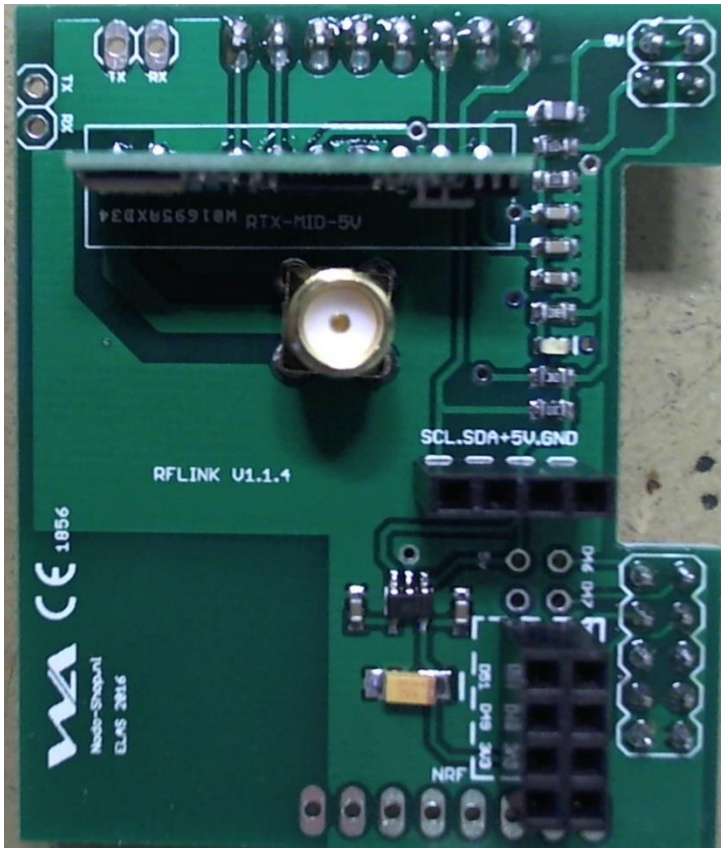
Build manual for breakout board

type RFLink V1.1.4



The kit for the breakout board type RFLink includes all the parts needed to build a RFLink breakout board. (see above picture for the composed product)

Build manual:

This kit is very easy to assemble; with a little soldering experience everybody can assemble this kit!

For some soldering tips and tricks take a look at this page:

http://www.aaroncake.net/electronics/solder.htm

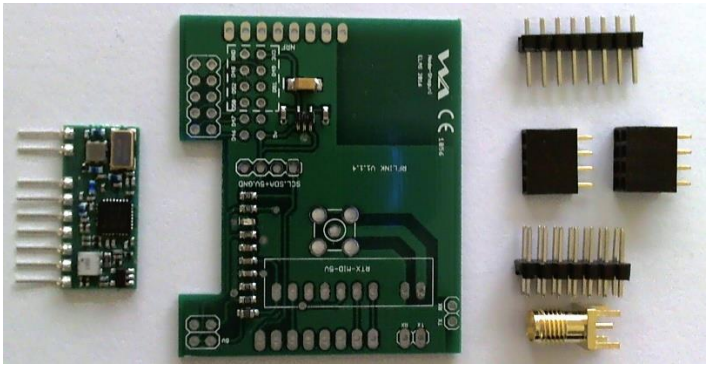
Tools required:

- Soldering iron (preferably with thin point)
- Solder for electronics (so no solder, solder paste S39 used by e.g. plumbers!)
- Cutting pliers

Components:

The kit consists of the following components:

- Pcb, already equipped with a range of SMD components
- Aurel transceiver
- SMA connector
- 8 x 1 pin male header
- 4 x 1 pin female header
- 7 x 2 pin female header



Assembly:

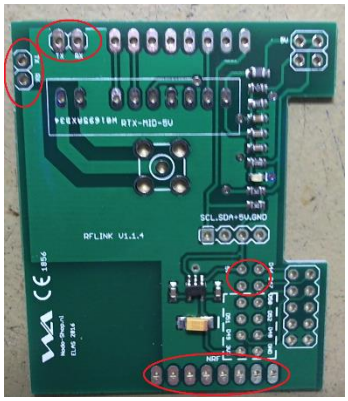
The Assembly of this kit is described step by step so no parts are forgotten.
Advice: read the entire guide before you assemble the kit.

