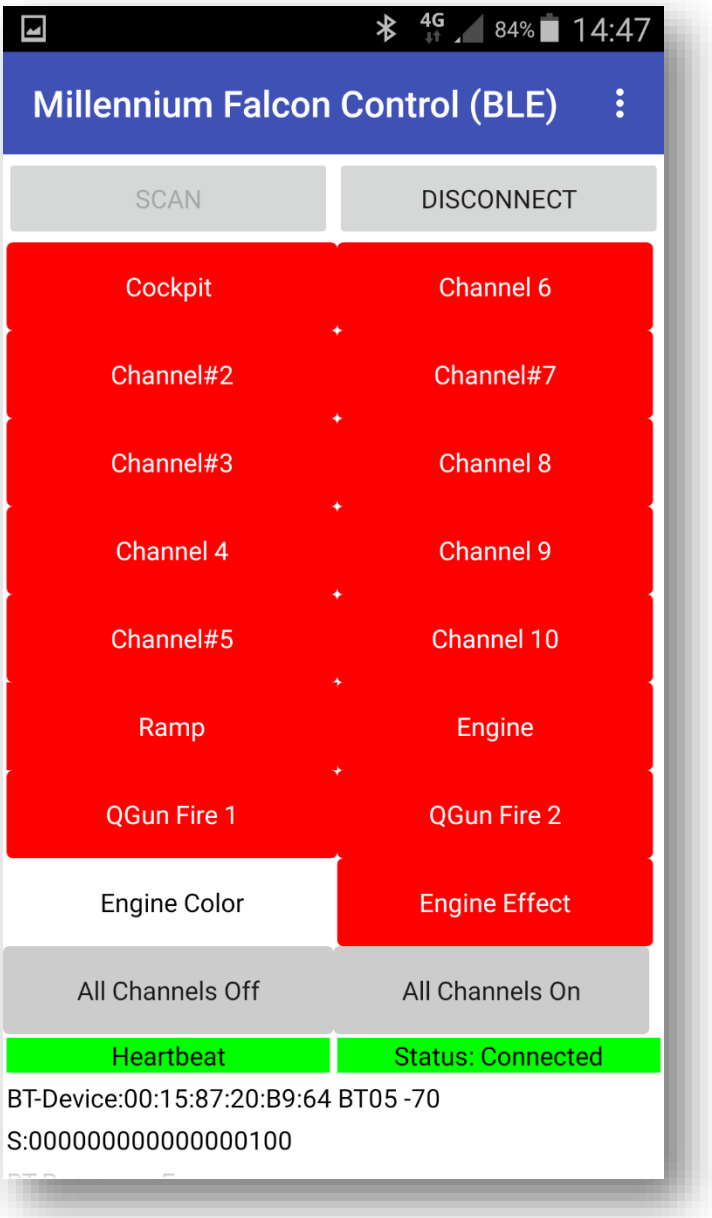
Millennium Falcon Control App

Version 1.5 (Build 11.04.2018)



Release 1.5

Release Date 16.04.2018

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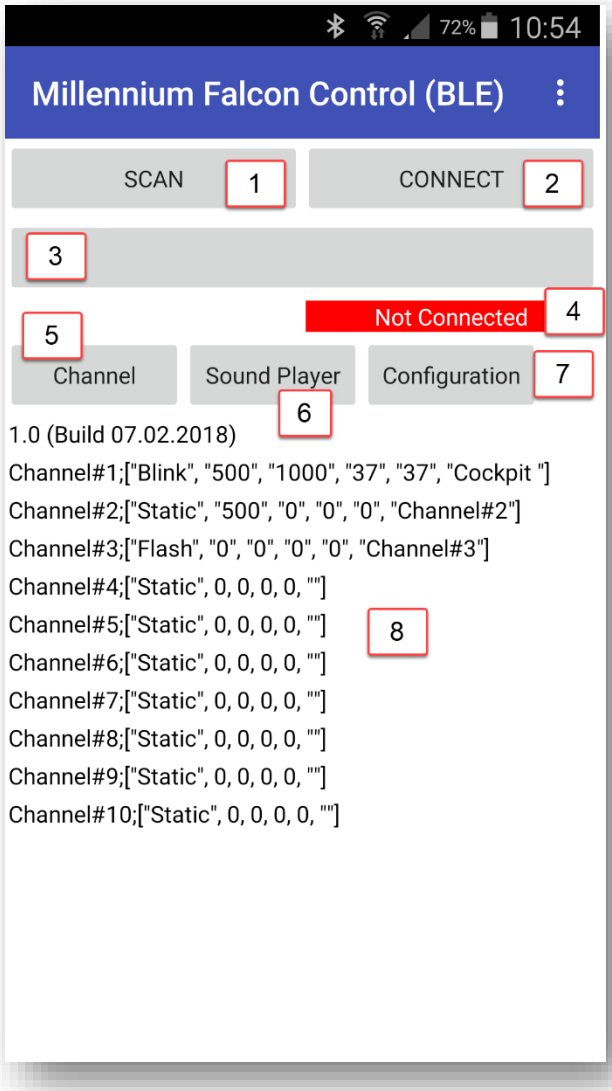
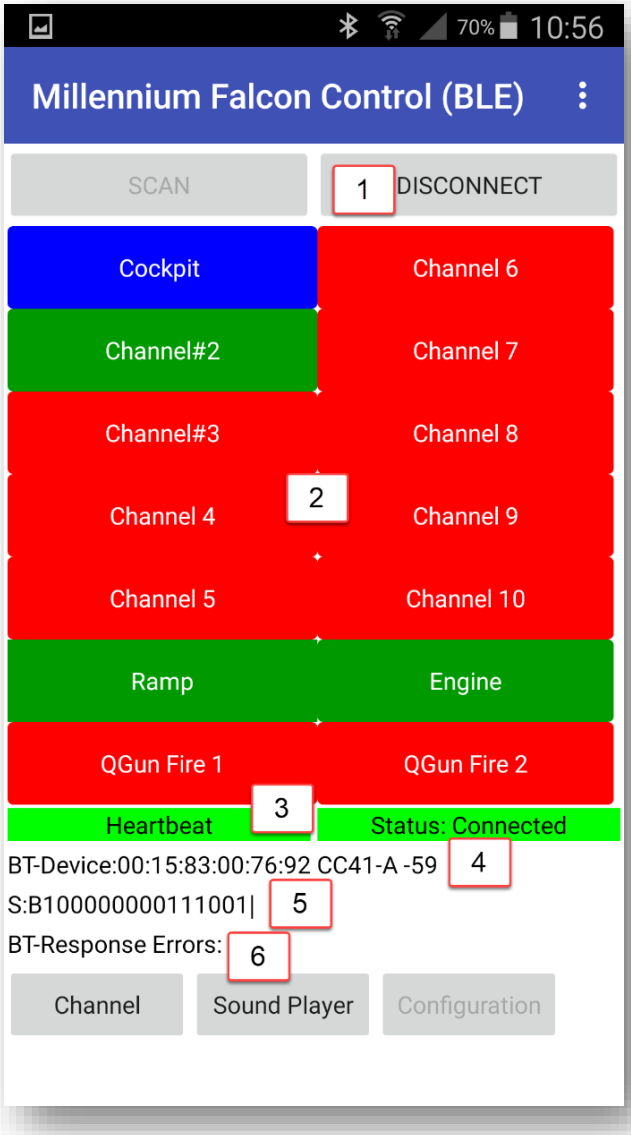
Overview

