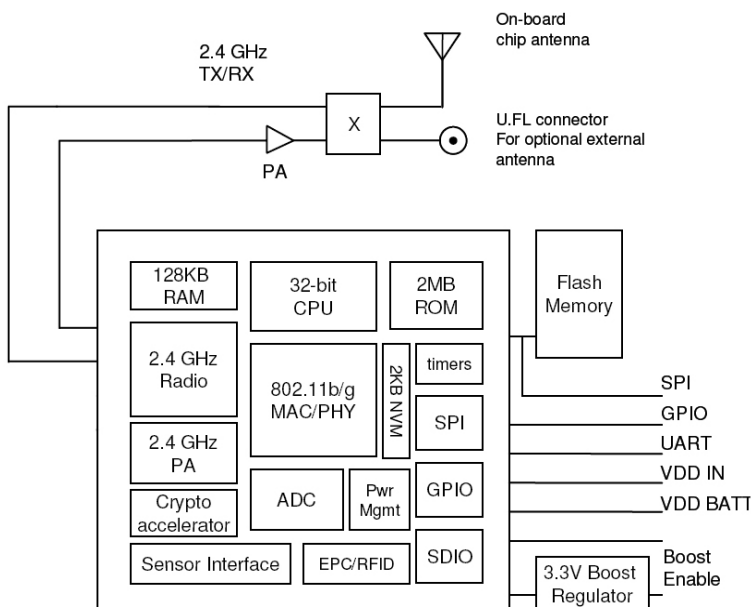


GUIDE D'INSTALLATION WIFI2UART BRIDGE



WM-ULP

Wifi Module – Ultra Low Power



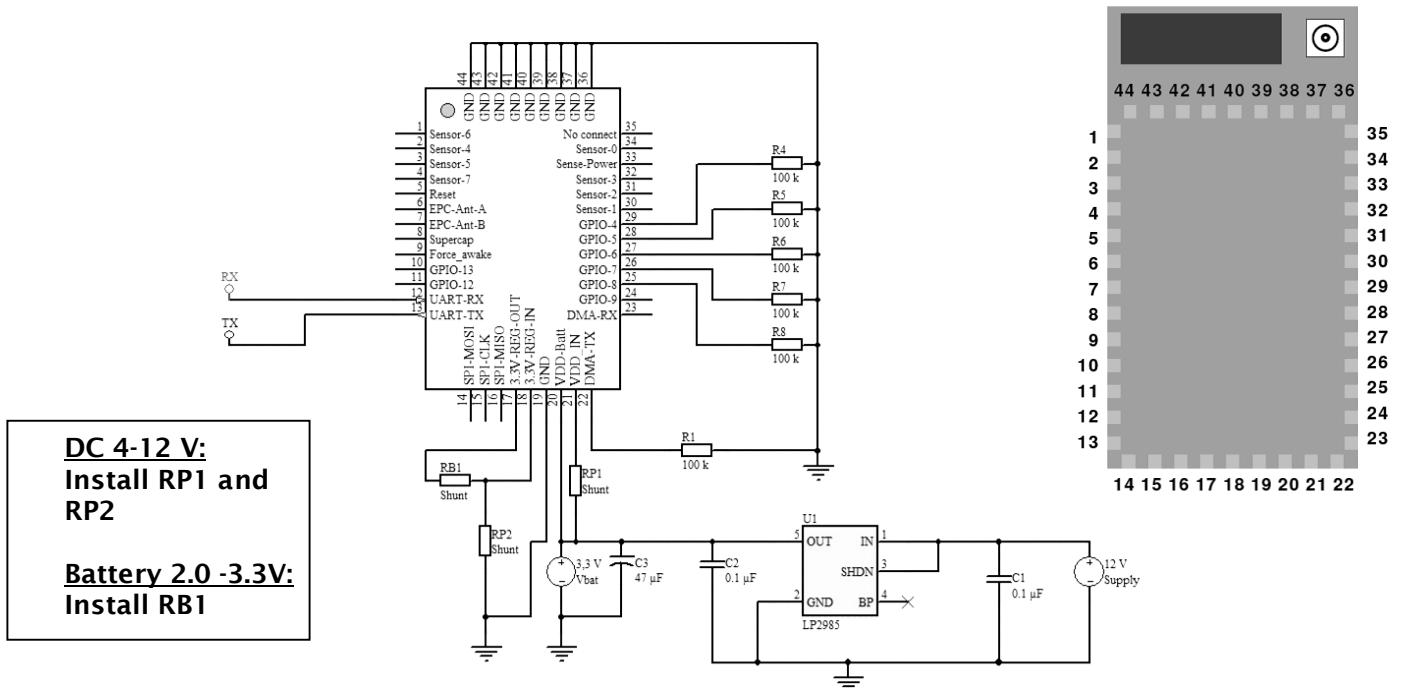
- ✓ Compatible 2.4GHz IEEE 802.11b/g
- ✓ Jusqu'à 4Mbps au travers d'une connexion TCP
- ✓ Ultra-Low-Power :
 - 4uA sleep,
 - 40mA Rx,
 - 210mA Tx
- ✓ Format CMS
- ✓ Dimensions : 10.5 x 22.5 mm
- ✓ Antenne Céramique sur carte et connecteur UFL
- ✓ 1 UART
- ✓ 10 E/S
- ✓ 8 Entrées Analogiques
- ✓ RTC (Real Time Clock)
- ✓ Alimentation de 3.3 à 3.7V régulés ou pile de 2 à 3V.
- ✓ Mode Sation ou Ad-Hoc
- ✓ Mémoire flash de 8 Mbit et 128 KB de RAM
- ✓ ECOS : OS et pile TCP/IP embarqués
- ✓ Services réseaux : DHCP, DNS, TCP, UDP, ICMP, ARP
- ✓ Certifié Wi-Fi Alliance pour WPA2-PSK
- ✓ Certifié FCC / CE/ ICS et norme RoHS

