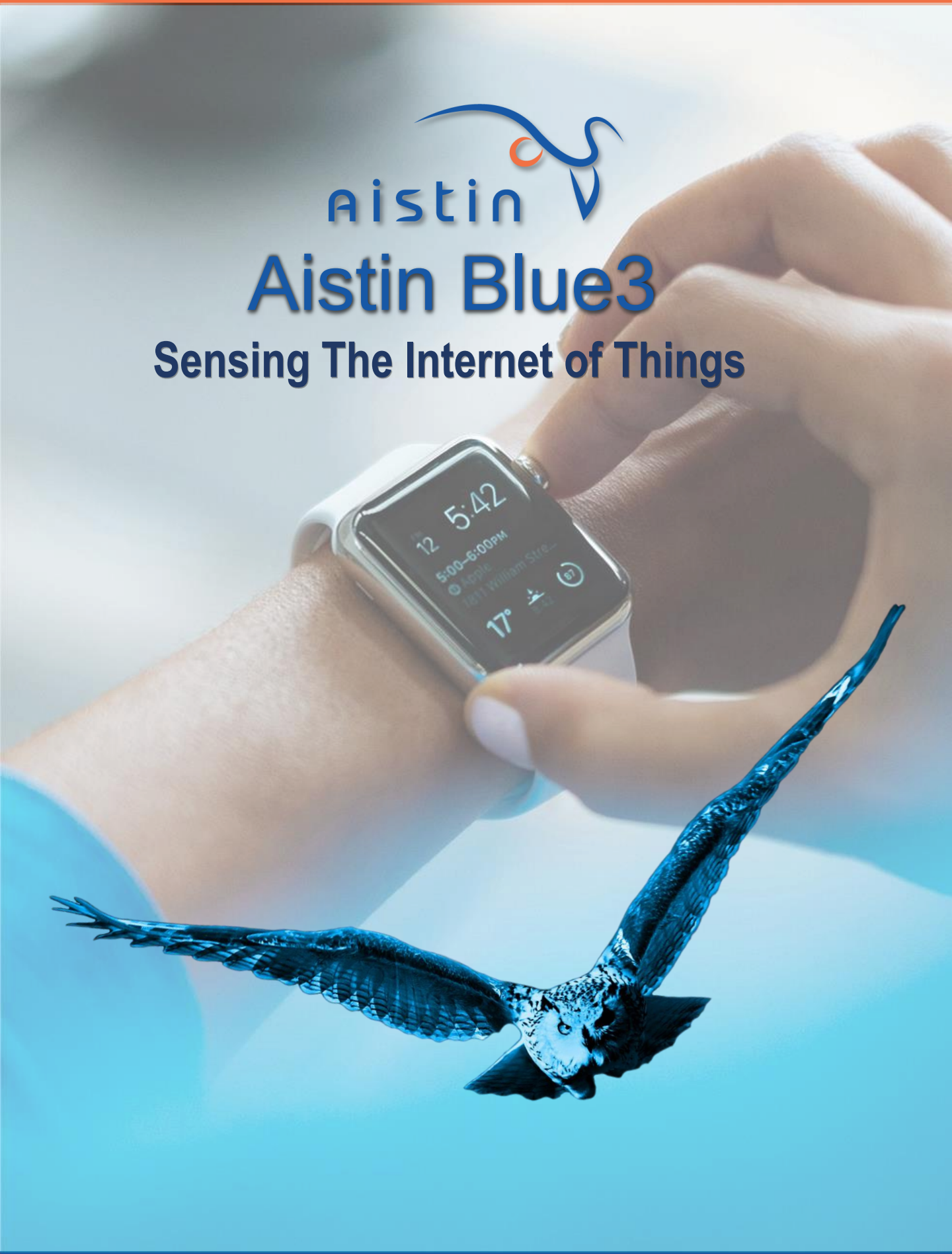
aistin

Aistin Blue3

Sensing The Internet of Things



iProtoXi

Teknologiantie 18, 90590 Oulu, Finland

www.iprotoxi.fi

The products for your new innovations and sensor solutions

Bluetooth Development Board

Aistin Blue3

BTL5x2

PRELIMINARY

v0.2

Aistin Blue3 Development Board makes low energy battery-powered wireless IoT solutions easy to build. This small and round device is only 32 mm in diameter, 27 mm without the screw pads and trace points. The Aistin Blue3 board is perfectly-suited for wearables and accessories.

The board is based on the Nordic Semiconductor's nRF52840 controller supporting Bluetooth 5 (Low Energy)/ANT, and provides radio connectivity with its integrated crystal antenna and connector for an external antenna. Smart power control enables long usage times even with smaller batteries, from days to several months depending on your application.