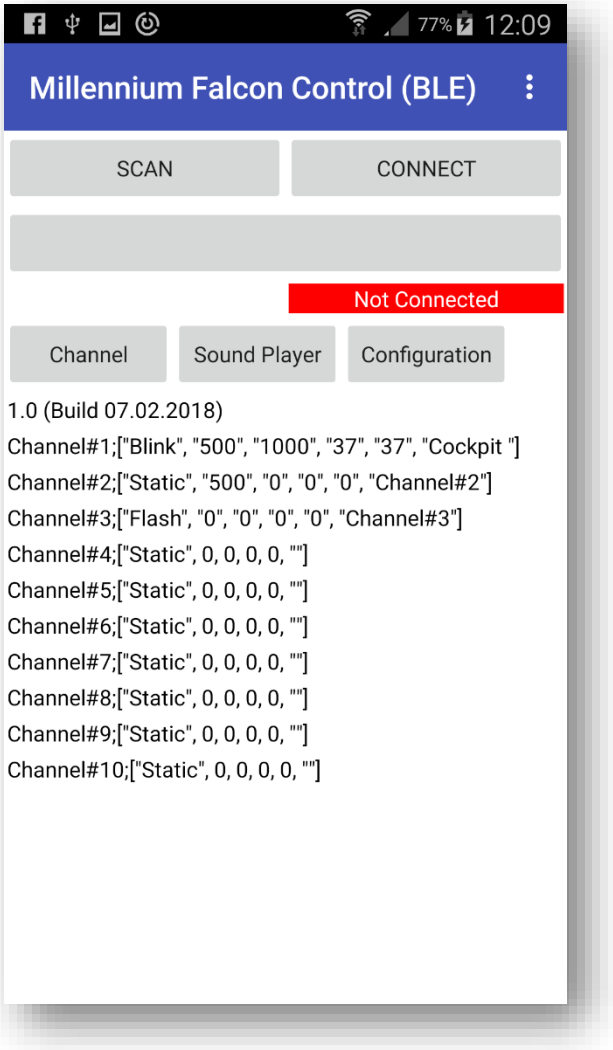


Number	Used for
1	Scan for Bluetooth devices
2	Connect to the Bluetooth module
3	Bluetooth device list, contains all Bluetooth devices found by scan
4	Bluetooth connection status
5	Show / hide channel configuration display
6	Call up the Sound player menu
7	Call up the channel configuration settings menu
8	Channel configuration



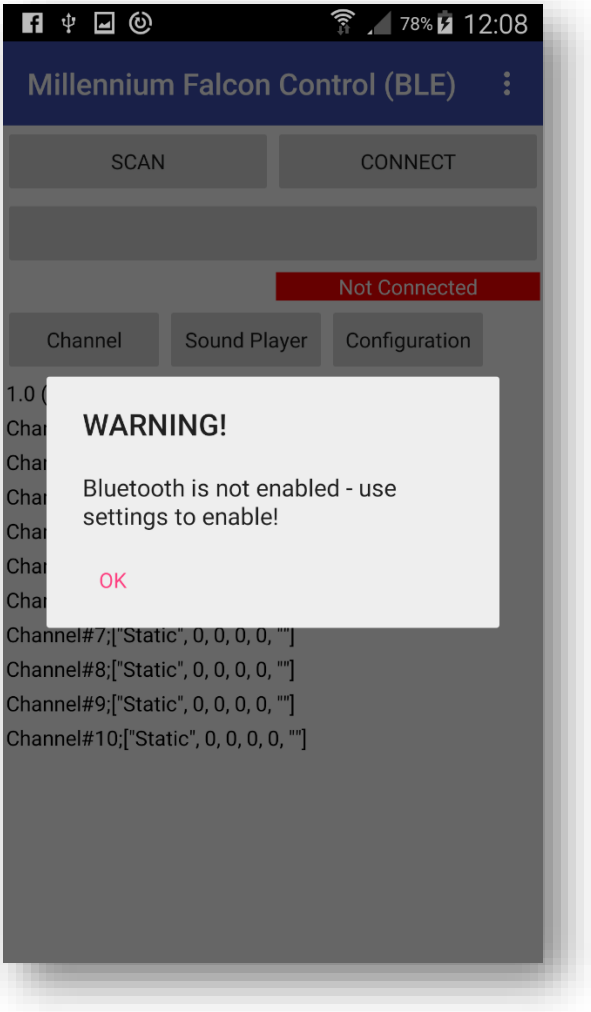
Number	Used for
1	Disconnect the Bluetooth module
2	Channel switch
3	Board heartbeat display
4	Bluetooth device name
5	Board Status Information
6	Bluetooth transmission error counter

Main screen



The main screen contains the main elements of the app.

