

# Duino-Coin

## Whitepaper

rev. 6

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## What is Duino-Coin?

Duino-Coin is a transparent, centralized, eco-friendly coin that focuses on mining with low-powered devices - especially with [Arduino](#), [ESP8266/32](#) and [Raspberry Pi](#) (or similar) boards, while also allowing PCs and many other hardware configurations to earn coins. **DUCO** (short for Duino-Coin) tries to achieve a reward system in which low-power devices benefit the most.

## Technical specifications

Algorithms	DUCO-S1, XXHASH (more planned for the future)
Supply	Infinite (before December 2020: 350k coins - new limits
planned for the future)	
Transactions	Instant
Decimals	20
Rewards	supported by original "Kolka system"
Ticker	DUCO (₭)
Supported devices	CPU's, GPU's, smart TV's, smartphones, <a href="#">Arduinos</a> , <a href="#">ESP8266s</a> , <a href="#">ESP32s</a> , <a href="#">Raspberry Pis</a> , <a href="#">Orange Pis</a> , <a href="#">Banana Pis</a> and all of their derivatives, etc.

## Form

We're trying to create the official Duino-Coin softwares to be as accessible as possible. Encountering problems, ambiguity or insufficient documentation is a common sight in quite a lot of projects, especially those that focus on cryptography; what's more - most of them are copies of each other which can lead to confusion.

## Uniqueness

Like all modern coins, Duino-Coin has instant transactions, global availability and is open-source. We place great emphasis on cost effectiveness and being written from scratch, implementing its own ideas where possible and allowing beginners to easily get on mining. It should be noted that in the current form Duino is mostly a for-fun project, but it's expanding greatly in the last few weeks and profits can be made thanks to a few exchanges that already support DUCO.

## Mining

Main Duino-Coin algorithm (DUCO-S1) is based on the **SHA1** hash chain. Each miner is being rewarded for each mined share that is based on the previous one.

The miner asks for the job from one of the nodes and receives an expected hash, hash of the last block and a difficulty. Miner needs to find a valid nonce (that is always in range of the difficulty) that gets appended to the last block hash so that after hashing it again it produces the expected hash.

When a valid hash gets found, the miner submits the nonce result to the node. Server then takes care of the results and rewards by calculating them with the **Kolka** system.

This pseudocode demonstrates the simplest implementation of the process:

```

last_block_hash, expected_hash, difficulty = receive_job
temporary_hash = sha1.init(last_block_hash)
for nonce = 0 to difficulty * 100
    current_hash = temporary_hash.update(nonce)
    if current_hash equals expected_hash
        // Resulting nounce gets found
        send_result

```

## Rewards

The system that takes care of the rewards named *Kolka* - from *Coca Cola* - is designed in such a way to make the low-powered devices earn almost the same or even more as powerful devices. It encourages use of eco-friendly equipment, such as Arduinos, which are the main goal of Duino.

## Features of Kolka

Other than having rules which miners have to follow (see Terms of service), here are some of the main methods that Kolka utilizes:

- Kolka V1 (introduced around March 2020):
  - have separate difficulties for AVR, ESP and PC mining
  - make the rewards dependent on (but not only):
    - hashrate used to find a share
    - time it took to find a share
    - number of shares submitted in a period of time
    - amount of workers mining on an account
    - used difficulty
    - randomness
- Kolka V2 (introduced around June 2020) :
  - everything from the previous point, with addition of:
  - throttling fast miners (those, who exceed max shares per some period of time)
  - checking for hashrate on difficulties (for example, AVR board won't make more than 200 H/s) and rejecting shares who come from suspicious miners

- Kolka V3 (introduced in March 2021):
  - everything from the previous points, with addition of:
  - variable difficulty dependent on sharetime
    - if the sharetime was faster than the expected sharetime, raise the difficulty with the help of this formula:
 
$$\text{multiplier} = 2 - (\text{sharetime} / \text{expected\_sharetime})$$

$$\text{new\_difficulty} = \text{difficulty} * \text{multiplier}$$
  - automatically moving miner to the correct difficulty tier if it's too low or too high
- Kolka V4 (introduced around May 2021):
  - everything from the previous points, with addition of:
  - reporting unique IDs of AVR and ESP chips to the server for verification

This system essentially ensures that the miner is using the correct difficulty for his equipment and is being rewarded fairly. Additional documentation will be soon available in the Wiki section of our GitHub.

## Efficiency drop

In order to prevent people creating huge mining farms disallowing “regular” users to mine, we’ve come up with a system called Kolka efficiency drop, which causes each additional miner to earn a bit less than the previous one. The formula for it is  $\text{last\_miner\_efficiency} * 100 - \text{drop \%}$ , the drop for AVRs and ESPs is 4% and for PCs 20%.

## Centralization

Making Arduino and other low powered devices not only profitable, but just possible would be impossible to maintain if the coin was decentralized. Since the coin is meant to be mostly a fun project for all, it’s better to keep a few good servers running than a whole network that would be really hard to maintain. Storing stuff inside a secure server also ensures the funds won't be lost.

## Decentralization

Users wanting to store their funds in a decentralized way can use wDUCO - Duino-Coins wrapped on the **Tron** network. To do so, take a look at this tutorial:

<https://github.com/revoxhere/duino-coin/wiki/wDUCO-tutorial>

## Sources and useful links

Website: <https://duinocoin.com>

GitHub: <https://github.com/revoxhere/duino-coin>

Explorer & Network stats: <https://explorer.duinocoin.com>

Online (Web) Wallet: <https://wallet.duinocoin.com>

Discord server: <https://discord.gg/kvBkccy>

FAQ: <https://github.com/revoxhere/duino-coin/wiki/FAQ>

## Exchanges

**DUCO** Exchange (official - DUCO - BCH, XMG, TRX, BYND, LKE):

<https://exchange.duinocoin.com/>

**Node-S** Exchange (DUCO - USD through Paypal):

[http://www.node-s.co.za/duco\\_exchange/home](http://www.node-s.co.za/duco_exchange/home)

**JustSwap** (wDUCO - TRX):

<https://justswap.io/#/scan/detail/trx/TWYaXdxA12JywrUdou3PFD1fvx2PWjqK9U>

**Thank you for reading this document.**

We hope we convinced you to take a look at our project.

**Duino-Coin project 2019-2021**