



Adding Heart to Your Technology

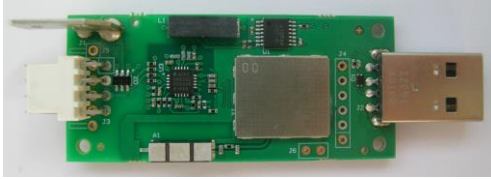
V 0.9 25 September 2017

POLAR 2R

Bluetooth Smart, 5 kHz and Contact heart rate

KEY FEATURES

- RF
 - Sensitivity -94dBm
 - TX power 0dBm
- 5 kHz
 - Coded / non-coded
 - Adjustable ranges (4 steps) thru the API
- CHR
 - Detection time 4s. typical
 - Hands on/off information available
- Automatic pairing to Polar dual transmitters (H7/H10)
- Selected Polar Smart coaching features included
- Polar API available



DESCRIPTION

Polar 2R –platform incorporates several key features into one simple package that can be interfaced either by UART or by USB. The API is also available for several different operating systems.

The platform includes Bluetooth Smart, 5 kHz receiver system and the contact heart rate – function. It comes with selected coaching features that are available when compatible transmitter belt is used. To be noted, coaching features require heart rate variability and not all transmitters support that.

It is possible to perform auto-pairing to Polar H7 and H10 transmitters. This means when user wears H7 or H10 and he/she walks to fitness equipment, the 5 kHz system detects the transmitter and the transmission code. Then platform scans for Bluetooth sensors and when a match of this data is found, the system connects to this particular Bluetooth transmitter. For the user this action is invisible.

The platform has software update possibility.

The available options are listed on the last page of this datasheet. Please contact your local sales representative to discuss your requirements. Contact information is found on the footer of each page.

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SYSTEM DESCRIPTION AND SPECIFICATION

BLOCK	FEATURE	INFO
RF	Bluetooth transceiver	Bluetooth 4.2 2400MHz – 2483.5MHz, 1MHz nominal channel bandwidth -94dBm receiver sensitivity
5 kHz receiver	Coded and non-coded functionality	Adjustable lock-in and reception range (thru API) Auto-pairing Filter selection
Contact Heart Rate	4 second detection time Hands on/off information	
Peripherals	UART USB 1.1 FS	3.3V nominal for UART 5V standard USB
SW update	Available	

