
AlphBanX on Alephium

Independent security assessment
report



Report version: 1.0 / date: 27.05.2025

Table of contents

Table of contents	2
Summary	4
Overview on issues and observations	4
Project overview	6
Scope	6
Smart contract security assessment	6
Scope limitations	7
Methodology	8
Objectives	8
Activities	9
Security issues	9
Observations	9
Disclaimer	10
Appendix	11
Adversarial scenarios	11
Risk rating definition for smart contracts	12
Glossary	13

inference



Version / Date	Description
1.0 / 27.05.2025	Final version

Summary

Inference AG was engaged to perform an independent security assessment of the AlphBanX's smart contracts.

Inference AG performed the security assessment based on the agreed scope, following our approach and activities as outlined in the "[Project overview](#)" chapter between the 25th of November 2024 and the 26th of May 2025. Feedback from the AlphBanX team was received and Inference performed a follow-up assessment.

Based on our scope and our performed activities, our initial security assessment revealed several security issues rated from critical to low severity. Additionally, different observations were also made, which if resolved with appropriate actions, may improve the quality of AlphBanX.

During our security assessment, the AlphBanX team resolved all our reported security issues and observations.

Overview on issues and observations

At Inference AG we separate the findings that we identify in our security assessments in two categories:

- Security issues represent risks to either users of the platform, owners of the contract, the environment of the blockchain, or one or more of these. For example, the possibility to steal funds from the contract, or to lock them in the contract, or to set the contract in a state that renders it unusable are all potential security issues;
- Observations represent opportunities to create a better performing contract, saving gas fees, integrating more efficiently into the existing environment, and creating a better user experience overall. For example, code optimizations that save execution time (and thus gas fees), better compliance to existing standards, and following secure coding best practices are all examples of observations.



Details for each reported issue or observation can be obtained from the “[Security issues](#)” and “[Observations](#)” sections.

	Severity / Status
Security issues	
There are no known open security issues.	
Observations	
There are no known open observations.	

Project overview

Scope

Smart contract security assessment

The smart contracts covered in this security assessment include the following contracts, along with any extended contracts, implemented interfaces, and additional created contracts or subcontracts. Note: Contracts or subcontracts that were created are listed in parentheses:

- AbdToken / AbxToken
 - token/AbdToken.ral
 - token/AbxToken.ral
- StakeManager (Staker (LockInfo))
 - staking/StakeManager.ral
- Vesting (Schedule, SortedList (ListNode))
 - vesting/Vesting.ral
- AuctionManager (AuctionPool (Bid), AuctionFarming, Bidder)
 - auction/AuctionManager.ral
- LoanManager (SortedLIst(ListNode), InterestPool, Loan)
 - loan/LoanManager.ral
- BorrowerOperations
 - loan/BorrowerOperations.ral
- DIAAlphPriceAdapter
 - oracle/dia/DIAAlphPriceAdapter.ral
- PlatformSettings:
 - settings/PlatformSettings.ral

The files in scope were made available via a source code repo:

<https://github.com/FRAGSTAR/Smart-Contracts---AlphBanX> and our initial security assessment considered commit “c314120b262fc343f73a2da9767e4ee06a5693f5”¹.

¹ The sha256sum hash of the repository’s “.zip” file is:

0de4d294d3e089e8fccecad3853405dc7a412ba3c22870641f9608a81db75fb7



Our follow-up assessment considered commit
“8c44dfe722636a46abfb48430d1c65b7432692ac”².

Scope limitations

Our security assessment is based on the following key assumptions and scope limitations:

- Any potential adversarial activities conducted by the administrator of the contract or operational errors by administrators were out of scope.
- Deployment and initial configuration of the deployed smart contract were out of scope.
- The key management of associated secret keys has not been assessed.
- The entities owning privileged roles have not been reviewed, assessed, or vetted in any form.
- Price oracle configuration, data sources, data integrity, and potential manipulation or reliability issues related to the oracle were out of scope.

