

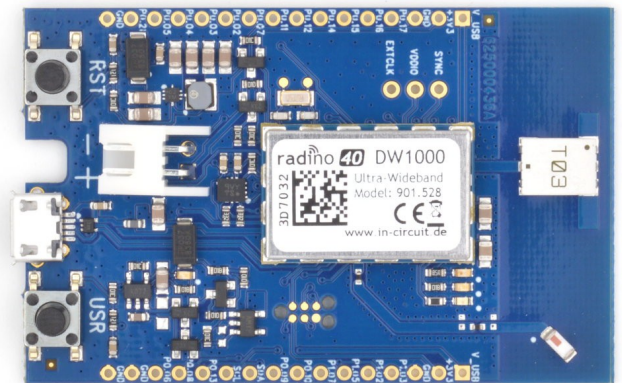
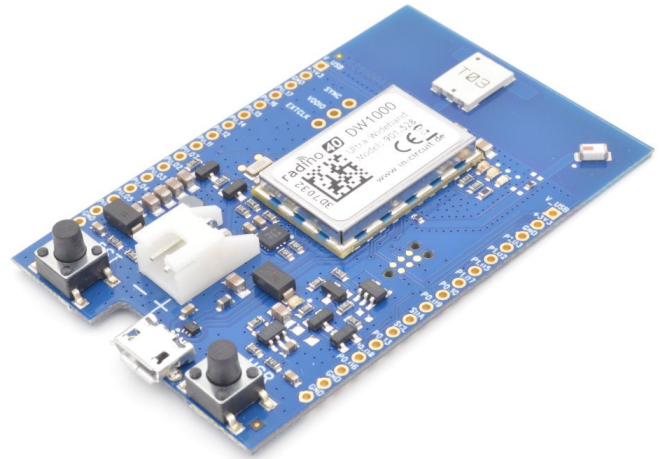
## radino 40 DW1000 Breakout

The In-Circuit radino 40 DW1000 Breakout is a development kit for the radino 40 DW1000 radio module with additional peripherals.

The radino 40 DW1000 combines Nordic Semiconductor's nRF52840 microcontroller and Decawave's DW1000 UWB radio chip.

The development board contains a 3.3V voltage regulator, USB micro connector, 6-Pin TC2030 TCX Plug-of-Nails™ SWD connector, BMI160 low power IMU, LiPo/Li-Ion charger, 2 push buttons, 3 LEDs UWB- and Bluetooth®-antenna. Many of the radino 40's IOs are connected to two 16-pin headers with 2.54mm pitch.

The headers are breadboard compatible, making the device a perfect development environment for radino 40.



## Features

- Development platform for radino 40
- radino 40 DW1000 module
- Additional peripherals:
  - USB-Micro connector
  - 6-Pin TC2030 TCX Plug-of-Nails™ SWD connector
  - 3.3V voltage regulator
  - BMI160 low power IMU
  - LiPo/Li-Ion charger & battery voltage measurement circuit
  - 2 User buttons
  - UWB- & Bluetooth®-chip-antenna
- 2 breadboard-compatible, 16-pin headers