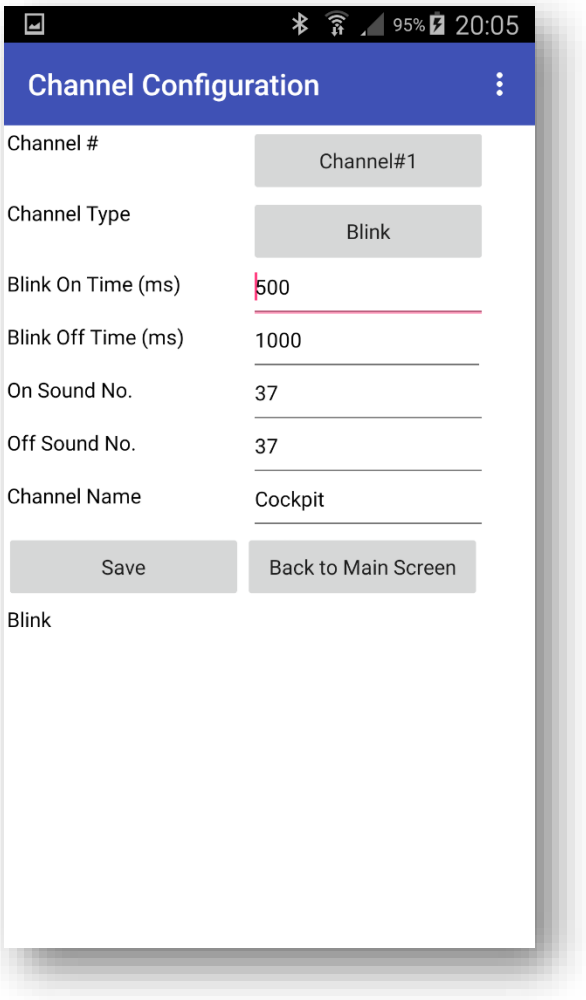
Button	Usage
Scan	search for Bluetooth devices
Connect	Connect to a Bluetooth device
Channel	Show / hide channel configuration
Sound Player	Control MP3 player on the board (not yet implemented)
Configuration	Channel Setting menu



If the Bluetooth module is deactivated on the smartphone, the corresponding warning appears.

Important: You cannot pair the Replacement Board's BLE module with Android's standard Bluetooth capabilities. The BLE module can be found by scan but a coupling is not possible for technical and security reasons.

Channel configuration menu

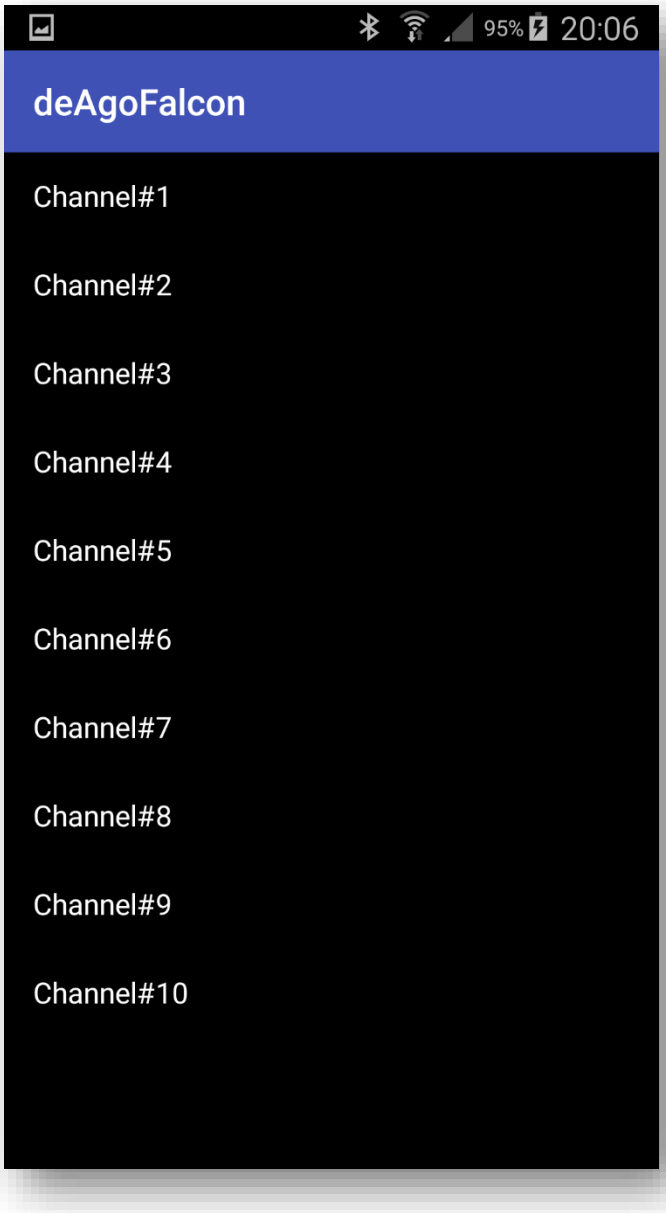


Each of the 10 channels can be configured in the Screen Channel Configuration.