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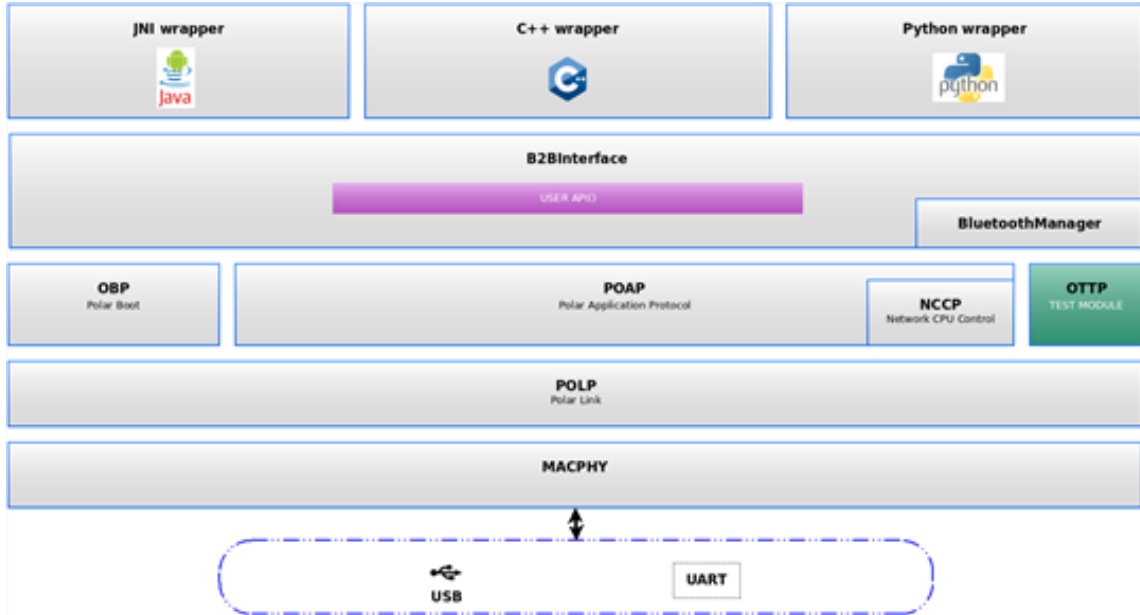
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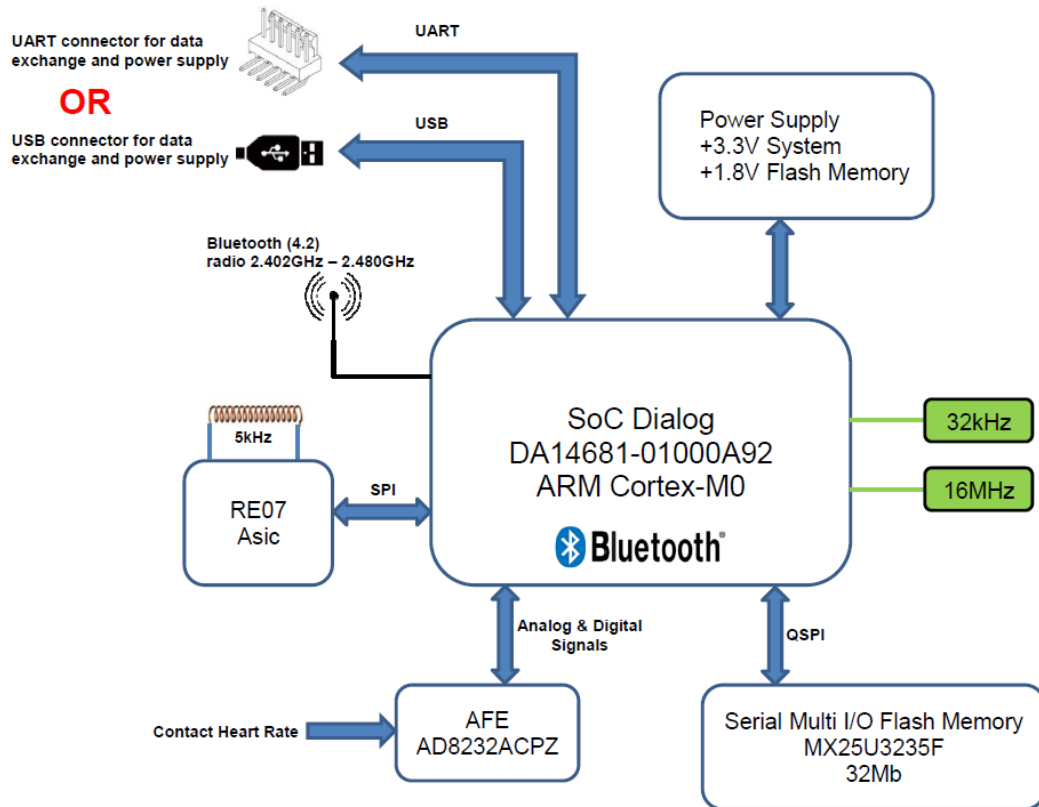
POLAR API BLOCK DIAGRAM