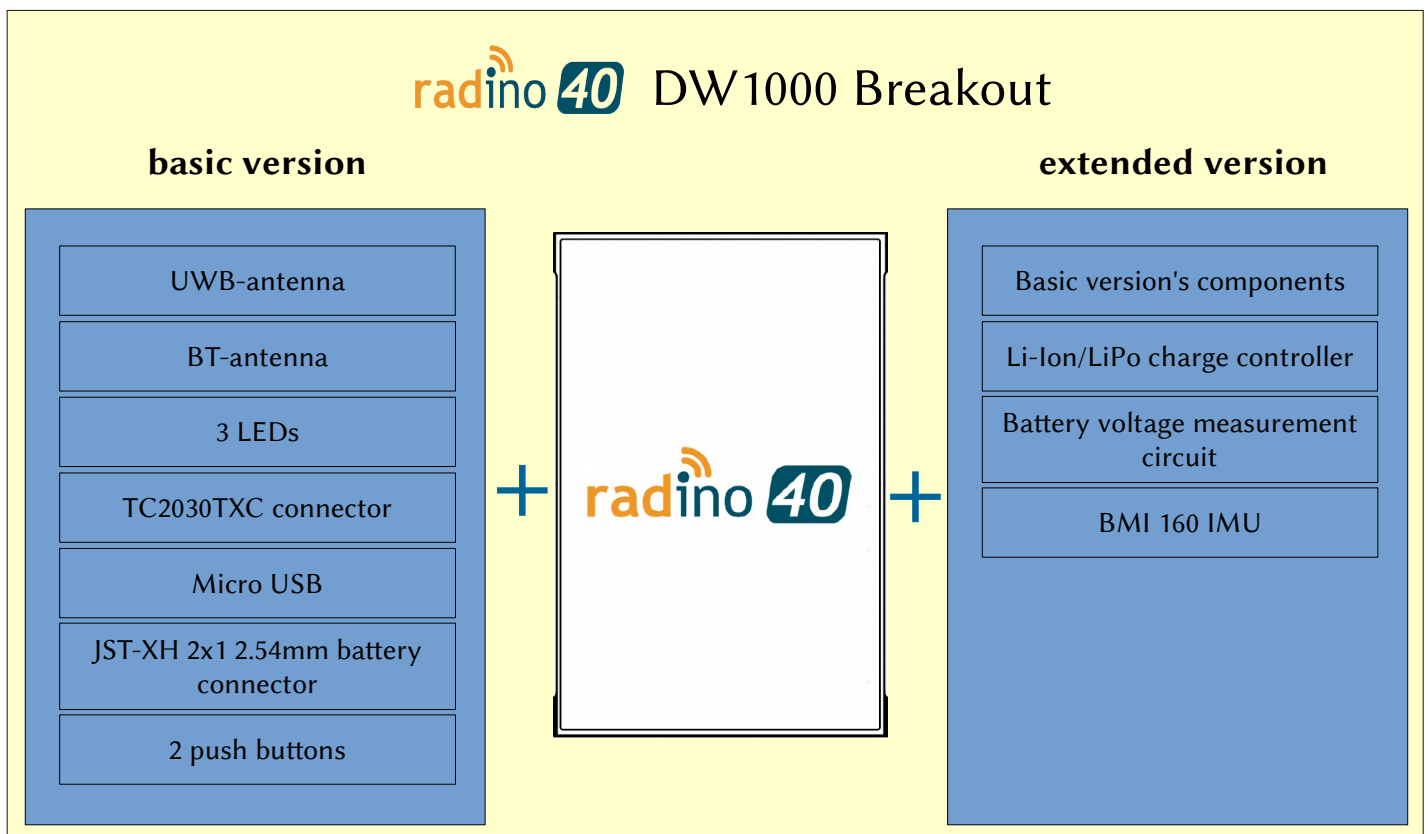
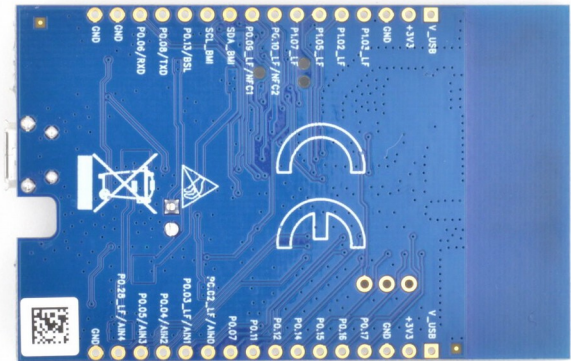
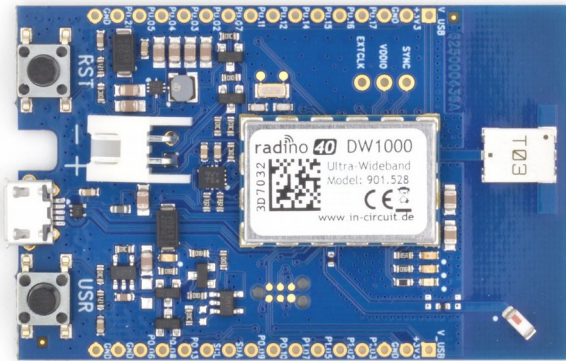
## Applications