I. Description:

Totalement autonome, le module WM-ULP est compatible 802.11 b/g. Grâce à sa taille réduite et sa très faible consommation il est la solution idéale aux applications embarquées telles que suivi de production, transfert de données GPS et systèmes de capteurs sur batterie. Ses fonctions TCP/IP embarquées lui fournissent une connectivité réseau complète et la configuration de ses

paramètres peut se faire par commandes AT ou depuis un client Telnet. Intégrable facilement et ne nécessitant que quatre fils (V+, GND, RX, TX), il se connecte automatiquement en ad-hoc ou à un point d'accès d'un réseau Wifi à proximité.

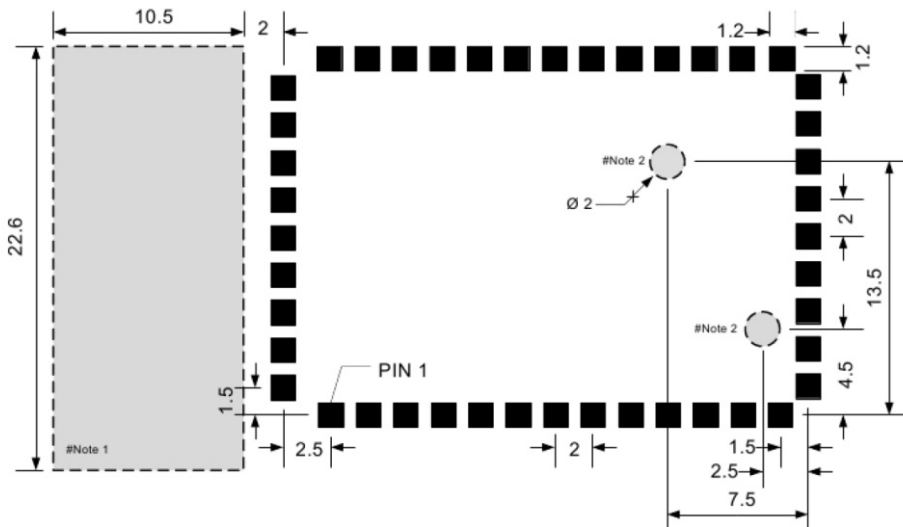
II. Pin Description :