The BTL5x2 board has more sensors, measuring distance, ambient light and light color. It's also capable of detecting 3D-acceleration, 3D-magnetism, 3D-rotation, on-board temperature, air pressure and optionally humidity, all of this integrated onto the same board. Optional NFC TAG functionality is also introduced at Aistin Blue3. Even more functionality can be obtained by mounting different Aistin Add-on Boards from the Aistin family using Aistin Bus24 connector.

With the Aistin Sensor Scanner Application, you can read sensor values over the Bluetooth. Local configuration and setup is also possible using the Bluetooth connection.

USAGE EXAMPLES

- ❑ Smart wearables
- ❑ Clothing
- ❑ Wrist devices
- ❑ Sport equipments
- ❑ Step, hit, movement
- ❑ Shake and orientation detector
- ❑ Counters
- ❑ Vibration
- ❑ Animal monitoring

Bluetooth Development Board

Aistin Blue3

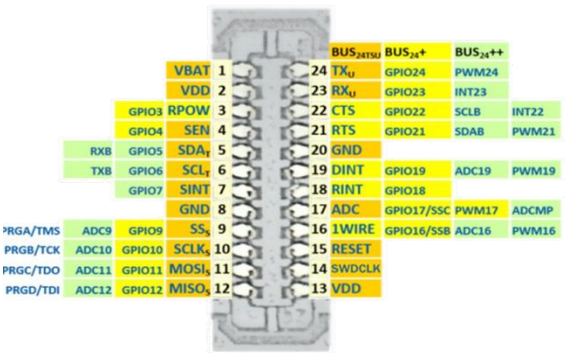
TECHNICAL SPECIFICATION

- ❑ **Dimensions** Ø 32/27 mm x 4.2 mm (0.6 mm PCB)
- ❑ **Controller**
  - ❑ Nordic Semiconductor nRF52840 (SoC)
  - ❑ ARM Cortex-M4F with Bluetooth 5
  - ❑ 64 MHz Clock Speed
- ❑ **Memory**
  - ❑ 1 MB flash, 256 KB RAM (SoC)
  - ❑ 2 Mbits SPI 8/16Mbit Flash memory
- ❑ **Connectors**
  - ❑ 2 x Aistin Bus24 host connector*
  - ❑ Battery and NFC connectors
  - ❑ Micro-USB
  - ❑ Tracing pads
  - ❑ Screw holes for mounting
  - ❑ SWD programming connector
- ❑ **Indicators**
  - ❑ 2 x red/green/blue LED
  - ❑ Charging LED
- ❑ **Programmable switch and power control**

- ❑ **Accelerometers**
- Sensitivity Accuracy ±5 %
- Signal Bandwidth (-3dB) 3500 (xy) 1800 (z) Hz
- Integral Non-Linearity 1 % of FS
- Cross Axis Sensitivity % of FS
  - -2 (XY)
  - 0.1 (XZ)
  - 2.7 (YX)
  - -0.7 (YZ)
  - -0.8 (ZX)
  - 1.4 (ZY)
- Noise RMS 0.75 mg, Density 130 µg/√Hz

**Aistin BUS_{24}* is an open standard and includes all necessary signals for further expanding the board's capabilities. The primary and alternative pin usages are shown in the chart.*

Aistin Bus24 Signal Chart



- ❑ **Accelerometer with Magnetometer**
- G range up to ±16g
- Output Data Rate up to 25600Hz
- Low Power or High Resolution modes
- Digital I2C up to 3.4MHz and Digital SPI up to 10MHz
- High Shock Survivability
- Digital Bit Depth 16 bits

- ❑ **3D digital accelerometer and a 3D digital gyroscope**
- G range ±2/±4/±8/±16g full scale
- ±125/±245/±500/±1000/±2000 dps full scale
- Pedometer, step detector and step counter
- Linear acceleration sensitivity
  - FS = ±2 0.061 mg/LSB
  - FS = ±16 0.488 mg/LSB
- Angular rate sensitivity
  - FS = ±125 4.375 mdps/LSB
  - FS = ±2000 70 mdps/LSB
- Sensitivity tolerance ±1%
- Linear acceleration zero-g level offset accuracy ±20 mg
- Angular rate zero-rate level ±1 dps
- Rate noise density in highperformance mode 3,8 mdps/√Hz

- ❑ **Barometers**
- Pressure Range: 300hPa to 1100hPa
- Relative Pressure Accuracy: ±0.12hPa(Typ)
- Absolute Pressure Accuracy: ±1hPa(Typ)

- ❑ **Ambient light and light color**
- Senses Red, Green and Blue light
- The High Sensitivity and Wide Dynamic Range (0.005 – 40k lx)
- Rejecting 50Hz/60Hz Light Noise

- ❑ **Optional Distance**
- Up to 400 cm distance measurement
- Up to 50 Hz ranging frequency
- Typical full field-of-view (FoV): 27 °
- Emitter: 940 nm invisible laser (Class1)
- Maximum ranging distance is impacted by ambient light
- Short distance mode is more immune to ambient light, but its maximum ranging distance is typically limited to 1.3 m

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