



Safe And Efficient Decentralized Perpetual Exchange Protocol

Overview

Thanks to the industry-wide development, the global cryptocurrency industry is gradually turning legitimized and regulated, which is bound to usher in an unprecedented explosion for the industry.

Trading is definitely the bedrock of the entire cryptocurrency industrial ecosystem, providing support for its development and continuously generating profits for the industry year after year. Currently, there are mainly two types of trading in the market: spot trading and derivatives trading. As per professional statistics, of all the trading, the trading activity and volume of derivatives trading are almost twice that of spot trading. Judging from the traditional financial products and their development trend, it is inevitable that the spot trading market will be greatly outweighed by the derivatives trading market, with cryptocurrency derivatives trading expected to be tens of times what it is today.

On the technical front, trading is divided into centralized trading and decentralized trading. Because of their financial nature, exchanges must be secure and transparent, which is almost beyond the attainment of centralized exchanges. Hence, various types of decentralized exchanges keep popping up. Spot trading is quite sophisticated in today's decentralized exchanges, while derivatives contract trading is booming. It is the decentralized derivatives contract trading that MEKE is eyeing for.

At present, decentralized derivatives exchanges can be roughly categorized into dydx and others. Dydx is a leading exchange wholly offering decentralized contract trading, while other product markets account for a tiny market share. Through meticulous research, MEKE's team has built a secure and efficient decentralized cryptocurrency derivatives trading platform by drawing on dydx. MEKE has placed all contract processes and trading on Binance Smart Chain (BSC), thus making every trading secure, and traceable on chain. For each transaction on MEKE, the exchange ensures the safety of user assets by granting possession of the assets to the user who owns the address, thereby preventing any misappropriation.

Considering the enormous fluctuations of the whole cryptocurrency market, MEKE initially assigned up to $25 \times$ leveraged trading for mainstream cryptocurrencies. As MEKE develops, there will be leveraged contract trading of financial products such as foreign exchanges and gold, with the trading leverage likely to be up to $100 \times$.

The initial version of MEKE was run on the BSC, which is the predominant player in public chains in terms of processing speed and stability at present. Coupled with the efficient algorithm developed by the MEKE team, 25× leveraged contract trading can be easily processed. In addition, Binance's traffic support will be of great help to MEKE's development.

In the development ecology of BSC, Layer2 is making great strides. MEKE will act in line with market development and deploy all contracts on Layer2 when it is finished.

Taking into account various data and the development law of the whole financial market, there is no doubt that cryptocurrency decentralized contract trading is set to embrace tremendous market demand and promising prospects. MEKE's goal is to solve the issues users may encounter in the area, satisfy market demand, and become one of the top applications in decentralized contract trading of cryptocurrencies.



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1 Fundamental implementation principles of MEKE

1.1 Trading models

In terms of trading models, the order book model and the liquidity pool model are the most used in the market at present. Of them, the order book model, as the most typical trading model, borrows ideas from traditional finance and is adopted by all centralized contract exchanges. It is featured with clear and distinct trading data and high efficiency, which is conducive to data analysis. Therefore, MEKE also utilizes the classic order book model.

Using the order book model, MEKE boasts a trading page with almost identical styles of centralized exchanges, making it handy for users to seamlessly switch from centralized contract exchanges to the decentralized contract exchange of MEKE, thereby reducing their learning costs.

1.2 Trading

As with all decentralized applications, when it comes to the first use of MEKE, authorization of USDT on the Binance chain is required, followed by transfer to the available margin balance. At this point, the available margin will be transferred to a designated smart contract and only the user can operate the fund. Users can choose to withdraw the available margin balance and the process is completely decentralized and executed by the smart contract; at the same time, users can use the margin for various contract trading.

After placing an order, the contract will freeze the required margin and then match the order.



Order matching includes

Limit orders: With fixed prices and quantity, limit orders are matched first after being placed and will be executed if meeting the price conditions. If the quantity is not matched, these orders will remain in the order book as open orders, which can be canceled.

