# Millennium Falcon Control App

Version 1.5 (Build 11.04.2018)

4	<b>⊁</b> <sup>4G</sup> ▲ 84% <b>1</b> 4:47
Millennium Falcon	Control (BLE)
SCAN	DISCONNECT
Cockpit	Channel 6
Channel#2	Channel#7
Channel#3	Channel 8
Channel 4	Channel 9
Channel#5	Channel 10
Ramp	Engine
QGun Fire 1	QGun Fire 2
Engine Color	Engine Effect
All Channels Off	All Channels On
Heartbeat BT-Device:00:15:87:20:B9:64 S:0000000000000000100	Status: Connected BT05 -70

## Content

Overview	. 3
Main screen	. 5
Channel configuration menu	. 7
List box Channel #	. 8
List box Channel Type	. 9
Save the configuration1	10
Configuration overview1	11
Establish the Bluetooth connection 1	12
Bluetooth-Device selection list	13
Main screen with active Bluetooth connection1	14
Sound Volume 1	16
BLE-Scanner-App 1	17

### 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

3



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

5



6

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

Channel#1 Blink 0	:
Channel#1 Blink 0	
Blink 0 00	
0	
00	
,	
,	
ockpit	
Back to Main Screen	
	_
	ack to Main Screen

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 #

	≱ 🗊 🔎 95% 🖬 20:06
deAgoFalcon	
Channel#1	
Channel#2	
Channel#3	
Channel#4	
Channel#5	
Channel#6	
Channel#7	
Channel#8	
Channel#9	
Channel#10	

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.

9

MILLENNIUM FALCON CONTROL APP

hannel Configuration :   nel # Channel#1   nel Type Blink   On Time (ms) 500   Off Time (ms) 1000   bund No. 37   ound No. 37   ound No. 37   ound No. 37   ound No. 37   otage Tage Celeted: Channel#1   Dark to main Sector   Blink Channel Zype Cockpit Channel Name Cockpit Cockpit Dark to main Sector Blink	nannel Configuration       :         nel #       Channel#1         nel Type       Blink         On Time (ms)       500         Off Time (ms)       1000         ound No.       37         ound No.       37         nel Name       Cockpit	Channel Channel # Channel Type Blink On Time ( Blink Off Time I On Sound No. Off Sound No.	Configuration Channel# Blink (ms) 500 (ms) 1000 37
Inel #       Channel#1         nel Type       Blink         On Time (ms)       500         Off Time (ms)       1000         Sound No.       37         Sound No.       Sound No.         Sound No.	Innel #     Channel#1       Innel Type     Blink       Innel Type     Blink       Innel Type     1000       Innel Type     1000       Innel No.     37       Sound No.     37       Innel Name     Cockpit	Channel # Channel Type Blink On Time ( Blink Off Time I On Sound No. Off Sound No.	(ms) 500 (ms) 1000 37
Image: BinkChannel TypeBinkOn Time (ms)500Blink On Time (ms)500Off Time (ms)1000Blink Off Time (ms)1000Dund No.37Off Sound No.37Ound No.37Off Sound No.37CockpitCockpitCockpitCockpitSaveDack to Main SocietinDack to Main SocietinBlinkBlinkBlink Off Time (ms)10001000Dack to Main Societin37Discourd No.37BlinkDack to Main SocietinDiscourd No.BlinkBlinkDack to Main SocietinDiscourd No.Blink	Innel Type     Blink       k On Time (ms)     500       k Off Time (ms)     1000       Sound No.     37       Sound No.     37       Innel Name     Cockpit	Channel Type Blink On Time ( Blink Off Time I On Sound No. Off Sound No.	(ms) 500 (ms) 1000 37
On Time (ms)500Off Time (ms)1000bund No.37bund No.37cound No.37cockpitOff Sound No.Xisting Tag deleted: Channel#1back to main screenback to main screenBlink	Cockpit     Cockpit	Blink On Time ( Blink Off Time i On Sound No. Off Sound No.	(ms) 500 (ms) 1000 37
Off Time (ms)       1000         Jund No.       37         Jound No.       37         Cockpit       Channel Name         Kisting Tag deleted: Channel#1       Jack to Main Screen         Jack to Main Screen       Jack to Main Screen         Blink       Blink	Off Time (ms)       1000         und No.       37         ound No.       37         nel Name       Cockpit         visting Tag, dolotod: Chappel#1	Blink Off Time On Sound No. Off Sound No.	(ms) 1000 37
bund No. 37   bund No. 37   and Name Cockpit   xisting Tag deleted: Channel#1   back to main screen   Blink	ound No. 37 ound No. 37 nel Name Cockpit	On Sound No. Off Sound No.	37
ound No. 37 nel Name Cockpit xisting Tag deleted: Channel#1 Save Back to Main Screen Blink Blink	nel Name Cockpit	Off Sound No.	
nel Name Cockpit xisting Tag deleted: Channel#1 Back to Main Screen Blink Blink	Inel Name Cockpit		37
xisting Tag deleted: Channel#1	visting Tag deleted: Channel#1	Channel Name	Cockpit
Blink		Та	g saved: Channel#
		Blink	

