Quick Start Guide
BlueCoin Starter Kit - STEVAL-BCNKT01V1

www.st.com/bluecoin
With the expanded capabilities of its starter kit, BlueCoin lets you explore advanced sensor fusion and signal processing functions for robotics and automation applications with a 4 digital MEMS microphone array, a high-performance 9-axis inertial and environmental sensor unit and time-of-flight ranging sensors.

130mAh LiPo Battery (UN38.3 Certified)

ST-Link SWD Programming Cable

STEVAL-BCNST01V1 CoinStation

STEVAL-BCNCR01V1 Cradle

STEVAL-BCNCS01V1 Core System

Plastic Case
First Setup – Run the preloaded Demo

The preloaded demo on BlueCoin Kit is the FP-AUD-SMARTMIC1

**Step 1**
**Plug** the BlueCoin Core System on the CoinStation.
Pay attention to the alignment of the BlueCoin connectors

**Step 2**
**Connect it to the PC via USB**

**Step 3**
Run FP-AUD-SMARTMIC1 GUI, included in FP-AUD-SMARTMIC1 function pack available on www.st.com/bluecoin

Please refer to function pack documentation for more details about the software
Example projects in source code

**STSW-BCNKT01**
Starter Firmware

5 code examples for basic features: Audio_SD, DataLog, AudioLoop, GestureDetect, BLE_SampleApp

**FP-AUD-SMARTMIC1**
Advanced Audio

Function Pack for advanced audio algorithms (Beamforming, SL, AEC)
Works with dedicated PC Software GUI

**FP-AUD-BVLINK1**
**FP-AUD-BVLINK2**
Voice over BLE

Function Pack for Voice over Bluetooth Low Energy
Works with dedicated Android or iOS app

**FP-SNS-ALLMEMS1**
Algorithms and Connectivity

Function Pack for advanced sensing algorithms and BLE connectivity
Works with dedicated Android or iOS app
How to open the example projects

**Step 1**
Download the chosen project from www.st.com/bluecoin

**Step 2**
Unzip the package on your PC

**Step 3**
Open one of the projects examples with your favorite IDE

- IAR Embedded Workbench
- ARM KEIL µVision IDE
- System Workbench for STM32

Figures below refer to STSW-BCNKT01, same procedure can be applied to any of the provided example projects.
Hardware setup for board programming

Step 1
Take an STM32 Nucleo board
And remove CN2 jumpers

Step 2
Plug the BlueCoin on top of the CoinStation

Step 3
Connect the two boards with the provided flat cable

Step 4
Connect to the PC and download the firmware with your IDE
More information
• STEVAL-BCNKT01V1 is the starter kit for the BlueCoin board (STEVAL-BCNCS01V1), a highly Integrated Development Platform with a broad range of functionalities aiming to improve system design cycle and accelerate delivery of results.

• Two host boards are also provided as part of the kit.

BlueCoin Block Diagram

- Vin (4.5-5.5V)
- VDD 3V
- Vsys
- STBC03J Battery charger With 3V LDO
- VBat
- LSM6DSM acc+gyro
- LSM303AGR acc+mag
- LPS22HB barometer
- 4x MP34DT06J* MEMS microphones
- 2.048 MHz PDM
- 16MHz
- 32MHz
- BALF-NRG-01D3 Integrated balun
- BlueNRG-MS Bluetooth 4.1

* In previous release MP34DT04-C1
BlueCoin - The Robotic Ear

Core System: STEVAL-BCNCS01V1

**LSM303AGR**  
3DAcc+3DMag  
200μA @ 20 Hz (HR mode)  
Accel/Mag independent power down mode

**LPS22HB**  
Barometer  
1-75Hz, 3-12μA @ 1Hz

**STM32F446**  
Cortex-M4  
up to 180MHz

**4x MP34DT06J**  
Digital MEMS Microphones  
64dB SNR, 120dBSPL

**LSM6DSM**  
3DAcc+3DGyro  
0.65mA @ 1.6kHz  
9μA @ 12.5Hz

**STBC03**  
Li-Ion linear battery charger with LDO

**Balun Filter**  
Bluetooth low-energy  
Concurrent master/slave BT4.1

**BlueNRG-MS**

8 LEDs

* In previous release MP34DT04-C1
CoinStation: STEVAL-BCNST01V1

- Battery Connector
- BlueCoin Connectors
- Expansion Connector
- Stereo Audio DAC and 3.5mm Jack
- SWD Connector
- USBLC6-2P6: ESD protection for USB
- 2x VL53L0X: Time-of-Flight ranging sensors
- LDK120M: 2.8V LDO
BlueCoin Cradle: STEVAL-BCNCR01V1

TOP VIEW

- BlueCoin Connectors
- ST1S12XX

BOTTOM VIEW

- Battery Connector
- Micro SD Card
- Micro USB
- FOR EVALUATION PURPOSES ONLY
- ROHS COMPLIANT 2002/95/EC
BlueCoin Programming/Debugging

• Connect an external ST-Link to the cradles SWD connectors. A 5pin flat cable is provided within the BlueCoin Starter Kit
  • The easiest way is to get an STM32-Nucleo board which includes an ST-Link V2.1
  • Remove CN2 Jumpers from the Nucleo Board
  • Connect the SWD interfaces using the provided cable
How to assemble the portable demo

Plug the battery on the Cradle

Fold the Battery below the cradle, insert in the plastic case and secure with the bolts

Plug the BlueCoin and secure with the bolts