Market orders: With fixed quantity, market orders are filled by matching with opposing orders from other traders. If the opposing orders are not enough or the maximum limit is reached, matching will be ceased. If there is a surplus, the remaining orders will not be matched.

Selling: Selling orders are short orders that will make a profit if the contract price goes up and sustain a loss if the price edges down, and verse versa.

Order matching rules: Orders will be filled by matching with the latest opposing orders and trading will be terminated when meeting the order-taking conditions of limit orders or market orders.

All orders support a maximum of $25 \times$ leverages, with future leverages likely to go up to $100 \times$ according to market demand.

Actual frozen amount: order value+on-chain commission fees+margin. Unfinished orders can be canceled and the balance will then be unfrozen in line with the number of remaining orders. For limit orders, only the unfinished ones can be canceled.

1.3 Liquidation

If the margin balance held by a user is lower than the contract margin threshold, i.e.



the maintenance margin due to faulty market predictions, liquidation of the user's assets will be triggered.

After the liquidation, most of the remaining funds will be returned to the user, while a small portion of the fund will be kept as an insurance fund. In a later stage, the market capitalization manager will also be incentivized. If a market capitalization user takes a liquidated order, this small portion of the fund will go to the user.

After the liquidation, if a user still possesses limit orders and the remaining margin is not enough to make orders, the existing orders will be canceled and processed according to the user's current account balance (orders will not be canceled if the current balance minus the frozen balance is greater than zero; otherwise, all orders will be canceled).



1.4 Trading on chain

After all, orders are matched, they will be moved on the chain, with the specific process as follows:



(Figure 1.4-1, Trading on chain)

After moving the trading on the chain, the order book will be returned based on the returned data. In case of failure, selective messages will be sent out in accordance with the feedback.



1.4.1 Contract interaction process

Through the above steps, the user can wrap up the whole process from top-up to trading, with the specific contract interaction process summarized in the following figure:



(Figure 1.4.1-1. Contract interaction flow chart)



2 MEKE index price

For a certain product, there are two prices in traditional contract trading: the spot index price and the real-time trading price of contract exchanges. Generally, the spot index price is used to calculate the expected profit and loss of open orders, trigger liquidation, or stop loss or gain. The real-time trading price is deployed to measure the actual profit and loss arising from contract trading.

If the liquidity is sufficient on contract trading platforms and market volatility is restricted, the above methods can handily satisfy the trading needs. In the event of considerable fluctuations in a one-sided market or insufficient liquidity on contract trading exchanges, it is easy to spot extreme volatilities in K-line prices, thus incurring unnecessary losses to users.

The problem is solved by MEKE through a specific algorithm. First of all, there are three types of prices on MEKE: the real-time trading price of contract products on MEKE, the spot index prices of major trading platforms obtained through oracles, and the index price of the MEKE platform.

MEKE adopts chainlink oracle as its oracle because it is the most stable at present. Chainlink is a decentralized oracle network that enables smart contracts to securely access off-chain data sources, Web APIs and traditional bank payments. It is known for providing highly secure and reliable oracles to large enterprises (Google, Oracle and SWIFT) and leading smart contract development teams (e.g. Polkadot/Substrate, Synthetix, Loopring, Aave, OpenLaw, and Conflux).On mainstream cryptocurrencies, Chainlink's price feed is currently protected by a collection of at least 20 independent, security-vetted and anti-Sybil attack node operators, many of which are operated by top blockchain DevOps and security teams. Each node draws data from high-quality data aggregators such as BraveNewCoin and the price reference contract employs at



least seven different aggregators. This architecture ensures that Chainlink's price oracle consistently delivers highly accurate and timely data using decentralized aggregation of independent nodes and data sources.

Rather than simply taking the price feed of chainlink as the guided price, MEKE also references the real-time prices of contracts on its platform in addition to chainlink's price feed. The guided price is worked out by factoring in chainlink's price feed and the real-time contract trading price on MEKE through a weighted algorithm and then utilized to compute the expected profit or loss of users' open orders, trigger liquidation, or stop loss or gain.