Label	Used for
Channel #	Channel
Channel Type	Channel type
Blink On Time (ms)	For channel type Blink, the duration of the on phase of the channel
Blink Off Time (ms)	for channel type Blink the duration of the off-phase of the channel
On Sound No	Number of the sound file that is played when the channel is switched on
Off Sound No	Number of the sound file played when the channel is turned off
Channel Name	Name of the channel, this is displayed in the start screen
Save	Save the settings of the current channel
Back to Main Screen	Back to main menu

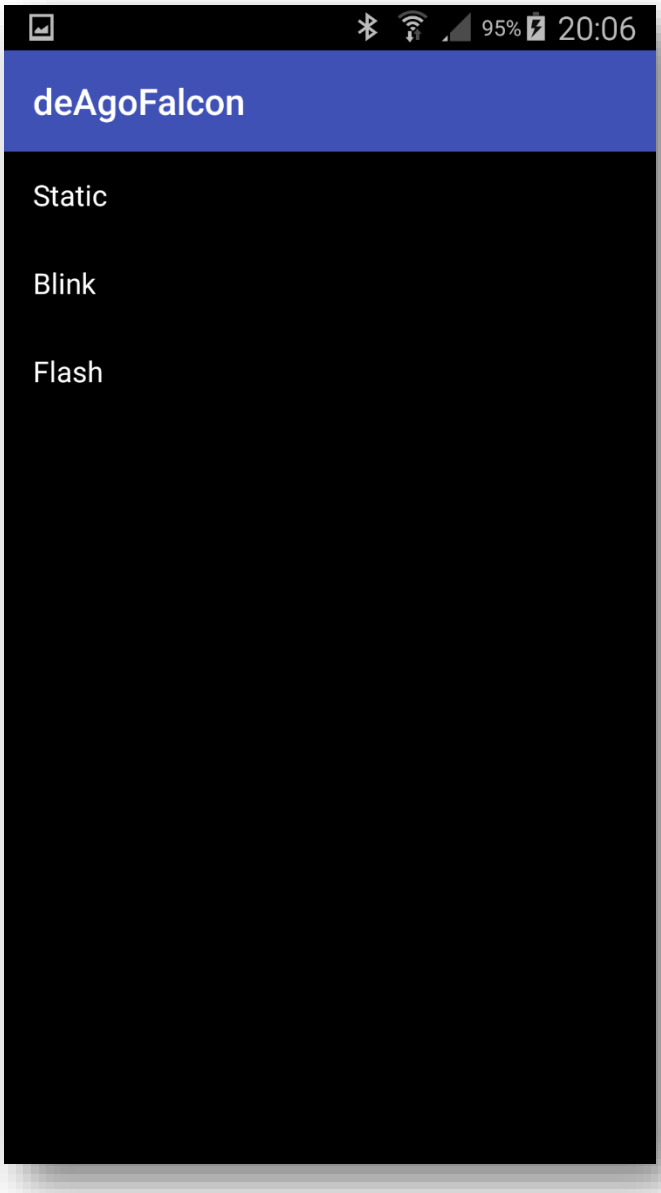
Note: The Ramp and Engine channel ignore the flashing values.

List box Channel #



The list box Channel # displays the list of configurable channels.
Select the corresponding channel by tapping.

List box Channel Type

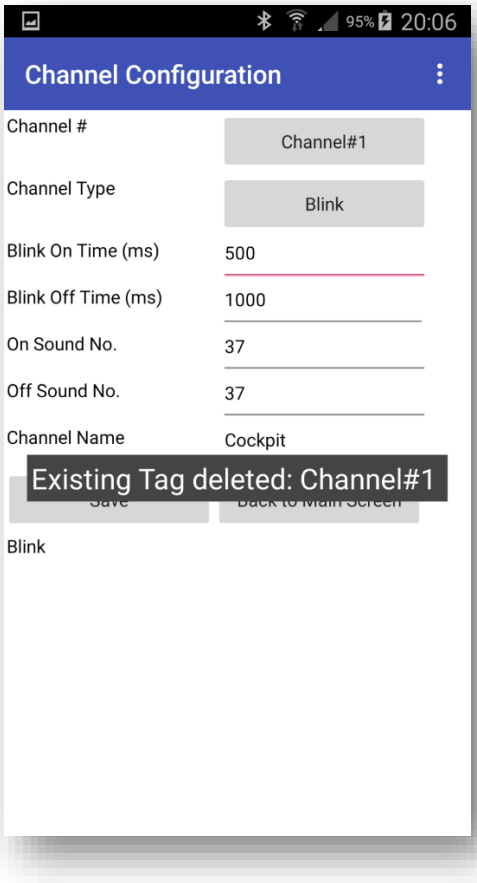


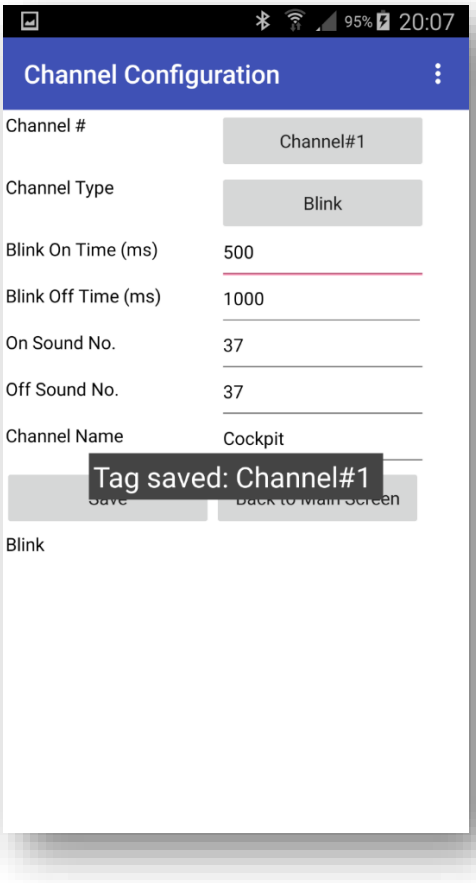
The list box Channel Type shows the possible functions of a channel.
Touch to select the desired function.

