# NMEA 183

NMEA2WIFI

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BEFORE YOU START

If you have assembled an electronic kit before, you should have no problem in assembling the Nmea2Wifi multiplex kit. However we still advise you to read this small instruction manual. You should have the minimal set of tools to carry out the assembling, namely a soldering iron, solder, a multimeter and a wire cutter. It is a good idea to work in a well illuminated space with good air ventilation and to use safety glasses. Avoid to work in a carpeted room as this increases electrostatic charge build-up in your body. If possible use an anti-static wrist or at least rub your hands in a metallic water pipe before you start your job in order to discharge to the ground any electrostatic charge that you may have accumulated. Finally, you need to follow good soldering practices. Insert the leads of the components through the plated through holes from the side that has the names of the parts printed in white.

Ensure an even contact of the part with the surface of the PCB. On the other side of the PCB solder the leads to the pad, assuring that the solder fully fill and cover the pad. Avoid bridges between neighbouring pads and traces. Cut the leads flush with the cutter. Your soldering joints should look like the ones in the picture.
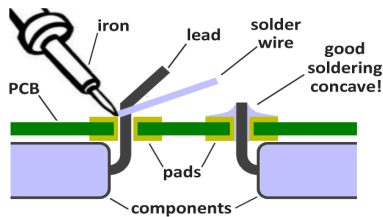

LIST OF COMPONENTS

In the following table you will find the list of components. It is essential to check the contents of the kit and identify all parts, their location and orientation on the Printed Circuit Board (PCB). There are two parts that need to be assembled before soldering them to the PCB: the "D1 mini ESP8266 module" and the "Adjustable Voltage Regulator". The mounting of these parts is referred to in the following sections of this manual. There are 6 ¼ watt resistors of different values: 270R, 470R, 1K and 2K2. If you are not familiar with the colour coding of resistors, you should use a multimeter to identify the different resistor values.

Quantity	Description	PCB Label
1x	Printed Circuit Board (PCB)	n.a.
1x	Plastic Enclosure Box	n.a.
4x	Self-tapping M2.6 6mm Screws	n.a.
3x	2 Pole Screw Block Connectors	P1 P2 & P3
1x	3 Pole Screw Block Connector	P4
2x	1N4148 Signal Diodes	D1 & D2
1x	1N4007 Rectifier Diode	D3
2x	100nF Ceramic Capacitors	C2 & C3
1x	100uF 16V Electrolytic Cap.	C1
1x	1/4W Metal Film 2K2 Resistor	R1
1x	1/4W Metal Film 1K Resistor	R2
1x	1/4W Metal Film 270R Resistor	R3
3x	1/4W Metal Film 470R Resistors	R4 R5 & R6
1X	3mm Green Led	L1
1x	3mm Red Led	L2
1x	4 Pin Tactile Micro Switch	SW1
3x	8 Pin DIP IC Soldering Sockets	U3 U4 & U5
2x	6N139 DIP-8 Opto-coupler IC	U3 & U4
1x	MAX485 DIP-8 driver IC	U5
1x	4 Pin Single Row Header	U1
1x	Adjustable Voltage Regulator	U1
1x	D1 Mini Esp8266 Module	U2

ESP8266 D1 MINI MODULE

The D1 mini ESP8266 module is contained in an antistatic plastic bag and includes the module, 2 pin headers and 2 types of sockets. The pair of sockets with long leads is not used. You need to solder the 2 rows of pin headers to the module. In order to do that, insert the pins and just solder a single pin on each row (preferable one of the central pins). The reason for this is to have a possibility to correct any

misalignment that may occur. If you solder all the pins in each row and if it happens that the pins are not perpendicular to the surface of the module, it will be very difficult to correct this situation as you would need to heat 8 pins at the same time to realign the pin header. If the row of pins is just

this row is not right!
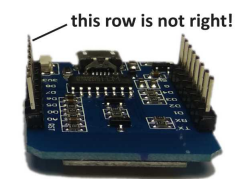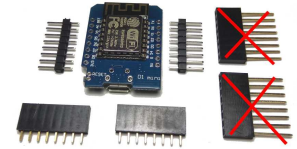
secured by one solder joint, it is very easy to correct its alignment to become perpendicular to the module surface. When the orientations of the two rows look fine, you flip over the module and solder all the remaining pins.

At this stage you can programme the module, by following the instructions found in this webpage: . Note that the webpage shows the flashing (programming) of a fully assembled multiplexer. But you can do it with the module alone even before soldering the pins. You should also download the latest version of the firmware. Look in the forum. At the moment of writing this manual the latest version is NMEA2WIFIV41.bin.

ADJUSTABLE VOLTAGE REGULATOR

The adjustable voltage regulator accepts an external input voltage between +7V and +16V, and supplies a +5V stabilized voltage to all the parts in the multiplexer. It is possible to adjust the output voltage but, by default, it is +5V. You need to solder the 4 pin header to the regulator. As in the ESP8266 module,

you should solder just one pin to check if the header is properly aligned and, if so, solder the remaining 3 pins. You may want to check the output voltage before soldering the regulator on the printed circuit board. If you have a laboratory power supply adjust the voltage to +12V and apply it to the proper pins of the regulator. Be careful and do not apply a reverse (-12V) voltage to the regulator. A wrong polarity voltage applied to the regulator will damage the part. In the final

> 4.95 V
< 5.05 V

assembled multiplexer there is a diode D3 which protects the whole circuit if a wrong polarity is applied on the P1 connector. If you do not have a laboratory power supply, you can use a simple +9V battery as shown in the picture. The output voltage should be between 4.95 V and 5.05 V. If that is the case, you can to start the assembling of the PCB.