Pin	Name	Description	Default
1	SENSOR-6	Sensor interface, analog input to module, 1.2V	No connect
2	SENSOR-4	Sensor interface, Analog input to module, 1.2V	No connect
3	SENSOR-5	Sensor interface, Analog input to module, 1.2V	No connect
4	SENSOR-7	Analog input to module, 1.2V	No connect
5	RESET	Module reset, Active Low, reference to VDD-BATT, 160 usec pulse	Pull up
6	EPC-ANT-A	EPC port, RFID antenna A	No connect
7	EPC-ANT-B	EPC port, RFID antenna B	No connect
8	SUPERCAP	Balance center pin voltage on stacked super capacitors, Analog 3.3V	No connect
9	FORCE_AWAKE	Force the module to wakeup, input to module, 31us min. pulse	
10	GPIO-13	UART RTS flow control, 8mA drive, 3.3V tolerant	
11	GPIO-12	UART CTS flow control, 8mA drive, 3.3V tolerant	
12	UART-RX	RX to the module, 8mA drive, 3.3V tolerant	
13	UART-TX	TX from the module, 8mA drive, 3.3V tolerant	
14	SPI-MOSI	SPI master data out (Contact us for details)	No connect
15	SPI-CLK	SPI clock, (Contact us for details)	No connect
16	SPI-MISO	SPI master data in (Contact us for details)	No connect
17	3.3V-REG-OUT	boost regulator control output, connect to 3.3V-REG-IN to enable	No connect
18	3.3V-REG-IN	boost regulator control input, connect to 3.3V-REG-OUT to enable	GND to disable
19	GND	Ground	
20	VDD-BATT	Battery input, 2.0-3.3V with boost regulator in use, 3.0-3.7V otherwise	
21	VDD-IN	3.3 to 3.7 voltage, do not connect when boost regulator is in use	
22	DMA-TX	Debug port *(apply 100K pulldown if ultra low sleep power reqd)	HIGH Z
23	DMA-RX	Debug port	No connect
24	GPIO-9	Restore factory resets, 8mA drive, 3.3V tolerant	INPUT
25	GPIO-8	GPIO, 24mA drive, 3.3V tolerant	GP output
26	GPIO-7	GPIO, 24mA drive, 3.3V tolerant	GP output
27	GPIO-6	Connection STATUS, 24mA drive, 3.3V tolerant	LED output
28	GPIO-5	Data transfer STATUS, 24mA drive, 3.3V tolerant	LED output
29	GPIO-4	Association STATUS, 24mA drive, 3.3V tolerant	LED output
30	SENSOR-1	Sensor interface, analog input to module, 1.2V	
31	SENSOR-2	Sensor interface, analog input to module, 1.2V	
32	SENSOR-3	Sensor interface, analog input to module, 1.2V	
33	SENSE-PWR	Voltage output from module to power external sensors, 3.3V	
34	SENSOR-0	Wakeup from external condition	
35	NO CONNECT		No connect
36-44	GND	Must be connected for proper antenna performance	

III. Installation/integration:

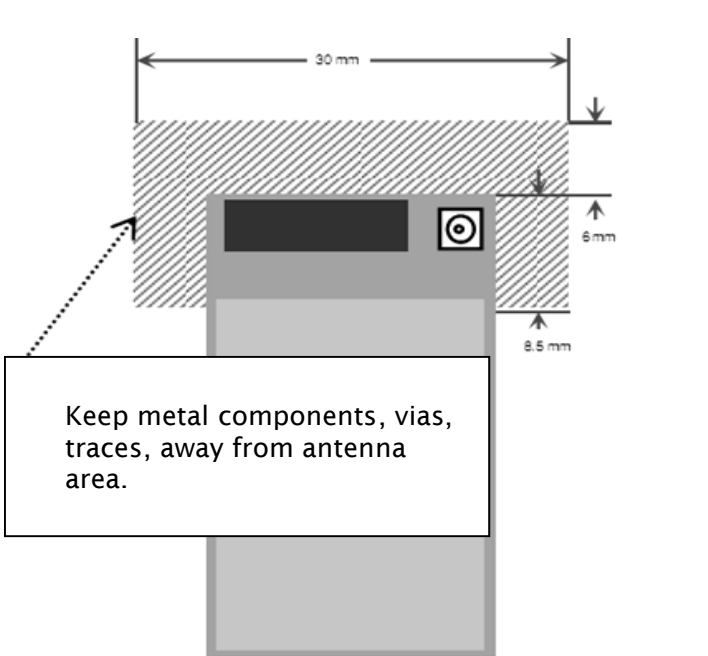
1. Dimensions



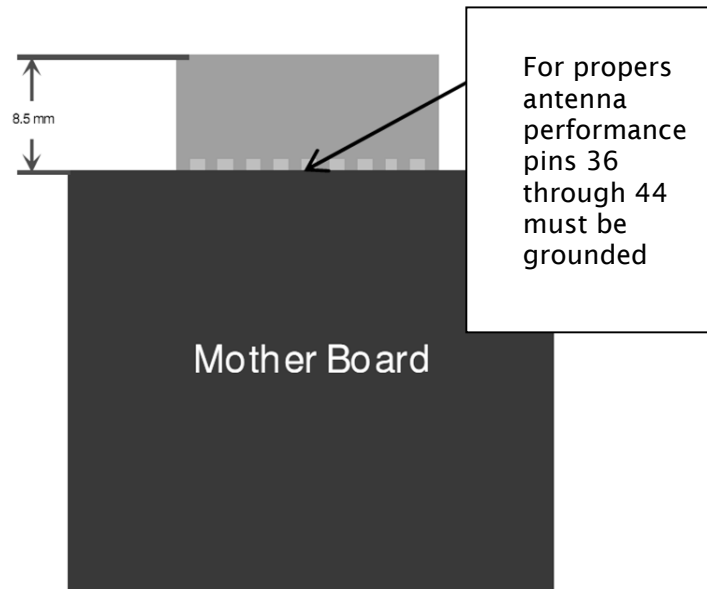
All dimensions are in millimeters.