Function	Used for
Static	normal on / off channel
Blink	the channel flashes in the set on / off time sequence
Flash	the channel "flickers" in a random sequence

The smallest unit for blinking is 50ms (0.05s). Although smaller values can be entered and saved, the board checks the received values and corrects them if they are smaller than 50ms. This serves to protect the on-board switching transistors.

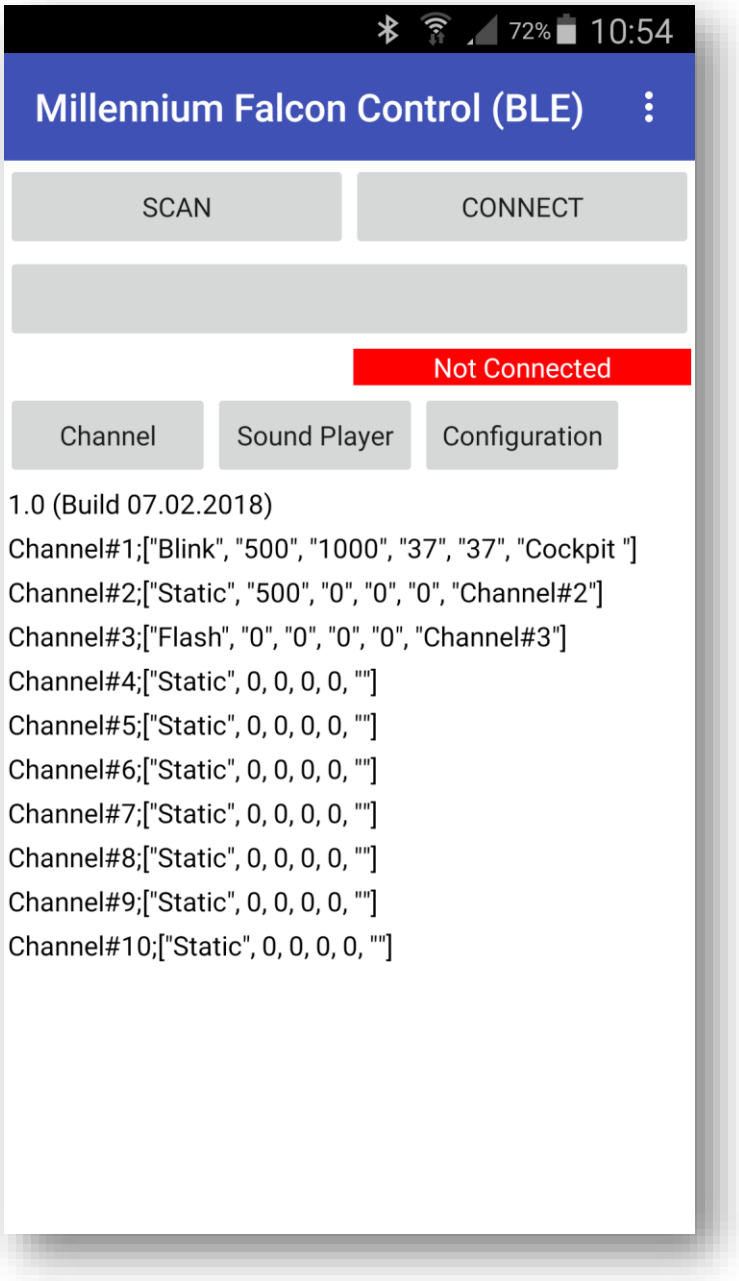
Save the configuration





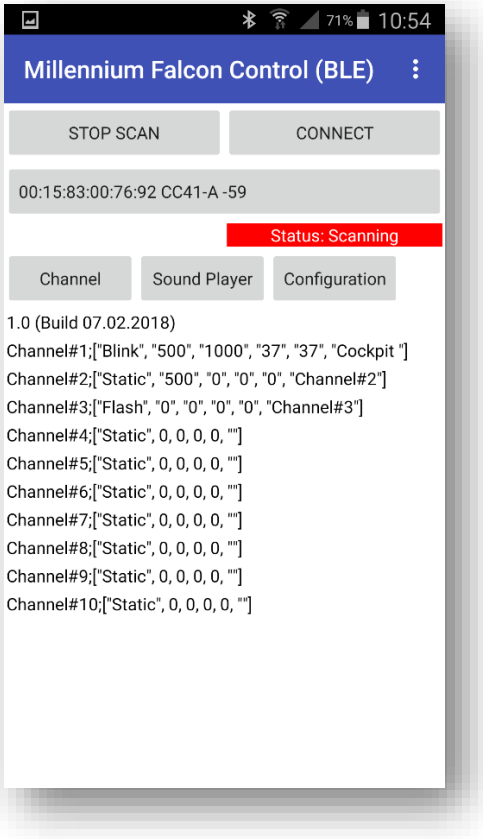
The save button saves the entered values.
The save process is displayed by pop-up overlays.
Once the last display is removed from the screen, the data is safely stored.
The first time saving overwrites the default values.

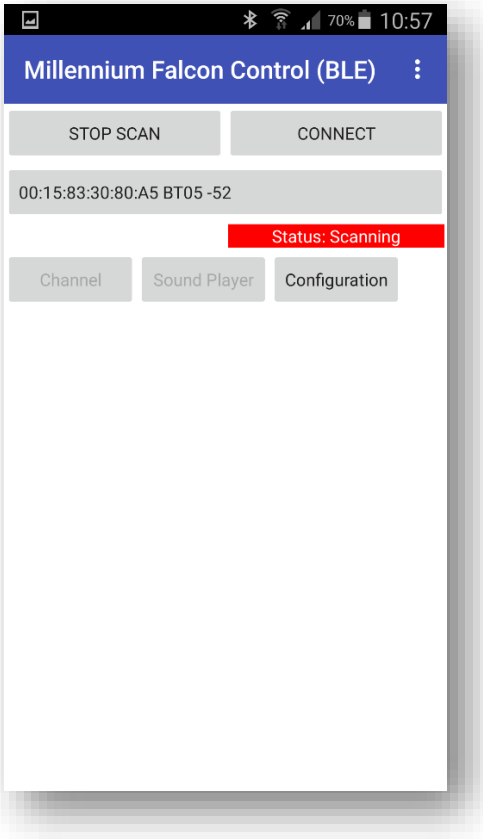
Configuration overview



The saved configuration can be displayed on the main screen with the button Channel.