The algorithm allows MEKE to make the prices more stable in case of violent fluctuations in the contract market, or when someone is deliberately manipulating the real-time trading prices. By doing so, the interests of users are protected to the maximum extent.



3 MEKE funding rate

3.1 Introduction to funding rate

A perpetual contract is a derivative product akin to a futures contract but has no expiration date. The perpetual contracts market operates on a zero-sum game basis, where the gains or losses of each participant are perfectly balanced against that of the other participants (the longs pay the shorts or vice versa).

To maintain the balance between long and short positions, perpetual contracts are subject to a dynamic funding rate, which is similar to an interest rate with the goal of incentivizing traders with the lower value to balance the short/long ratio.

The on-chain trading interface is the only way for other smart contracts to interact with decentralized perpetual contracts and one of the key features is the funding rate. In this way, we have to calculate the funding rate of smart contracts.

MEKE continuously measures the differences between the mark price of a perpetual contract and Chainlink's price feed index. The percentage difference between these two prices is taken as the basis for the eight-hour funding rate applied to all immature perpetual contracts.

When the funding rate is positive, traders that are long must pay the ones that are short. Similarly, a negative funding rate means that short positions holders must pay longs. The fund payment is calculated automatically once per second and added to or subtracted from PNL.

3.2 Generating rules



The funding rate is generated based on the highest, lowest, opening and closing prices at the current time point. If no trading occurs at the time point, the closing price (K-line) of the previous time period is seen as the funding rate.

The funding rate is returned from each transaction and perpetuated in the cache every eight hours.

3.3 Specific process

1. The cache is generated according to the first transaction and historical and real-time data are generated in the meanwhile.

2. If there is no historical data in the first pull, the real-time data are returned, and if there is none, an empty array is returned.

3. After the completion of a transaction, the real-time data will be recalculated and redis will be updated. If caught by the redis event listener, the local cache flag state should be changed.

4. Real-time K-lines and funds rates are sent out regularly and selectively according to the local cache flag state

5. K-line data are calculated based on transactions that take place per minute (sigma_minute_trade_record)

The funding rate is recorded once per hour and reids cache is altered for each successful transaction.

The detailed implementation process of the funding rate is shown below:





(Figure 3.3-1, Flow chart of funding rate implementation)

3.4 Calculation formula

3.4.1 Exponential moving average of premiums (EMAPremium)

The market price is obtained using the index price and the fair price by adding the 600-second exponential moving average (EMA) of the fair price - index price to the index.

We can rewrite the recursive formula of the EMA as a general term to calculate the final result of the last on-chain trading.



$$EMA_t(V) = \alpha V + (1 - \alpha) EMA_{t-1} = (1 - \alpha)^n (\alpha - v) + v$$
, where $\alpha = EMA_0$

So we can define EMAPremium as follows:

LastIndexPrice := Read the oracle LastPremium:= FairPrice - LastIndexPrice n:= Now() - LastFundingTime EMAPremium:=(LastEMAPremium-LastPremium)*Pow(1 - GovEMAAlpha, n) + LastPremium

Note that all variables starting with "last" will be stored in the contract, so the person calling the contract after this transaction will consider it to be an old value.

3.4.2 Funding rate calculation

MarkPrice: LastIndexPrice + EMAPremium, Limited by (LastIndexPrice * (1 ± GovMarkPremiumLimit)) PremiumRate: (MarkPrice - LastIndexPrice) / LastIndexPrice FundingRate:Maximum(GovFundingDampener,PremiumRate)+Minimum(-GovFundi ngDampener, PremiumRate)

Note that we think that the funding rate is changing every second.



4 Token economy

MEKE will serve as the token of the cryptocurrency contract trading platform of MEKE, providing various functional roles such as user incentives, funding vault, community activities and DAO governance for the whole platform.

4.1 Total amount

The MEKE token will be deployed on the Binance Smart Chain like the MEKE protocol in the future. A total of 60 billion MEKE tokens will be issued.