V1.1.4

The version 1.1.4 has six additional connections:

- 2 x Rx / Tx (left top)
- 2 x 4 (D46 / D47 and 2 without name (right above 2 x 4 holes)
- 1 x 8 (Mega A8 / A15)

these connectors are not used and , therefore, it is not necessary to solder headers !



8 x 1 pin male header:

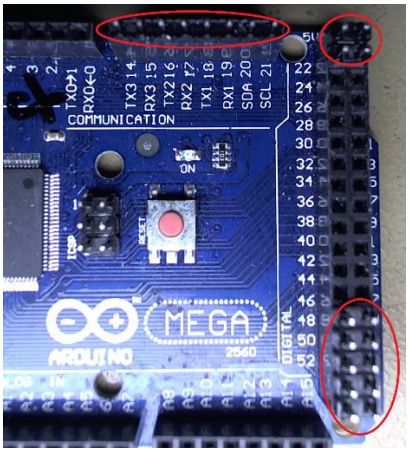
The easiest way to solder the pins on the RFLink is to put them first in the correct position on an Arduino Mega.
The 8 pins header goes in the female header on the Mega with the text: Communication 14 till 21

7 x 2 pin male header:

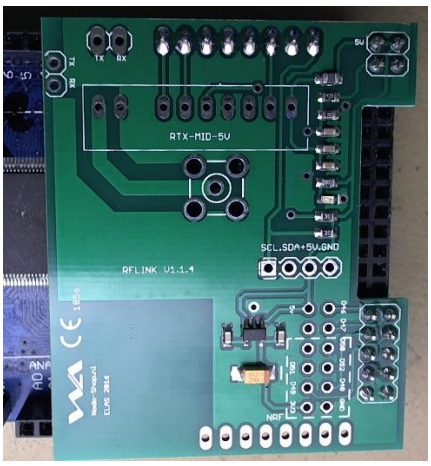
Cut (or break) the 7 x 2 pin male header in the following lengths:

- 5 x 2 pins
- 2 x 2 pins

The 5 x 2 male header goes in the female header on the Mega with the text: GND (2x) / 53 / 52 / 51 / 50 / 49 / 48 / 47 / 46
The 2 x 2 male header goes in the female header on the Mega with the text: 5V (2x) / 22 / 23



Now place the pcb on the headers, press it and solder the 20 pins of the headers.
After all pins are soldered you can pick up the print from the Mega.



4 x 1 pin female header:

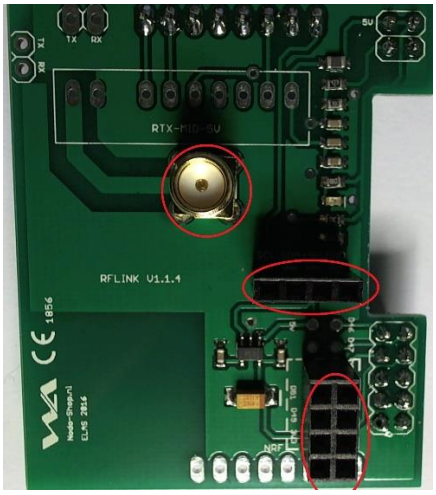
Place the 4 pin female header on the top of the PCB on the position in which SDA SCL etc.
Keep the female header in place with your finger, turn over the PCB and solder the 4 pins.

4 x 2 pin female header:

Place the 4 pin female header on the top of the PCB on the position in the small framework.
Keep the female header in place with your finger, turn over the PCB and solder the 8 pins.

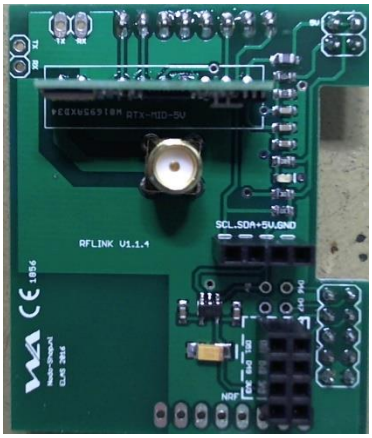
SMA connector:

Place the SMA antenna connector (gold colored) in the correct position on the top of the print. Keep with a finger the connector in place and turn the print over. Now solder the center pin of the SMA connector. Check the position and solder the remaining 4 pins of the SMA connector. It takes a while before the connector and the print (GND plane) are hot enough for the solder to flow (much mass).