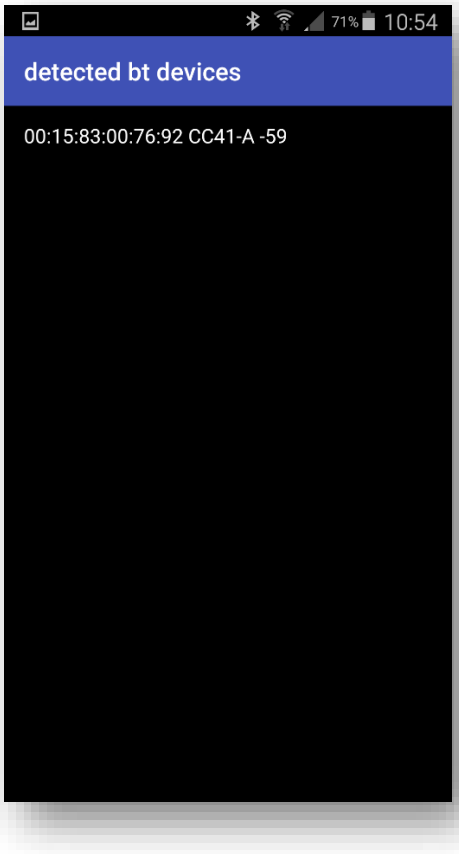
Establish the Bluetooth connection

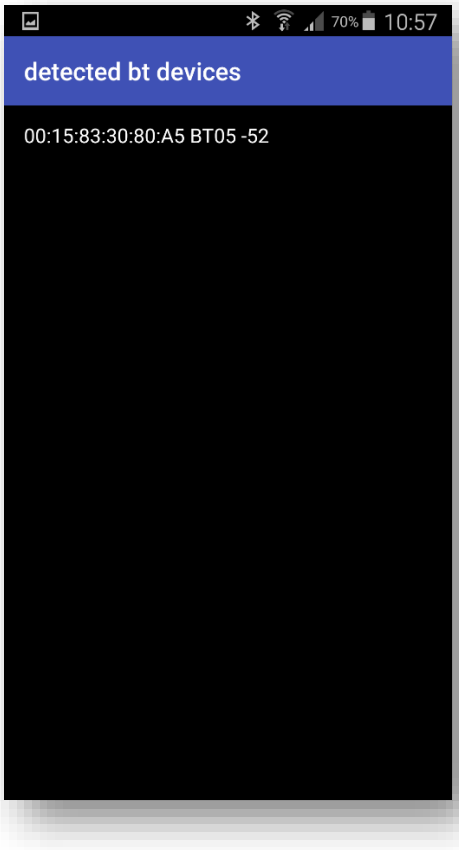




To connect to the Bluetooth module of the Replacement Board, a scan must be performed in the app.
By tapping the Scan button, the search starts for so-called BLE devices (Bluetooth Low Energy). Detected devices are displayed in the list box below.
Tapping the list box will take you to the device selection list, which displays all the Bluetooth modules detected by the scan run.
The Bluetooth modules of the Replacement Board can be identified by the designations CC41-A or BT05.

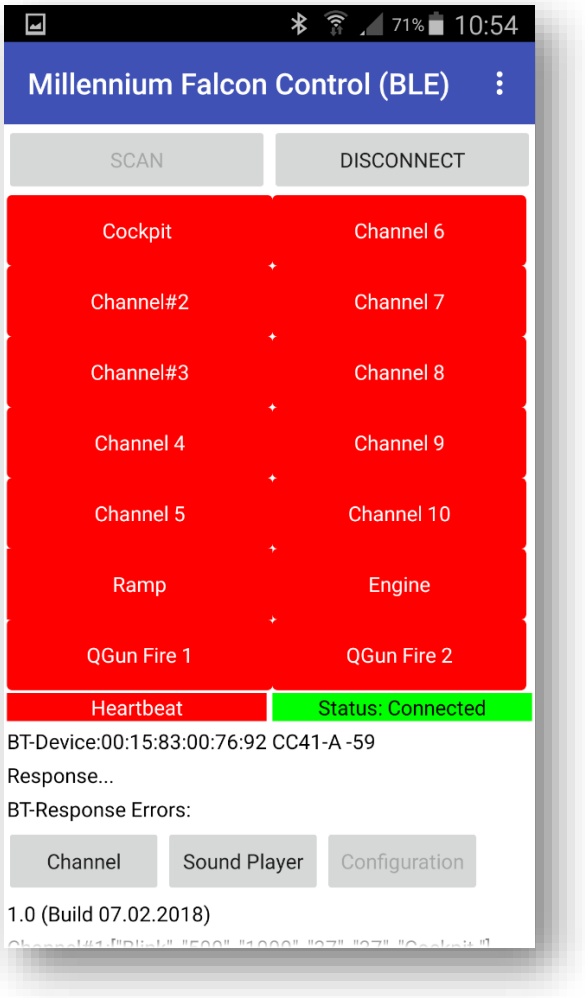
Bluetooth-Device selection list





The selection list displays the Bluetooth devices found by scan, mostly the Replacement Board.
Tapping the device name confirms the selection.
Then the app returns to the main menu and tapping the Connect button activates the Bluetooth connection.