4.2 Token distribution

Part of 10% will be distributed to early investment advisors and technical advisors, and most of the 10% will be airdropped to users who participated in the MEKE public beta early.

Investment institutions will be allocated 20% of the tokens. However, their positions must be locked for a year before restrictions are lifted. After being locked for one year, positions are unrestricted on a bi-monthly basis over ten years.

The project owner will possess 10% of the tokens and use them for market maintenance and various promotional activities.

As many as 50% of the tokens will go to market makers and users. Users can obtain MEKE by trade mining and providing liquidity to the exchange. The mining time should be no less than ten years.



The remaining 10% will be set aside as an insurance fund and the community will vote on the disposing thereof in case of major events



(Figure 4.2-1, Distribution of MEKE tokens)

4.3 Trade mining

As for trade mining, MEKE capitalizes on the mining algorithm of dydx.

Trade mining credits:

$$w = d^p * f^{(1-p)}$$

Trade mining income distribution:



$$r = R \times \frac{w}{\sum_{n} w_{n}} , n=1, 2...K$$

Representative term	Description
d	The average position of users in a given period
f	Total fees paid by users in a given period
p	Designated distribution constants (between 0 and 1)
r	User income
R	Total amount distributed to the platform
w	Total user credits in a given period

4.4 Yield farming

4.4.1 General formula

Yield farming is mainly deployed to incentivize market makers to provide liquidity to the order book, whose quality is rated by a credit system, with the influencing factors including the deviation of order prices from the middle prices and retention time of orders in the order book. The calculation formula is

Explanation of terms.

Middle price: the average price of one bid price and one ask price.

Minimum depth (MinDepth): position amount * price.

Maximum price spread (MaxSpread): the range of prices valid for credit calculation



Tip: MaxSpread and MinDepth can be set.

4.4.2 Bid credit

As for the price range credit, the bid credit is:

 $Q_{\rm bid} = \frac{BidDepth1}{spread1} + \frac{BidDepth2}{spread2} + \frac{BidDepth3}{spread3} + \dots$

Where BidDepth > MinDepth and Spread < MaxSpread.

For example, if the liquidity provider places a 1BTC bid order at \$29,900, a 5BTC bid order at \$29,850 and a 10BTC bid order at \$29,500, and the current middle price, the MinDepth and MaxSpread in the market is \$30,000, \$5,000 and \$200, respectively, then

$$Q_{\rm bid} = (1 \times (\frac{\$29900}{\$100/30000})) + (5 \times (\frac{\$29850}{\$150/30000}))$$

Since \$29500 has deviated from the middle price of \$500, it is excluded. Q_{bid} is calculated through random sampling every minute.

4.4.3 Ask credit

$$Q_{ask} = \frac{AskDepth1}{spread1} + \frac{AskDepth2}{spread2} + \frac{AskDepth3}{spread3} + \dots$$

Where AskDepth > MinDepth and Spread < MaxSpread.

For example, if the liquidity provider places a 0.1BTC ask order at \$30,100, a 5BTC ask order at \$30,150 and a 10BTC ask order at \$30,175, and the MinDepth and MaxSpread are \$5,000 and \$200, respectively, then



$$Q_{\rm ask} = (5 \times (\frac{\$30150}{\$150/30000})) + 10 \times (\frac{\$30175}{\$175/30000})$$

Since the MinDepth of the 0.1BTC order at 30,100 is: 0.1 \times 30100 = 3010 < 5000, it is excluded.

4.4.4 Credit calculation

Credits of an epoch

$$Q_{\rm epoch} = \sum_{N=1}^{40320} Min(Q_{bid,Qask})$$

An epoch consists of 28 days, or 40,320 minutes, and the total credits are the sum of the minimum bid and ask credits of every minute.

Tip: The frequency of statistics changes according to demand.

The proportion of online time for each epoch is calculated as:

$$Uptime_{epoch} = rac{\sum_{N=1}^{40320} COUNT(Min(Q_{bid}, Q_{ask})_N > 0)}{40320}$$

If the credit of the Nth minute in the epoch is greater than 0, then COUNT returns 1; otherwise, it returns 0. This is how the proportion of online time for the epoch is worked out.