- Precision real time location systems (RTLS) using two-way ranging or TDOA schemes in a variety of markets:
  - Healthcare
  - Consumer
  - Industrial
  - Other
- Location aware wireless sensor networks

For more information visit:  
<http://www.in-circuit.de/>  
<http://www.radino.cc/>

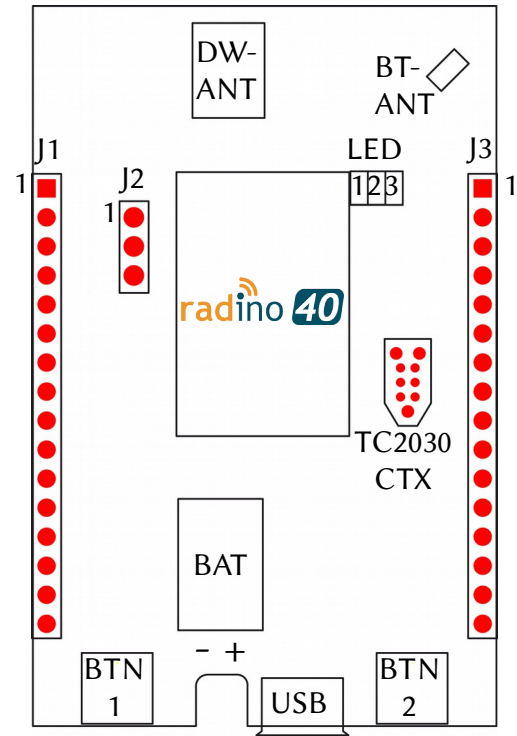
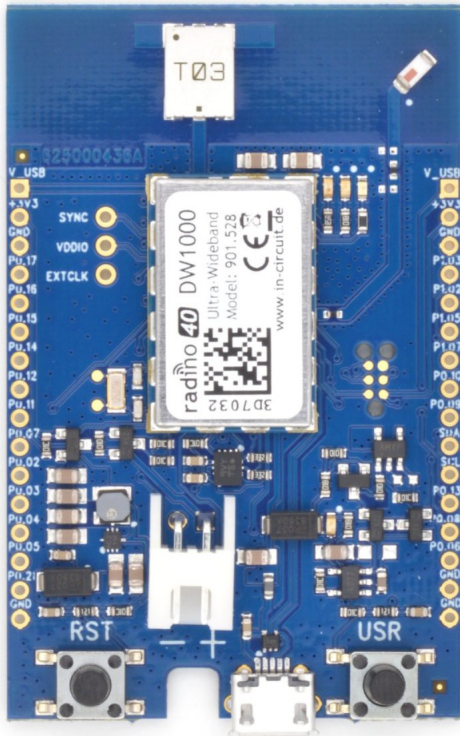
## Overview

The In-Circuit radino 40 DW1000 Breakout combines a radino 40 radio module with additional peripherals forming a convenient development environment for radino 40 DW1000. The development board comes in two versions. The equipment of both versions can be seen in the scheme below.



