter Power save Mode 2. at+rsi_pwmode=2,1,1
- (2) Data can be sent from Server to the module in Power save Mode at any time.
- (3) WUP pin needs to be pulled high (3.3v) to wake up the module in order that the module can send data to Server.



7. TURN OFF POWER SAVE MODE WITH RYWB116_LITE

- (1) Pull high WUP pin to 3.3v and input below command into Docklight to turn off Power save Mode. at+rsi_pwmode=0
- (2) Power save Mode will be disabled after the module replies "OK".



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