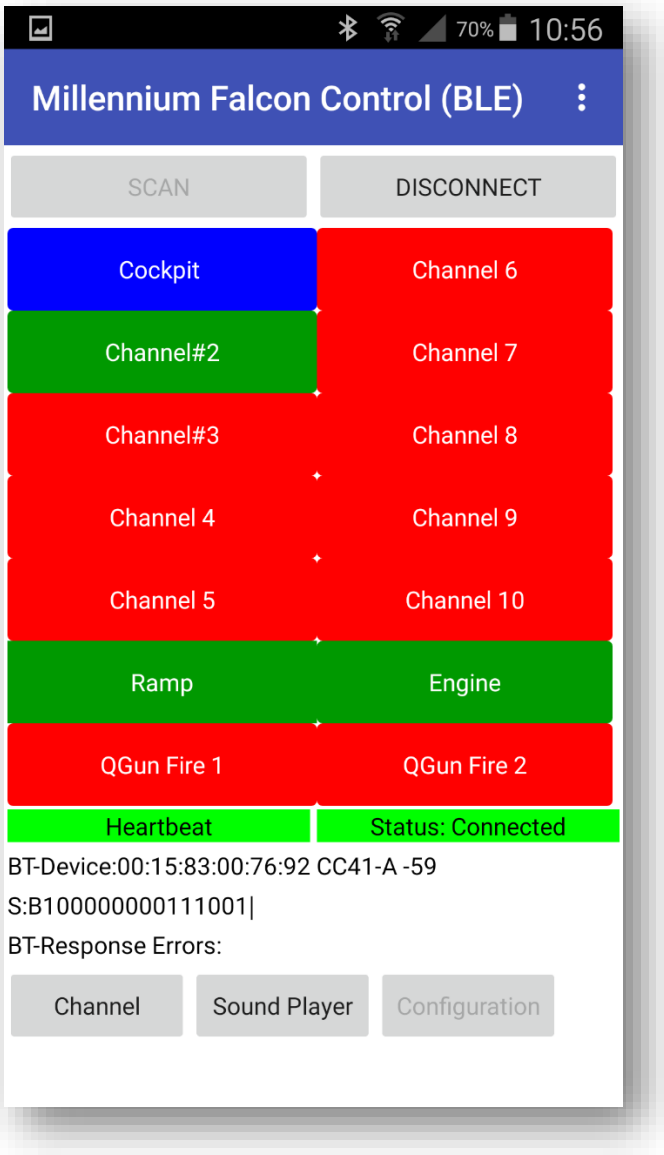
Main screen with active Bluetooth connection



As soon as the Bluetooth connection is established, the main menu will appear

- the channel buttons
- the replacement board "heartbeat"
- the Bluetooth device name
- The replacement board status information
- the incorrect status information

displayed.

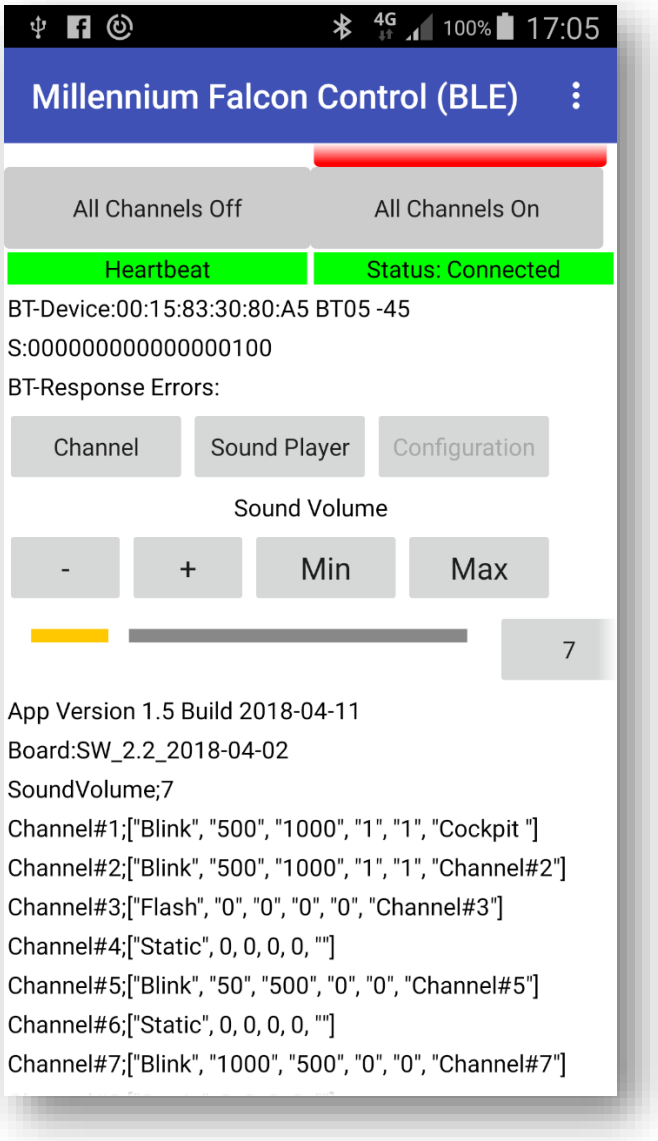


With appropriate button colors the current channel status is displayed accordingly.
The Replacement Board sends the current status of all channels to the app every 5 seconds and every time a channel is switched. This can be seen in the line "S: B100000000011001".
This status contains the status flag of each channel.

State flag	Description	Button color
0	Channel off	red
1	Channel on (type static)	green
B	Channel on (type Blink)	blue / green alternating
F	Channel on (type Flash)	light blue / green alternating

The 16th state flag is the heartbeat that changes between 0 and 1 each time the board is sent. The signals to the app and the user active communication via Bluetooth and proper work of the Arduino Nano on the board.