Aurel Transceiver (combined transmitter/receiver):

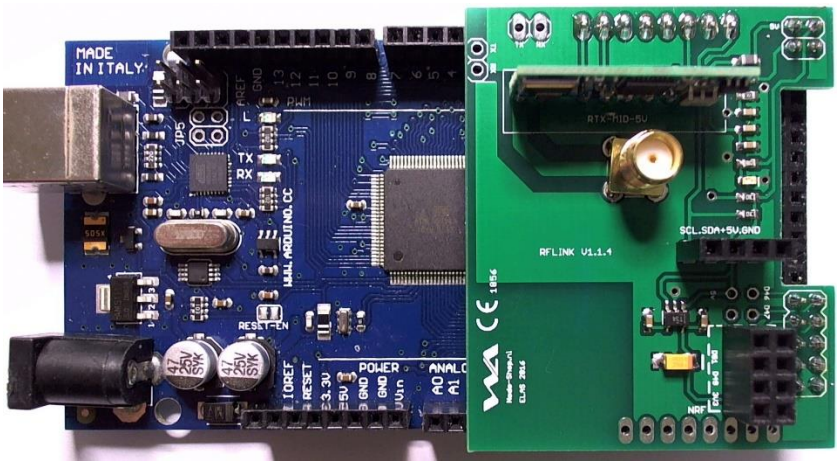
The transceiver is a sensitive and fragile component, so be very careful with it. Place the transceiver in the position as shown on the print, it will fit only in one way. Make sure the transceiver is in the upright position and solder the pins on the bottom and cut the remaining part. Because the transceiver is a very heat sensitive don't keep the soldering iron to long in one place. Let the PCB cool a bit in between the soldering of the transceiver pins. To ensure that the shielding works well, it is important that the transceiver makes good contact with the mass of the PCB.



Placing the breakout board type RFLink on an Arduino Mega 2560 (or compatible) board:

If you are going to use the breakout board type RFLink in combination with for example an Arduino Mega 2560 (or compatible) board, you can place the breakout board type RFLink on the Arduino Mega 2560 (or compatible) board directly. (see picture below)

The breakout board type RFLink should be placed so that the 2 x 2 pin header is in the right upper corner of the Arduino Mega 2560 (or compatible) board connecting the 5V and dig 22 and 23 female header pins.



By placing breakout board type RFLink on an Arduino Mega 2560 (or compatible) board the following connections are being made:

Arduino	***RFLink***
5V	5V
GND	GND
D14	DAT IN Transceiver
D15	TX / RX Transceiver
D19	DAT OUT Transceiver
D20	SDA I2C
D21	SCL I2C
D22	ENABLE Transceiver
D49	CS
D51	MOSI
D50	MISO
D52	SCK
D46	
D47	

CE declaration of conformity:
The kit comes with a CE mark.
The CE mark will be void if the end user makes modifications to the breakout board type RFLink.

If the breakout board type RFLink is used in combination, for example, with an Arduino Mega 2560 (or compatible) board then the regulatory compliance for CE marking depends on the build quality, this is the end user's own responsibility.

Electrical Safety:
The Power supply for the breakout board type RFLink should be 5V DC. If the breakout board type RFLink is used in combination, for example, with an Arduino Mega 2560 (or compatible) board, then the board will automatically be provided with the required 5V DC.
Always use a power supply labeled with the CE mark.

EMC:
The end user is solely responsible for the applicable EMC standards as the product comes without any shielding. The user will have to accept that if the composite product is used without shielding, then influencing signals can occur. (insufficient immunity)
If the composite product causes interference its use should be discontinued immediately, and the supplier should be contacted.
Electromagnetic compatibility depends mainly on the used housing and the way it is built into the housing.

(07) Copy of Declaration of Conformity

Declaration of Conformity

We, the undersigned,

Company	*Wijbenga Automatisering*
Address, City	*Hendrik Hoogersstraat 14, 6524 AB Nijmegen*
Country	*Netherlands*
Phone number	*+31 (0) 24 388 00 94*
Fax number	

certify and declare under our sole responsibility that the following equipment:

Product description / Intended use:	
Manufacturer	*Wijbenga Automatisering*
Brand	*Wijbenga Automatisering*
Type	*Assembly kit breakout board type RFLink V1.1.x*
EU / EFTA member states intended for use	**EU**: all countries **EFTA**: all countries
Member states with restrictive use	*none*

Presumption of compliance has been achieved based on the following ***List of R&TTE Harmonised Standards:***

