EN

Build manual for breakout board

RFLink Pro V1.1



The kit for the breakout board type RFLink includes all the parts needed to build a RFLink breakout board.

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 (with fine tip)
- Solder for electronics (so no solder, solder paste S39 used by e.g. plumbers!)
- Wire cutters

Components:

The kit consists of the following components:

- RFLink Pro PCB, already equipped with a range of SMD components
- Aurel transceiver
- ESP32-C3 Super Mini (optional)
- SMA connector
- 16 x 2 pin female header
- 3 x 2 pin female header

You will need an Arduino Mega Pro 2560 board (available from our shop) to use this kit.

This should be fully assembled with male headers.

RFLink Pro 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.

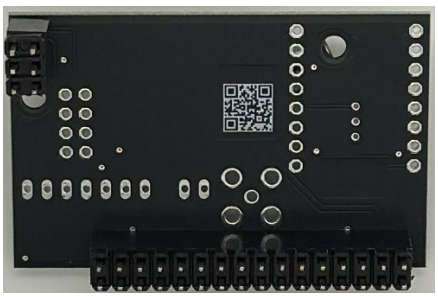
Female headers

Insert the female headers as shown, place the board on a flat surface with headers below the board and solder the pins. Make sure the headers are flat and straight on the board when soldering.



Male pins

Insert the male pins into the female headers, long ends go into the headers, short ends uppermost.

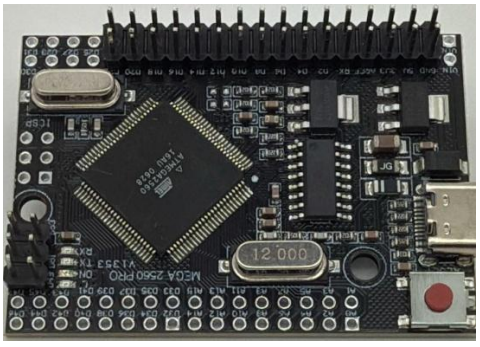


Mega Pro

Place the Mega Pro on top and solder the pins as shown.



Now unplug the Mega Pro from the RFLink Pro, it should look like this.



SMA connector

Place the SMA antenna connector (gold colored) in the correct position on the top of the RFLink Pro. 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.

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 PCB.



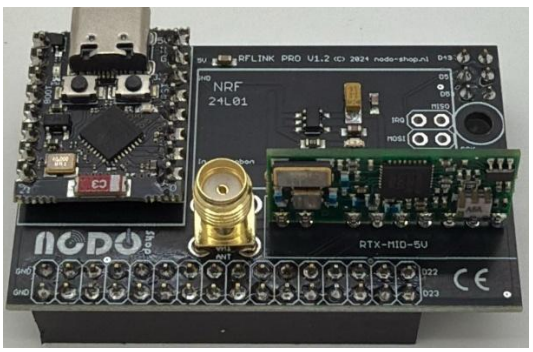
ESP32

If an ESP32 module (Wi-Fi) has been ordered it should be programmed with firmware before soldering.

Connect to a Windows PC via USB, visit https://td-er.nl/ESPEasy/, select **Normal 4M LittleFS ETH [ESP32, ESP32-S2/C3/C6]**, click **Connect**, select **USB JTAG/Serial port**, click **Install**.
Click **Connect to Wi-Fi** to configure the board with your Wi-fi network details and click **Visit Device**.

Go to **Devices** tab and click **Add** next to **1**, then select **Communication – Serial Server**, select **Enabled**, Serial Port **HW Serial 1**, ESP RX **GPIO-20,** ESP TX **GPIO-21**, Event processing **RFLInk**, select **LED Enabled**, LED pin **GPIO-8,** select **LED inverted**, click **Submit**.