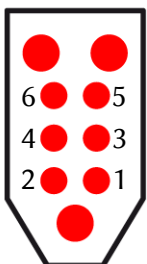
For detailed information about interconnections please refer to the circuit diagram in our Wiki. ([www.wiki.in-circuit.de](http://www.wiki.in-circuit.de))

## Layout & Connectors



Element	Description / Function
DW-ANT	DW1000 chip-antenna
BT-ANT	Bluetooth <sup>®</sup> -antenna
LED1	LED blue, connected to radino40 pin 52
LED2	LED green, connected to radino40 pin 25
LED3	LED red, connected to radino40 pin 53
TC2030TXC	6-Pin TC2030 CTX Plug-of-Nails™ SWD connector
USB	Micro USB connector
BAT	Battery connector JST-XH 2x1 2.54mm → connect Li-Ion/LiPo rechargeable batteries only → note polarity
BTN1	Reset button connected to radino40 pin 11/P0.18/RST
BTN2	User button connected to radino40 pin 16/P0.13

TC2030 CTX



Pin	Radino40 pin	Description / Function
1	15	+3V3
2	47	SWDIO
3	11	$\overline{\text{RST}}$
4	46	SWDCLK
5	12	GND
6	26	SWO

## Pin List

### J1

Pin	Name	radino40 pin	Description / Function
1	V_USB	45	USB Power 5V
2	+3V3	15	Power supply 3.3V
3	GND	12	GND
4	P0.17	1	GPIO
5	P0.16	33	GPIO
6	P0.15	2	GPIO
7	P0.14	3	GPIO
8	P0.12	4	GPIO; Trace buffer TRACEDATA[1]
9	P0.11	36	GPIO
10	P0.07	5	GPIO; Trace buffer clock
11	P0.02	37	GPIO (low-freq.); Analog Input
12	P0.03	6	GPIO (low-freq.); Analog Input
13	P0.04	38	GPIO; (RXD)
14	P0.05	7	GPIO; (TXD)
15	P0.28	39	Power supply
16	GND	12	GND

### J2

Pin	Name	radino40 pin	Description / Function
1	SYNC	34	USB Power 5V
2	VDDIO	35	Power supply 3.3V
3	EXTCLK	50	GND

## Pin List

### J3

Pin	Name	radino40 pin	Description / Function
1	V_USB	45	USB Power 5V
2	+3V3	15	Power supply 3.3V
3	GND	12	GND
4	P1.03	24	GPIO(
5	P1.02	51	GPIO
6	P1.05	23	GPIO
7	P1.07	22	GPIO
8	P0.10	20	GPIO; Trace buffer TRACEDATA[1]
9	P0.09	19	GPIO
10	SDA/P0.26	43	GPIO; Trace buffer clock
11	SCL/P1.09	44	GPIO (low-freq.); Analog Input
12	P0.13	16	GPIO (low-freq.); Analog Input
13	P0.08	14	GPIO; (TXD)
14	P0.06	13	GPIO; (RXD)
15	V_USB	45	USB Power 5V
16	+3V3	15	Power supply 3.3V

## Electrical Characteristics

### Absolut Maximum Ratings

Note: These are absolute maximum ratings beyond which the module can be permanently damaged. These are not maximum operating conditions.

Rating	Min	Max	Unit
Storage Temperature	-25	70	°C

### Recommended Operating Conditions

Environmental conditions

Rating	Min	Typ.	Max	Unit
Operating Temperature	-20		70	°C
Supply-Voltage $V_{USB}$	4.0	5.0	5.5	V
Battery Voltage $V_{BAT}$	3.3	3.6	4.2	V
Battery Charge Current $I_{CHA}$		100		mA

For further information please refer to the [radino 40 Datasheet](#).

## Certifications



### European RED Directive Statements

The radino40 DW 1000 Breakout has been tested and found to comply with Annex II of the Radio Equipment Directive (RED) 2014/53/EU and is subject of a notified body opinion. The module has been approved for Antennas with gains of 2 dBi or less.



### RoHS / WEEE compliant

WEEE-Reg.-Nr. DE 17225017



### Revision history:

Version	Date	Changes	Editor
A	2019/02/06	Initial version	Klause