IIDRE

« IIDRE: social distancing by UWB »

User guide

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I General description

IIDRE offers a solution helping for the compliance of the social distancing rule. Practice social distancing, also called physical distancing, means keeping space between people. The solution provided by IIDRE uses ultra wideband (UWB) technology and simply consists in personnal, anonymous, badges worn by persons sharing a same area. In case of non-compliance of the tunable threshold standing for social distancing between two or more persons, alerts are generated on the corresponding badges to prevent the wearers that they are too close from each other. The alert can be generated by means of a warning light, a buzzer or also a vibrator.

II Technical specifications

The main characteristics of the personnal badges are as follows:

- dimensions (L*l*h): 90*45*12 mm,

- weight (battery included): 53 g,

- battery:

  - LiPo 1500 mAh,
  - rechargeable via USB-C,
  - autonomy > 10 hours,

- radio frequency:

  - UWB chip: Decawave DW1000,
  - center frequency: 3494.4 MHz,
  - bandwidth: 499.2 MHz,

- accessory: removable neck lace.

Beyond these technical characteristics, the personnal badges offers tunable parameters:

- alert threshold: 1-5 m,

- alert type: warning light, buzzer (tunable tone), vibrator,

- alert duration: 1-5 s.

III Companion software

The *Badge Configuration App* provides two main functionnalities, namely to tune the parameters of the personnal badges on the one hand and to update the firmware on the other hand. In any case, the badge must be connected to the computer where the application is installed.

1 Connection

1. Switch on the badge using the power button.

2. Launch the *Badge Configuration App* and deploy the drop-down menus available on the welcome page as shown on the Figure 1 below.
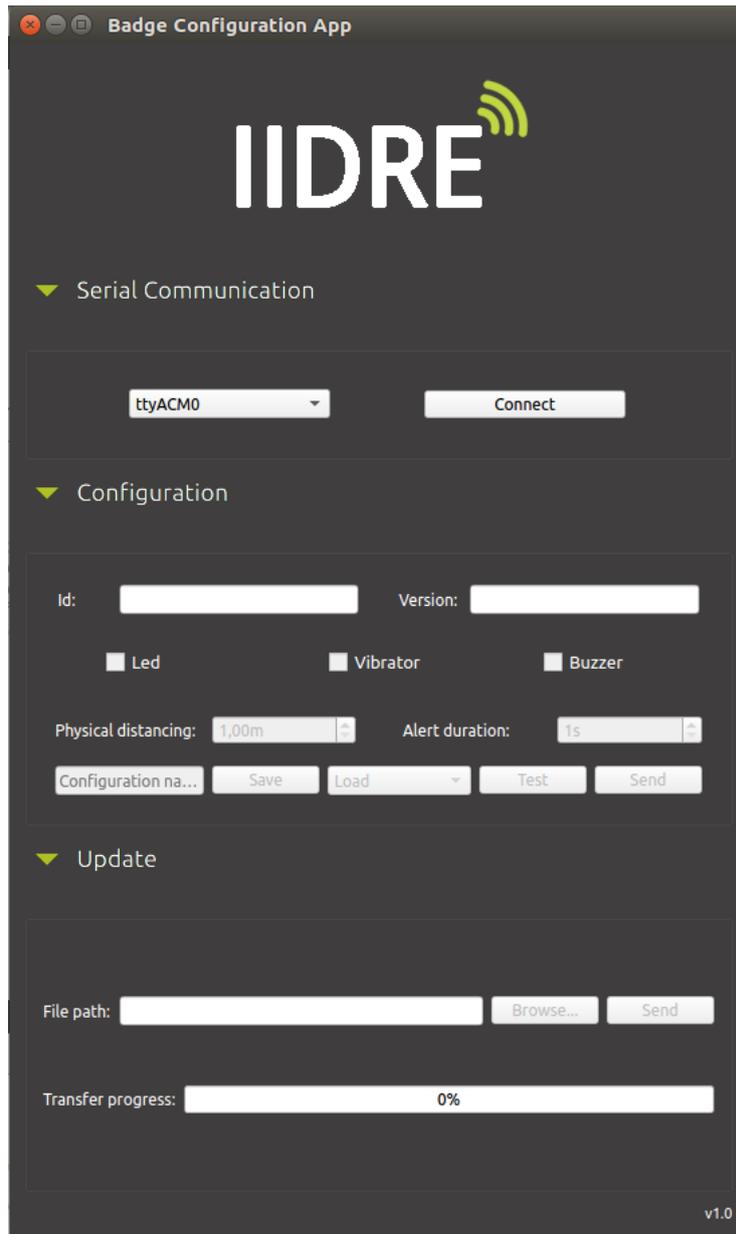

Figure 1: *Badge Configuration App* - welcome page menu

3. Connect the badge to the computer using the USB cable. When powered and plugged, the device is automatically detected by the computer and the application.

4. In the **Serial communication** menu, click on **Connect**.

5. When connected, the ID of the badge, the current firmware version and the tunable parameters appear in the **Configuration** menu.

2 Badge parameters

1. When powered and connected, the user can change the tunable parameters in the **Configuration** menu.

   - Led : activate/deactivate using the check-box. If activated, choose the **Intensity** with a value into the range 1-100.
   - Vibrator : activate/deactivate using the check-box. If activated, choose the **Intensity** with a value into the range 1-100.
   - Buzzer : activate/deactivate using the check-box. If activated, choose the **Intensity** with a value into the range 1-100; choose also the **Tonality** with a value into the range 1-5.
   - Alert duration : select the **duration** of the alert with a value into the range 1s-5s.
   - Social distancing : select the distance standing for the **threshold** for the alert with a value into the range 1m-5m.

2. The **Test** button allows for the user to evaluate the selected configuration.

3. The **Save** button allows for the user to store the selected configuration with the name indicated in the field **Configuration name**.

4. The **Load** button allows for the user to use a previously stored configuration.

5. The **Send** button allows for the user to send the selected configuration. A confirmation message indicates if the operation is successful.

6. The badge is configured and ready for use.

3 Badge update

1. When powered and connected, the user can update the firmware in the badge via the **Update** menu. The *.bin* filetype is associated with the update operation.

2. The **Browse** button allows for the user to specify the path where the *.bin* file is located.

3. Click on the **Reset** button to initiate the update process.

4. Click on the **Send** button to validate the update process.

5. The badge is updated and ready for use.