² The sha256sum hash of the repository’s “.zip” file is:
e5622593a3e81912b5ae12fcb860d19f74a2aa460627b7def55d2bf489d48e86



Methodology

Inference's methodology for security assessments comprises a source code review in the high-level language, followed by multiple rounds of Q&A with the development team to discuss findings and critical points that emerged during the first assessment. Follow-up assessments are conducted until all identified points, as defined by the team for resolution, have been appropriately addressed.

In order to ensure a high quality in our security assessments, Inference is using subject matter experts having a high adversarial scenario mindset to spot potential issues in protocols under review. Additionally, for smart contract security reviews, we apply checklists derived from good practices and commonly known issues to document our work and ensure good coverage.

Furthermore, Inference maintains regular communications with the development team to ensure a correct understanding of the solution and environment, but also to make teams aware of any observations as soon as possible.

Inference's internal quality assurance procedures ensure that the results of security assessments are challenged for completeness and appropriateness by a second independent expert.

Objectives

The objectives are the identification of security issues with regard to the assessed smart contracts and their conceptual design and specification. The security assessment also focuses on adversarial scenarios on specific use cases which have been listed in appendix "[Adversarial scenarios](#)". These were identified together with the AlphBanX team and checked during our security assessment.

Activities

Our security assessment activities for the defined scope were:

- Source code review of smart contract code written in Ralph

Our activities for the follow-up assessment were:

- Source code review of the changes applied to the smart contract code written in Ralph
- Reassessing security issues and observations from initial assessment in case they are claimed to be resolved
- Reviewing the documentation on GitBook to ensure it aligns with the reviewed code: <https://alphbanx.gitbook.io/>. A copy of the reviewed GitBook is attached to this report.

Security issues

There are no known open security issues.

Observations

There are no known open observations.

Disclaimer

This security assessment report (“Report”) by Inference AG (“Inference”) is solely intended for the “Client” with respect to the Report’s purpose as agreed by the Client. The Report may not be relied upon by any other party than the Client and may only be distributed to a third party or published with the Client’s consent. If the Report is published or distributed by the Client or Inference (with the Client’s approval) then it is for information purposes only and Inference does not accept or assume any responsibility or liability for any other purpose or to any other party.

Security assessments of a software or technology cannot uncover all existing vulnerabilities. Even an assessment in which no weaknesses are found is not a guarantee of a secure system. Generally, code assessments enable the discovery of vulnerabilities that were overlooked during development and show areas where additional security measures are necessary. Within the Client’s defined time frame and engagement, Inference has performed an assessment in order to discover as many vulnerabilities of the technology or software analysed as possible. The focus of the Report’s security assessment was limited to the general items and code parts defined by the Client. The assessment shall reduce risks for the Client but in no way claims any guarantee of security or functionality of the technology or software that Inference agreed to assess. As a result, the Report does not provide any warranty or guarantee regarding the defect-free or vulnerability-free nature of the technology or software analysed.

In addition, the Report only addresses the issues of the system and software at the time the Report was produced. The Client should be aware that blockchain technology and cryptographic assets present a high level of ongoing risk. Given the fact that inherent limitations, errors or failures in any software development process and software product exist, it is possible that even major failures or malfunctions remain undetected by the Report. Inference did not assess the underlying third party infrastructure which adds further risks. Inference relied on the correct performance and execution of the included third party technology itself.

Appendix

Adversarial scenarios

The following adversarial scenarios have been identified and checked during our security assessment.

Scenario	Assessment result
As a normal user, add myself as an owner.	Ok Nothing identified.
As a normal user, execute restricted functionality.	Ok Nothing identified.
Exploit improper accounting to obtain more tokens.	Ok Nothing identified.
Exploit rounding and approximation errors to gain economic advantage.	Ok Nothing identified.
Prevent liquidation of an undercollateralized loan.	Ok Nothing identified.
Prevent the redemption of a loan.	Ok Nothing identified.
Pay a lower loan interest rate, while the loan is handled in an interest pool with higher interest rates.	Ok Nothing identified.
Place bids with a high discount rate to be preferred over bids with a lower discount rate.	Ok Nothing identified.
Place bids to be preferred over other bids of the same discount rate created earlier.	Ok Nothing identified.

inference



Risk rating definition for smart contracts

Severities are quantified with two dimensions, roughly defined as follows, whereas the examples have to be regarded as an indication only:

Probability of occurrence / materialisation of an issue

(bullets for a category are linked with each other with “and/or” condition.)