It can then be soldered to the RFLink Pro like this:



Firmware:

For questions about the hardware you can contact the Nodo-shop:

https://www.nodo-shop.nl/nl/contact-us

For the USB/serial driver for RFLink Pro Mini, see:
https://www.nodo-shop.nl/en/index.php?controller=attachment&id_attachment=16

For questions about firmware and using the RFLink, see:
http://www.letscontrolit.com/
http://www.rflink.nl/
https://www.domoticz.com/forum/
http://www.esp8266.nu/forum/

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) 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:

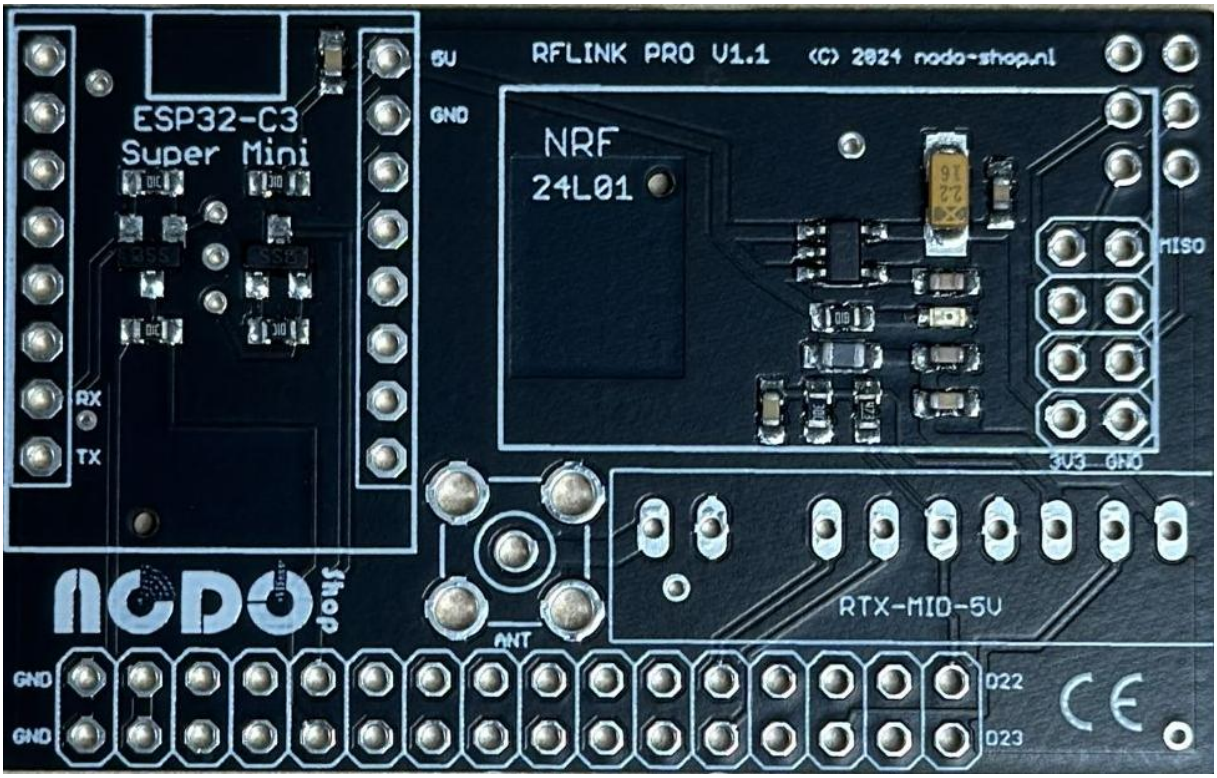
Company	*Wijbenga Automatisering*
Address, City	*Hendrik Hoogersstraat 14, 6524 AB Nijmegen*
Country	*Netherlands*
Phone number	*+31 (0) 24 388 00 94*
Fax number	

CE

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

NL

Bouwhandleiding voor RFLink V1.1



Het bouwpakket voor de breakout board type RFLink bevat alle benodigde onderdelen om de RFLink breakout board te bouwen.

Bouwhandleiding:

Solderen:
De print is ook door een niet ervaren “solderist” in elkaar te zetten, voor degene die nog nooit gesoldeerd hebben, of weinig ervaring hebben met het solderen van elektronica, verwijzen we graag naar:
http://www.budgetronics.eu/data/mediablocks/budgetronics%20handleiding%20solderen.pdf
Op deze site vind je een gratis ebook dat je leert hoe te solderen.