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POLAR 2R HW BLOCK DIAGRAM

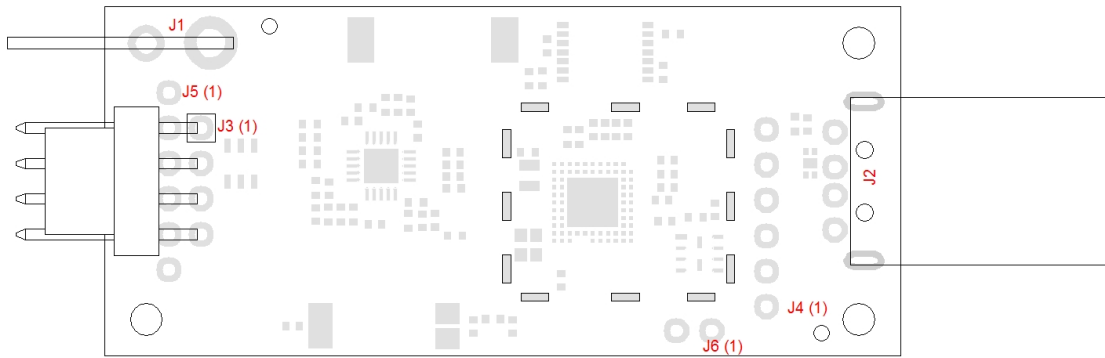




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V 0.9 25 September 2017

PIN CONFIGURATION



PIN DESCRIPTION

J1	Earth connector
J2	USB Connector (PTH)
J3 (1)	Hand right reference signal
J3 (2)	Hand Left signal
J3 (3)	Hand Right signal
J3 (4)	Hand left reference
J4 (1)	UART2 interface URTS2
J4 (2)	UART2 interface UCTS2
J4 (3)	UART2 interface URX2
J4 (4)	UART2 interface UTX2
J4 (5)	UART2 interface VBAT
J4 (6)	UART2 interface GND
J5 (1)	Hands AGND
J5 (2)	Hands Left Reference
J5 (3)	Hands Left signal
J5 (4)	Hands AGND
J5 (5)	Hands Right reference
J5 (6)	Hands Right signal
J6 (1)	UART UTX
J6 (2)	UART URX

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ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit
Supply voltage / UART version	V _{cc}	1.70	4.50	V
Supply voltage / USB version	V _{cc}	4.40	5.25	V
Storage temperature	T _s	-10	+50	°C
Operating temperature	T _o	+5	+50	°C
ESD endurance	V _{esd}		±20	kV

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply voltage UART	V _{cc}	T=25°C		3.3		V
Supply voltage USB	V _{cc}	T=25°C		5.0		V
Supply current average UART	I _{avg}	T=25°C V _{cc} =3.3V		13		mA
Supply current average USB	I _{avg}	T=25°C V _{cc} =5.0V		13		mA
Storage temperature	T _s			+25		°C
Operating temperature	T _o			+25		°C
Detection time from hands	Δt	T=25°C V _{cc} =5.0V		4		s
Wireless reception range (typical)*	l	T=25°C V _{cc} =5.0V	80		105	cm

*) Depends of selected range settings.

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ANTENNA CHARACTERISTICS

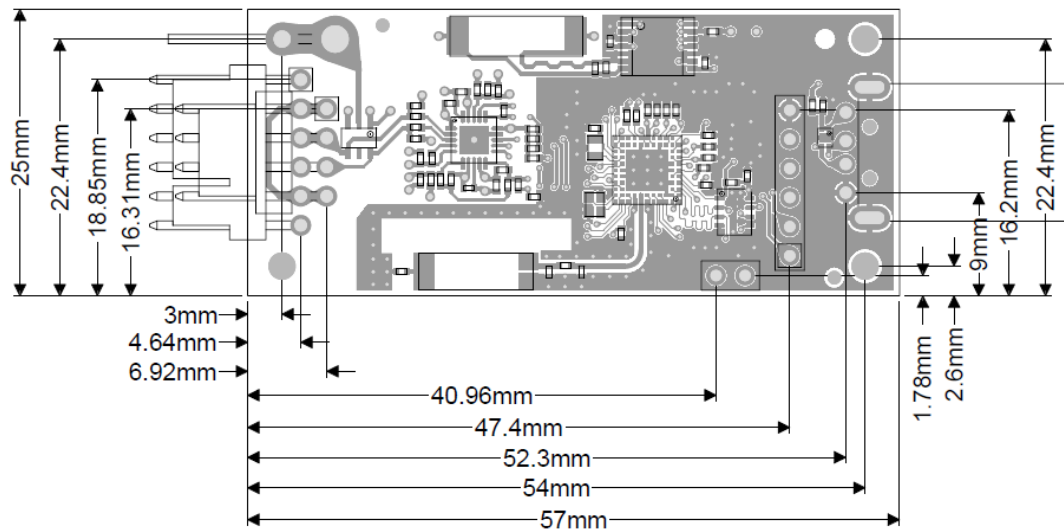
Antenna type: 2.4 GHz Bluetooth ceramic antenna

Features:

- Size: WxLxH (10x3.2x4) mm³
- Linear / omnidirectional
- Material: Copper on adhesive tape

Antenna location: Antenna SMD-soldered along the longer edge of the PWB

BOARD DIMENSIONS



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REGULATORY & STANDARDS INFORMATION

POLAR 2R

English

This product is compliant with Directives 2014/53/EU and 2011/65/EU. The relevant Declaration of Conformity is available at www.polar.com/en/regulatory_information.