Final credit is calculated as

$$Q_{\text{final}} = Q_{epoch} * (Uptime_{epoch})^5$$

The final credit is affected by Qepoch and Uptimeepoch.

Implementation plan

At a randomly selected time point in each minute, count in the order book:

Where MinDepth is greater than a designated value,

Calculate the cumulative credits \$Q{final}\$ of the bid and ask orders within a specified range of middle prices. When the cumulative credits reach an epoch, or 28 days, rewards are meted out according to the distribution ratio of platform coins in each trading market.

4.5 Role of MEKE tokens

4.5.1 DAO governance

Pledging the MEKE tokens held may result in an opportunity to govern the MEKE contract trading platform and acquire a dividend of the platform's transaction fees.

To participate in DAO governance, users must pledge their MEKE tokens to the MEKE governance pool system. Then, based on the number of pledged tokens and duration thereof, users will be handed out the Vmeke tokens, allowing them to vote on the platform's development direction and obtain the platform's transaction fees.

The MEKE tokens pledged by users can be redeemed through the Vmeke tokens when due.

In addition to pledging the MEKE tokens to the governance pool to secure governance rights and transaction fees, holding the MEKE tokens can lead to a certain degree of discount in transaction fees. The more the holding, the greater the discount.

The platform of MEKE is also buying back the MEKE tokens from time to time with revenue to reduce outstanding circulation.



Moreover, MEKE is monitoring the development of dydx's public chain closely. If dydx makes noticeable progress, MEKE will contemplate building its own application chain on COSMOS and employing MEKE as the transaction fee for the entire chain. Any transaction, including those from other application ecosystems seeking to use MEKE's application chain, will require a substantial amount of MEKE as the transaction fee.



5 Market operation

The market is an indispensable part of a blockchain project, which cannot be counted as a success until it is recognized by the market. The decentralized perpetual contract trading protocol of MEKE is backed by potent technical support and an exceptional market layout.

5.1 Promotional function

The project team has built a promotional function in the decentralized perpetual contract trading protocol of MEKE, enabling each user to generate links for promotion and make a profit through successful promotion. Both the promoter and the promoted party stand to benefit from it nicely.

For each successful promotion, the promoter is entitled to a 30% rebate on the invitee's commission for each transaction. This means a daily return for successful promoters. Hence the more successful promotions, the greater the return.

Upon successful registration through the invitation link, the promoted person will enjoy a reduced transaction fee of 60% of the original. This means that logging in to the exchange via the promotion link activates a discounted transaction fee of 60% of the original on all subsequent contract transactions.

The current cryptocurrency market is so enormous that the daily trading volume can amount to as much as 100 billion to 200 billion dollars. Therefore, successful promotions will bring huge gains.

To reflect the spirit of decentralization, user promotional relationship is bound through an on-chain binding method. Promoters share a link and users enter the



MEKE contract trading page via the link, which will activate the promotional relationship. Once activated, the on-chain promotional relationship is permanently valid and tamper-proof, leading to a continuous stream of contract transaction fees and dividends as long as the MEKE contract exchange exists.

The promotion consists of a single layer and is fully compliant with the legal framework in each country. Users can stay assured when promoting.

5.2 Public beta test

Prior to its official launch on BSC, MEKE's perpetual contracts will run and initiate a public beta test on the Binance testnet chain. Users who participate in the public beta test can receive airdropped rewards from MEKE.

Once the public beta test begins, the promotional function will be made available to users on the testnet. When MEKE's perpetual contracts are officially launched on BSC, the promotional relationship will be migrated from the testnet chain to the official chain, allowing users to earn income from MEKE built on the official network of Binance through the promotional relationship.

As MEKE's perpetual contracts are going to enter a booming phase amid the public beta test, promotional efficiency is anticipated to be higher.