R&TTE Harmonised Standard	**Description**
EN 60950 : 2006	Safety of information technology equipment, includine electrical business equipment.
EN 301 489-1 V1.9.2 EN 301 489-3 V1.6.1	Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic compatibility (EMC) standard for radio equipment and services; Part3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 40 GHz.
EN 300 220-2 V2.4.1	Electromagnetic compatibility and Radio spectrum Matters (ERM); Short-Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500 mW; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive.

and therefore complies with the essential requirements and provisions of the **Directive 1999/5/EC** of the European Parliament and of the council of March 9, 1999 on Radio equipment and Telecommunications Terminal Equipment and the mutual recognition of their conformity and with the provisions of Annex IV (Conformity Assessment procedure referred to in article 10).

The following Notified Body has been consulted in the Conformity Assessment procedure:

Notified Body number	Name and address
1856	TÜV Rheinland Nederland B.V., PO Box 37, 9350 AA Leek, The Netherlands

The technical documentation as required by the Conformity Assessment procedure is kept at the following address:

Company	*Wijbenga Automatisering*
Address, City	*Hendrik Hoogersstraat 14, 6524 AB Nijmegen*
Country	*Netherlands*
Phone number	*+31 (0) 24 388 00 94*
Fax number	

CE

TCF/TF reference nr.	*WACE001*
Drawn up in	*Nijmegen Netherlands*
Date	*11-11-2015*
Name and position	*R. Wijbenga*

DICHIARAZIONE DI CONFORMITÀ - EC DECLARATION OF CONFORMITY

Il sottoscritto rappresentante il seguente costruttore / *The undersigned, representing the following* **manufacturer.**

Costruttore (o suo Rappresentante Autorizzato) : *Manufacturer (or his authorized Representative) :*	**AUR°EL S.p.A.**
Indirizzo : *Address :*	**Via Foro dei Tigli, 4 – 47015 Modigliana (FC) - ITALY**

dichiara qui di seguito che il prodotto / *herewith declares that the product*

Identificazione del prodotto : *Product identification :*	**RTX MID 5V**

risulta in conformità a quanto previsto dalla seguente direttiva comunitaria *(comprese tutte le modifiche applicabili)* / ***is in conformity with the provisions of the following EC directive(s) (including all applicable amendments)***

Rif. n° / *Ref. n°*	Titolo / *Title* :
99/5/CE	Direttiva riguardante le apparecchiature radio e le apparecchiature terminali di telecomunicazione e il reciproco riconoscimento della loro conformità ***Directive on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity***

e che sono state applicate tutte le norme tecniche sottoindicate / ***and that the standards referenced here below:***

Norme armonizzate *Harmonized std.*	Titolo : *Title :*
EN 301 489-3: (2002-08)	Compatibilità elettromagnetica e questioni relative allo spettro delle radiofrequenze (ERM); norma di compatibilità elettromagnetica (EMC) per apparecchiature e servizi radio. Parte 3: Condizioni specifiche per dispositivi a breve portata (SRD) operanti su frequenze tra 9 kHz e 40 GHz. ***Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic compatibility (EMC) standard for radio equipment and services; Part3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 40 GHz.***
EN 300 220-2: (2012-05)	Compatibilità elettromagnetica e spettro radio (ERM); apparecchiature per comunicazioni a corto raggio (SRD); apparati radio operanti nella banda di frequenza da 25 MHz a 1000 MHz con livelli di potenza fino a 500 mW. Parte 2: Norma europea armonizzata relativa ai requisiti essenziali di cui all'articolo 3.2 della direttiva R&TTE. ***Electromagnetic compatibility and Radio spectrum Matters (ERM); Short-Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500 mW; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive.***
EN 60950 : 2006	Sicurezza delle apparecchiature per la tecnologia dell'informazione comprese le apparecchiature elettriche per ufficio. ***Safety of information technology equipment, includine electrical business equipment.***

È conforme alla serie di prove radio essenziali e specifiche della categoria delle apparecchiature radio individuate dalle Norme armonizzate applicate.
Is in conformity with all essential and specific radio test suites for that radio equipment category identified by the above referenced harmonized standards.

Modigliana (luogo / *place*), _____*28-09-2012*_____ (data / *date*)

Dott. Franco Perugini – Technical Manager _____ (firma / *signature*)

Nome e funzione della persona incaricata di firmare per conto del costruttore o suo rappresentante autorizzato
Name and function of the signatory empowered to bind the manufacturer or his authorized representative

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