Deutsch

Dieses Produkt erfüllt die Anforderungen der Richtlinien 2014/53/EU und 2011/65/EU. Die zugehörige Konformitätserklärung ist erhältlich unter www.polar.com/de/rechtliche_informationen.

Français

Ce produit est conforme aux dispositions des directives 2014/53/UE et 2011/65/UE. La Déclaration de Conformité correspondante est disponible à l'adresse www.polar.com/fr/informations_reglementaires.

Ελληνικά

Το προϊόν αυτό είναι συμβατό με την Ευρωπαϊκή Οδηγία 2014/53/EU και 2011/65/EU. Η σχετική Δήλωση συμμόρφωσης είναι διαθέσιμη στην ηλεκτρονική διεύθυνση www.polar.com/el/regulatory_information.

Nederlands

Dit product voldoet aan de richtlijnen 2014/53/EU en 2011/65/EU. De desbetreff ende conformiteitsverklaring is beschikbaar op www.polar.com/nl/wettelijk_verplichte_informatie.

Italiano

Questo prodotto è conforme alle Direttive 2014/53/UE e 2011/65/UE. La Dichiarazione di conformità relativa è disponibile sul sito www.polar.com/it/informazioni_normative.

Español

Este producto cumple con las Directivas 2014/53/UE y 2011/65/UE. La Declaración de conformidad correspondiente se puede encontrar en www.polar.com/es/informacion_reguladora.

Português

Este produto está conforme às Directivas 2014/53/EU e 2011/65/EU. A respectiva Declaração de Conformidade está disponível em www.polar.com/pt/informacao_regulatoria.

Suomi

Tämä tuote on direktiivien 2014/53/EU ja 2011/65/EU mukainen. Asiaankuuluva Vaatimustenmukaisuusvakuutus on luettavissa osoitteessa www.polar.com/fi/lainsaadannolliset_tiedot.

Svenska

Denna produkt uppfyller direktiven 2014/53/EU och 2011/65/EU. Tillämplig försäkran om överensstämmelse finns tillgänglig på www.polar.com/sv/gallande_bestammelser.

Dansk

Dette produkt er i overensstemmelse med direktiv 2014/53/EU og 2011/65/EU. Den relevante Erklæring om overensstemmelse findes på adressen www.polar.com/da/oplysninger_om_regulering.

Norsk

Dette produktet er i samsvar med EU-direktivene 2014/53/EU og 2011/65/EU. Den relevante samsvarserklæringen finner du på www.polar.com/nb/informasjon_om_forskrifter.

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Compliance statement

CANADA

Polar Electro Oy has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.

Polar Electro Oy n'a approuvé aucune modification apportée à l'appareil par l'utilisateur, quelle qu'en soit la nature. Tout changement ou toute modification peuvent annuler le droit d'utilisation de l'appareil par l'utilisateur.

Innovation, Science and Economic Development Canada (ISED) regulatory information

This device complies with Innovation, Science and Economic Development Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

This device complies with the safety requirements for RF exposure in accordance with RSS-102 Issue 5 for portable use conditions.

Avis de conformité à la réglementation d'Innovation, Sciences et Développement économique Canada (ISDE)

Le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Cet appareil est conforme aux exigences de sécurité concernant l'exposition aux RF selon la norme RSS-102, 5ème édition, pour des conditions d'utilisation portable.

Class B digital device notice

This Class B digital apparatus complies with Canadian RSS-Gen and RSS-247.

Cet appareil numérique de la classe B est conforme à la norme CNR-Gen et CNR-247 du Canada.

CAN ICES-3(B)/NMB-3(B)

The AC/DC mains adapter shall meet the clause 2.5 of the standard for limited power supply
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USA

Polar Electro Oy has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.

FCC regulatory information

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

This product emits radio frequency energy, but the radiated output power of this device is far below the FCC radio frequency exposure limits. This equipment complies with FCC RF radiation exposure limits for an uncontrolled environment. Nevertheless, the device should be used in such a manner that the potential for human contact with the antenna during normal operation is minimized.

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