- Low:
 - A trusted / privileged role is required.
 - Contract may end up in the issue if other conditions, which are also unlikely to happen, are required.
- Medium:
 - A specific role or contract state is required to trigger the issue.
 - Contract may end up in the issue if another condition is fulfilled as well.
- High:
 - Anybody can trigger the issue.
 - Contract’s state will over the short or long term end up in the issue.

Impact:

(bullets for a category are linked with each other with “and/or” condition.)

- Low:
 - Non-compliance with standards
 - Unclear error messages
 - Confusing structures
- Medium:
 - A minor amount of assets can be withdrawn or destroyed.
- High:
 - Not in line with the specification
 - A non-minor amount of assets can be withdrawn or destroyed.
 - Entire or part of the contract becomes unusable.

Severity:

	Low impact	Medium impact	High impact
High probability	High	Critical	Critical
Medium probability	Medium	High	Critical
Low probability	Low	Medium	High



Glossary

Term	Description
Ralph	High level smart contract language. Website: https://docs.alephium.org/ralph/

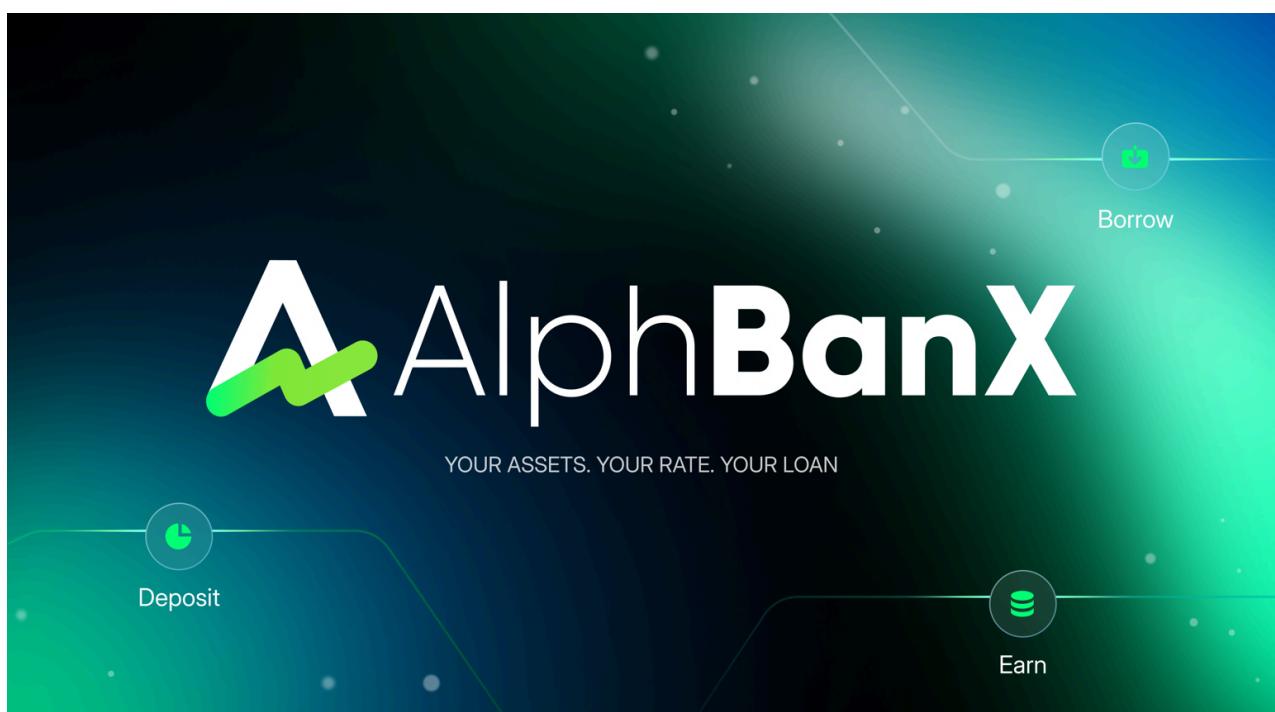
AlphBanX

Official AlphBanX Documentation

A Hybrid Crypto-Backed and Crypto-Collateralized Stablecoin Protocol

What is AlphBanX?