5.5.1 Public beta test process

The public beta test for MEKE's perpetual contracts is conducted on Binance smart testnet and is accessible to global users in regions where cryptocurrency trading is legal (please refrain from participating if you're in a non-legal region). Users can take part in the public beta test by utilizing popular browsers with wallet plugins or mainstream mobile wallets. When testing perpetual contract trading, users must



switch their wallets to Binance smart testnet.

Binance smart testnet is a copied BSC and a public chain designed for testing BSC applications. Its functions are almost the same as the official BSC. Therefore, the functions users can achieve on the testnet are also attainable on the official BSC.

Since the test is executed to be on the chain, users need to pay a certain amount of Testnet BNB (TBNB) as the transaction fee, which can be acquired on the BSC developer page. MEKE will provide the relevant link address on its official website. Similar to how every transaction on BSC necessitates BNB as a Gas fee, every transaction on the Binance testnet mandates TBNB as a Gas fee.

On top of the Gas fee, users are required to obtain test USDT to participate in USDT perpetual contract trading.

There will be a total of three periods of the public beta test, with each period lasting a minimum of five days and a maximum of 20 days. The exact length of each period will be determined according to the progress of the test. Advance notice will be released two days prior to the end of each period and the following period will take place X days later.

Users getting test USDT to participate in the test will receive airdropped MEKE tokens, the quantity of which will be recorded on the testnet. When MEKE's perpetual contract protocol goes online on the official BSC, the airdropped MEKE tokens will be migrated to the official BSC and users can withdraw them.



6 Planning and outlook

As per professional statistics, the daily trading volume of cryptocurrency contract products has stood around 100 billion to 200 billion dollars since 2021. In the entire cryptocurrency trading market, the trading volume of perpetual contract products is on a steadily rising track and is nearly twice that of spot products.

Around the globe, the SEC in the US, Singapore, Hong Kong and other places are gradually legalizing and regulating the cryptocurrency market, which is set to embrace exponential growth in the foreseeable future, with the trading volume expected to be tens or even hundreds of times what it is today.

There is no doubt that derivatives trading such as perpetual contracts is the most promising in the market. However, the market is still dominated by centralized exchanges. According to professional surveys, centralized perpetual contracts account for about 97% of the perpetual contracts market, while the share is only about 2% for the decentralized perpetual contracts market.

Despite getting a head start and catering to user habits, centralized perpetual contracts are grappling with some prominent shortcomings, such as data fraud, fraudulent trade trends and exchanges' exploiting of users. Meanwhile, users' assets are managed by exchanges in centralized perpetual contracts and thus are subject to the risk of being unable to withdraw the assets. These issues can be easily solved by decentralized perpetual contracts, thanks to their openness, transparency, tamper-proof feature and the fact that assets are only accessible to people with the private key to the address. With the development of decentralized technology, there is a good chance that the market share of decentralized perpetual contracts will overtake that of centralized perpetual contracts,



Developed by a US team, decentralized perpetual contracts, featured with cutting-edge contract algorithms and top-notch operational expertise,

Enable MEKE to snap the decentralized perpetual contracts market and provide global cryptocurrency enthusiasts with secure, efficient, and transparent decentralized cryptocurrency derivatives trading services.

After testing all public chains available in the market, MEKE has decided to run on BSC because it is fast in trading speed and friendly in Gas fee and stability. Additionally, the huge market traffic of BSC will make it easier for the growth and development of MEKE's decentralized perpetual contract protocol.

Undoubtedly, MEKE will continue to move forward and is seeking better technical solutions beyond BSC. It is now exploring the potential of BSC Layer2 and conducting experiments on COSMOS. Besides selecting chains, MEKE is also optimizing its algorithms amid continuous development.

MEKE's initial product launch will focus on decentralized contract trading of mainstream cryptocurrencies, with plans to gradually expand to high-liquidity popular coins, as well as potential offerings of gold, foreign exchange, and other assets. With seven years of experience in the blockchain field, MEKE's technical team is dedicated to supporting cryptocurrency technology, allowing MEKE to collaborate with encryption technology experts worldwide to push the industry forward.