- # Note 1: Keep this area free from all metal including ground fill
- # Note 2: Keep this area free from routes and exposed copper. Ok to place ground fill with solder mask

2. Minimizing radio interference



When integrating the module with on board chip antenna make sure the area around the chip antenna end the module is at least 6mm from the mother board PCB and any metal enclosure. If this is not possible use the on board UFL connector to route to an external Antenna. The 8.5 mm area under the antenna end of the module should be keep clear of metallic components, connectors, vias, traces and other materials that can interfere with the radio signal.



For the module antenna to function pins 36- to 44 must be connected to GND. We suggest you place module such that 0.5mm of these pads is exposed. This provides access for soldering pins 36 through 44 from below and provides ample clearance of the antenna from the PCB.

3. Connection status

GPIO-4, GPIO-5, GPIO-6 are available to drive a status LEDs. GPIO-6 indicates TCP/IP connection status. This signal is ON high for an active connection, toggles fast to indicate no IP address and toggles slow indicates IP address OK but not connection. GPIO-4 indicates association status. High means not associated with a network, Off indicates associated and Internet access is OK. GPIO-5 toggles when data is transferred.

4. Powering the module

3.0VDC battery power:

- Apply power to pin 20 (VDD-BATT)
- Short pin 17 (3.3V-REG-OUT) to pin 18 (3.3V-REG-IN) (battery boost mode)
- 150mA of current at 3.3V available for external devices on pin 21 when in battery boost mode

3.3 VDC regulated power:

- Apply power to pin 20(VDD-BATT) and pin 21 (VDD-IN)
- Connect pin 18 (3.3V-REG-IN) to ground and leave pin 17 (3.3V-REG-OUT) unconnected

5. Achieving lowest power in sleep mode

To achieve the lowest power consumption (4uA) in sleep mode connect a weak pull down (100K resistor to GND) on the following pin:

- Pin 22 - DMA-TX

If GPIO-8 through GPIO-4 are being used to drive an output, connect a 100k pull down resistor. Any GPIOs not used (No connect) can be left floating.

- Pin 25 - GPIO-8 Pin 26 - GPIO-7 Pin 27 - GPIO-6 Pin 28 - GPIO-5 Pin 29 - GPIO-4

Other GPIO lines: No pulldown needed, internal pulldown (80K) already on chip. The power consumption in sleep mode without these signals connected to a pull down is 655uA.

6. Sensor interfaces

Inputs must not exceed 1.2V. Sensitivity saturates at 400 mV.

7. Characteristics

RADIO CHARACTERISTICS		ELECTRICAL CHARACTERISTICS				
Parameter	Specifications	Supply Voltage	Min	Typ.	Max.	Unit
Frequency	2402 ~ 2480MHz	Supply Voltage VDD	3.0	3.3	3.7	VDC
Modulation	802.11b compatibility :	Supply Voltage (VBATT option)	2.0	3.0	3.3	VDC
	DSSS(CCK-11, CCK-5.5, DQPSK-2, DBPSK-1)	Pin 21 switched 3.3V output			150	mA
	802.11g : OFDM (default)	Digital input				
Channel intervals	5MHz	Input logic HIGH VIH	2.3V			VDC
Channels	01 - 14	Input logic LOW VIL			1.0V	VDC
Transmission rate	1 - 11Mbps for 802.11b	Digital Output drive				
(over the air)	6 - 54Mbps for 802.11g	PIO 4,5,6,7,8		24		mA
Receive sensitivity	-85dBm typ.	PIO 9,10,11,12,13		8		mA
Output level (Class1)	+18dBm	Power consumption				
Maximum RF input to UFLN	10 dBm	Sleep		4		uA
		Standby (doze)	-	15	-	mA
		Connected (idle, RX)		40		mA
		Connected (TX)		140	212	mA
ANALOG SENSOR INPUTS		ENVIRONMENTAL CONDITIONS				
Parameter	Value	Parameter	WM-ULP			
Sense 0,1,2,3 wakeup detect threshold	500mV	Temperature Range (Operating)	0°C ~+70°C			
AD sense 0-7 measurement range	0-400mV	Temperature Range (Storage)	-40°C ~+85°C			
Precision	14 bits = 12uV	Relative Humidity (Operating)	90%			
Accuracy	5% un-calibrated, 0.01% calibrated	Relative Humidity (Storage)	90%			
Minimum conversion time	35uS (5kHz over Wifi)					
Sensor Power (pin 33)	10 ohms,					
output resistance 3.3V	max current = 50mA					