Benodigd gereedschap:
- Soldeerbout (bij voorkeur met dunne stift)
- Soldeer voor elektronica (dus geen soldeer, S39 soldeerpasta e.d., dat gebruikt wordt door b.v. loodgieters !)
- Kniptangetje

Componenten:
De set bestaat uit de volgende componenten:
- RF-link pcb, al voorzien van diverse SMD componenten
- Aurel transceiver (optioneel)
- SMA connector
- 3 x 2 polige female header
- 16 x 2 polige female header

Om deze kit te gebruiken, heb je een Arduino Mega Pro-bord nodig (verkrijgbaar in onze winkel).

Deze moet volledig worden gemonteerd met vrouwelijke headers.

Montage:

De montage is stapsgewijs beschreven zodat niets vergeten kan worden.
Advies: lees eerst het item door voordat je het component monteert.

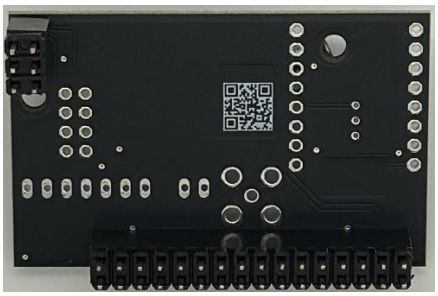
Vrouwelijke kopteksten

Plaats de vrouwelijke headers zoals afgebeeld, plaats het bord op een vlakke ondergrond met de headers onder het bord en soldeer de pinnen. Zorg ervoor dat de headers tijdens het solderen plat en recht op het bord liggen.



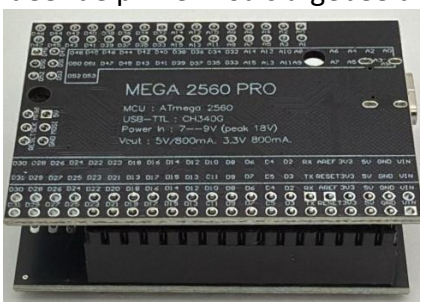
Mannelijke pinnen

Steek de mannelijke pinnen in de vrouwelijke headers, de lange uiteinden gaan in de headers en de korte uiteinden naar boven.

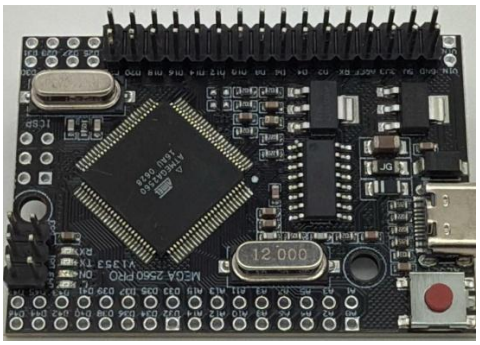


Mega Pro

Plaats de Mega Pro erop en soldeer de pinnen zoals afgebeeld.



Koppel nu de Mega Pro los van de RFLink Pro, het zou er zo uit moeten zien.



SMA connector

Plaats de SMA-antenneconnector (goudkleurig) in de juiste positie op de bovenkant van de RFLink Pro. Houd met een vinger de connector op zijn plaats en draai de print om. Soldeer nu de middelste pin van de SMA-connector. Controleer de positie en soldeer de resterende 4 pinnen van de SMA-connector. Het duurt even voordat de connector en de print (GND-vlak) heet genoeg zijn om het soldeer te laten vloeien.