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

Millennium	n Falcon	* Cor	72% ■ 10	):54 :
SCAN			CONNECT	
			Not Connected	
Channel	Sound Pla	ayer	Configuration	
Channel#1;["Blink Channel#2;["Stati Channel#3;["Flash Channel#4;["Stati Channel#5;["Stati Channel#6;["Stati Channel#7;["Stati Channel#8;["Stati Channel#9;["Stati Channel#10;["Stati	", "500", "100 c", "500", "0" n", "0", "0", "0 c", 0, 0, 0, 0, c", 0, 0, 0, 0, 0, tic", 0, 0, 0, 0, 0	00", "3 , "0", " ", "0", ""] ""] ""] ""] ""] ), ""]	37", "37", "Cockpit 0", "Channel#2"] "Channel#3"]	"]

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

## Establish the Bluetooth connection

STOP SCAN       CONNECT         :83:00:76:92 CC41-A -59       00:15:83:30:80:A5 BT05 -52         Status: Scanning         Image: Sound Player       Configuration         Id 07.02.2018)       If*1;["Blink", "500", "0", "0", "0", "0", "Channel#2"]       If*3;["Flash", "0", "0", "0", "0", "0", "Channel#2"]         If#3;["Flash", "0", "0", "0", "0", "0", "Channel#3"]       If#4;["Static", 0, 0, 0, 0, "]       If#6;["Static", 0, 0, 0, 0, "]         If#8;["Static", 0, 0, 0, 0, "]       If#7;["Static", 0, 0, 0, 0, "]       If#8;["Static", 0, 0, 0, 0, "]         If#8;["Static", 0, 0, 0, 0, "]       If#9;["Static", 0, 0, 0, 0, "]       If#9;["Static", 0, 0, 0, 0, "]	≉ 🛜 🔟 71% 🖹 10:54 lennium Falcon Control (BLE) :	ا که ۲۵% Millennium Falcon Control (BL
:83:00:76:92 CC41-A - 59       00:15:83:30:80:A5 BT05 - 52         Status: Scanning       Status: Scanning         annel       Sound Player       Configuration         Id 07.02.2018)       Channel       Sound Player         I#1;["Blink", "500", "1000", "37", "37", "Cockpit "]       Channel       Sound Player         I#2;["Static", "500", "0", "0", "0", "0", "Channel#2"]       I#3;["Flash", "0", "0", "0", "0", "Channel#3"]         I#4;["Static", 0, 0, 0, 0, "]       I#45;["Static", 0, 0, 0, 0, "]         I#7;["Static", 0, 0, 0, 0, "]       I#3;["Static", 0, 0, 0, 0, "]         I#7;["Static", 0, 0, 0, 0, "]       I#3;["Static", 0, 0, 0, 0, "]         I#8;["Static", 0, 0, 0, 0, "]       I#3;["Static", 0, 0, 0, 0, "]         I#9;["Static", 0, 0, 0, 0, "]       I#45;["Static", 0, 0, 0, 0, "]	STOP SCAN CONNECT	STOP SCAN CONNE