Sound Volume



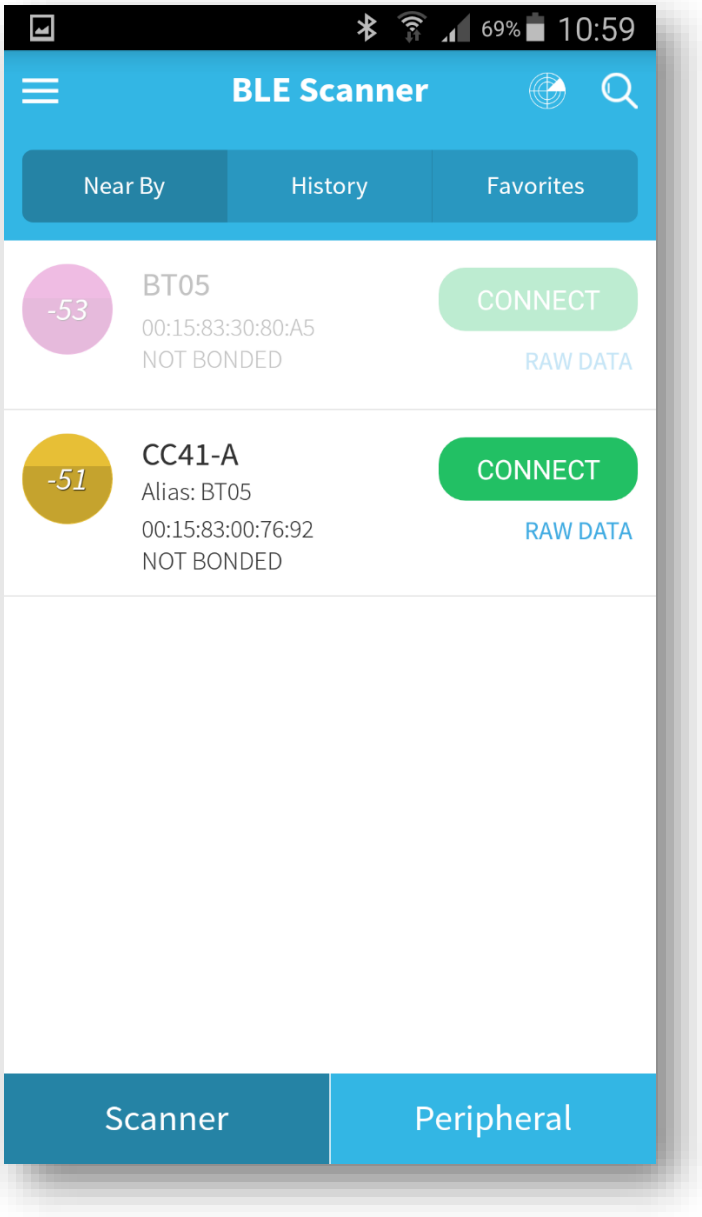
The volume can be adjusted using the buttons in the Sound Volume area.

Button	Description
-	Quieter
+	Volume
Min	minimum volume
Max	maximum volume

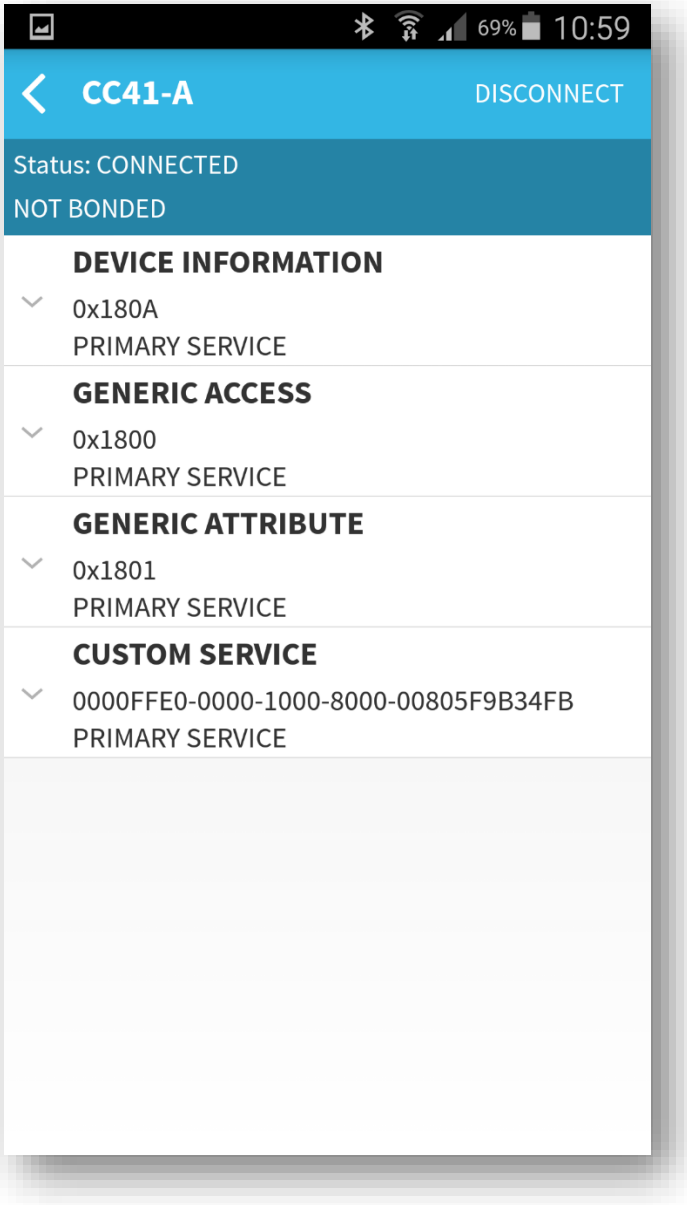
The slider displays the currently set volume level.
The button next to the level by number.
A click on the button saves the level and sets it automatically every time you connect to the board.

BLE-Scanner-App

The Google Play store provides the app "BLE Scanner". Using this app, you can scan the BLE Bluetooth devices and test the ability of the smartphone to communicate with BLE devices.



The picture shows an active BLE module. Tapping Connect will connect.



The BLE scanner app displays the functions provided by the BLE module.
If the BLE module of the Replacement Board is displayed and a connection can be made, then the app for the board will also work with the BLE module.