Aurel Transceiver (combined transmitter/receiver):

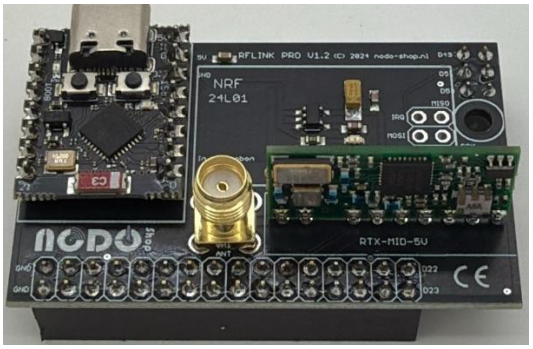
De zendontvanger is een gevoelig en kwetsbaar onderdeel, dus wees er zeer voorzichtig mee. Plaats de transceiver in de positie zoals aangegeven op de print, hij past maar op één manier. Zorg ervoor dat de transceiver rechtop staat, soldeer de pinnen aan de onderkant en knip het resterende deel af. Omdat de zendontvanger zeer warmtegevoelig is, moet u de soldeerbout niet te lang op één plaats bewaren. Laat de print een beetje afkoelen tussen het solderen van de transceiverpinnen. Om ervoor te zorgen dat de afscherming goed werkt, is het belangrijk dat de transceiver goed contact maakt met de printplaat.



ESP32

Als er een ESP32-module (Wi-Fi) is besteld, moet deze vóór het solderen worden geprogrammeerd met firmware. Maak verbinding met een Windows-pc via USB, ga naar https://td-er.nl/ESPEasy/, selecteer **Normal 4M LittleFS ETH [ESP32, ESP32-S2/C3/C6]**, klik op **Connect**, selecteer **USB JTAG/Serial port**, klik op **Install**. Klik op **Connect** met Wi-Fi om het bord te configureren met uw Wi-Fi-netwerkgegevens en klik op **Visit device**. Ga naar het tabblad **Devices** en klik op **Add** naast **1**, selecteer vervolgens **Communication – Serial server**, selecteer **Enabled**, Serial Port **HW Serial 1**, ESP RX **GPIO-20**, ESP TX **GPIO-21**, Event processing **RFLInk**, selecteer **LED Enabled**, LED pin **GPIO-8**, selecteer **LED inverted**, klik op **Submit**.

Vervolgens moet het als volgt aan de RFLink Pro worden gesoldeerd:



Soft- / Firmware:

De Nodo-shop c.q. Wijbenga Automatisering levert geen soft- c.q. firmware voor het gebruik van de RFLink breakout board.

Voor vragen over de montage kun je terecht bij de Nodo-shop:
https://www.nodo-shop.nl/nl/contact-us

Voor het USB/seriële stuurprogramma voor RFLink Pro Mini:
https://www.nodo-shop.nl/en/index.php?controller=attachment&id_attachment=16

Voor vragen over het gebruik van de RF-link kun je terecht op:
http://www.letscontrolit.com/
http://www.rflink.nl/
https://www.domoticz.com/forum/
http://www.esp8266.nu/forum/

CE-conformiteitsverklaring:

Het bouwpakket is voorzien van een CE markering.

De CE-markering vervalt indien de gebruiker zelf modificaties aanbrengt aan de RFLink breakout board.

Indien de RFLink breakout board gebruikt wordt i.c.m. b.v. een Arduino Mega 2560 (of compatible) dan hangt de conformiteit met de regelgeving voor CE markering van de (in)bouwkwaliteit af, de gebruiker is hier zelf verantwoordelijk voor.

Elektrische veiligheid:
De voeding voor de RFLink breakbout board moet 5V DC zijn. Indien de breakout board gebruikt wordt i.c.m. b.v. een Arduino Mega 2560 (of compatible) dan is het board automatisch voorzien van de benodigde 5V.
Gebruik altijd een voeding voorzien van het CE keurmerk.

EMC:
De gebruiker is zelf verantwoordelijk voor de geldende EMC normen.
Elektromagnetische straling hangt vooral af van de gebruikte behuizing en inbouwkwaliteit.

(07) Declaration of Conformity

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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:

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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
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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 : **RTX MID 5V** *Product identification :*

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

AUREL S.p.A. • Via Foro dei Tigli, 4 • I 47015 Modigliana (FC) Italy • Phone : +39-0546941124 • Fax : +39-0546941660 • http://www.aurel.it