Status: Scanning         annel       Sound Player       Configuration         Id 07.02.2018)       Id 07.02.108       Channel       Sound Player       Configuration         ##1;["Blink", "500", "1000", "37", "37", "Cockpit "]       I#2;["Static", "500", "0", "0", "0", "0", "Channel#2"]       I#3;["Flash", "0", "0", "0", "0", "0", "Channel#3"]         ##4;["Static", 0, 0, 0, 0, "]       I#3;["Static", 0, 0, 0, 0, "]       I#45;["Static", 0, 0, 0, 0, "]         ##7;["Static", 0, 0, 0, 0, "]       I#3;["Static", 0, 0, 0, 0, "]       I#3;["Static", 0, 0, 0, 0, "]         ##8;["Static", 0, 0, 0, 0, "]       I#3;["Static", 0, 0, 0, 0, "]       I#3;["Static", 0, 0, 0, 0, "]         ##9;["Static", 0, 0, 0, 0, "]       I#3;["Static", 0, 0, 0, 0, "]       I#3;["Static", 0, 0, 0, 0, "]	5:83:00:76:92 CC41-A -59	00:15:83:30:80:A5 BT05 -52
<pre>l#1;["Blink", "500", "1000", "37", "37", "Cockpit "] l#2;["Static", "500", "0", "0", "0", "Channel#2"] l#3;["Flash", "0", "0", "0", "0", "Channel#3"] l#4;["Static", 0, 0, 0, 0, "] l#4;["Static", 0, 0, 0, 0, "] l#6;["Static", 0, 0, 0, 0, "] l#7;["Static", 0, 0, 0, 0, "] l#8;["Static", 0, 0, 0, 0, "] l#9;["Static", 0, 0, 0, 0, "] l#10;["Static", 0, 0, 0, 0, "]</pre>	Status: Scanning Channel Sound Player Configuration	Status: Sca Channel Sound Player Configura
	nnel#2;["Static", "500", "0", "0", "0", "Channel#2"] nnel#2;["Flash", "0", "0", "0", "0", "Channel#3"] nnel#4;["Static", 0, 0, 0, 0, ""] nnel#5;["Static", 0, 0, 0, 0, ""] nnel#6;["Static", 0, 0, 0, 0, ""] nnel#7;["Static", 0, 0, 0, 0, ""] nnel#8;["Static", 0, 0, 0, 0, ""]	

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.

		* 🗊 🖌 70% 🖬 10:56		):56
Millennium Falcon Control (BLE)				
SCAN			DISCONNECT	
Cockpit			Channel 6	
Channel#2			Channel 7	
Channel#3			Channel 8	
Channel 4			Channel 9	
Channel 5			Channel 10	
Ramp			Engine	
QGun Fire 1		·	QGun Fire 2	
Heartbe	Heartbeat		Status: Connecte	d
BT-Device:00:15:83:00:76:92 CC41-A -59 S:B100000000111001  BT-Response Errors:				
Channel Sound Pla		ayer	Configuration	

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: B10000000011001".

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

This status contains the status flag of each channel.

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.

🕸 🛜 📶 69% 🖬 10:59			
BLE Scanner	Q		
History	Favorites		
8:30:80:A5 NDED	CONNECT RAW DATA		
<b>A</b> 505 8:00:76:92 NDED	CONNECT RAW DATA		
r F	Peripheral		
	Control Contr		

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

4	🕸 🗊 📶 69% 🖬 10:59
<	CC41-A DISCONNECT
Stat NOT	us: CONNECTED BONDED
~	DEVICE INFORMATION 0x180A PRIMARY SERVICE
$\sim$	GENERIC ACCESS 0x1800 PRIMARY SERVICE
$\sim$	GENERIC ATTRIBUTE 0x1801 PRIMARY SERVICE
$\sim$	CUSTOM SERVICE 0000FFE0-0000-1000-8000-00805F9B34FB PRIMARY SERVICE

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.