AlphBanX is a decentralized platform that allows you to borrow AlphBanX Dollars by using Alephium native Token (Alph) as collateral. To ensure safety and stability, the system aims to keep the collateral value at least 200% of the amount borrowed.

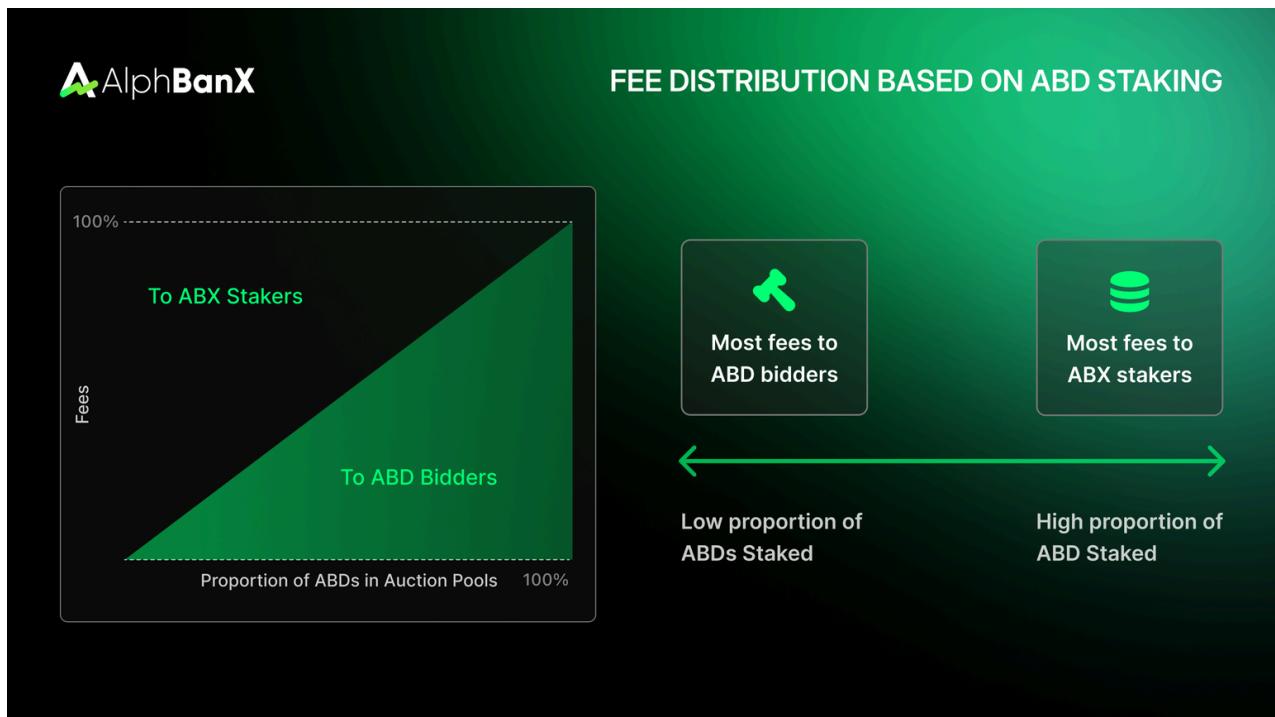


If your collateral value falls below 200%, your Alph tokens are auctioned off in stages to repay the loan. The auctions are divided into four pools, offering discounts of 5%, 10%, 15%, and 20%. Collateral is first offered in the 5% discount pool; if it isn't sold there, it moves to the next pool with a higher discount, continuing until it's purchased.

- **Earning Fees:** Borrowing fees collected by AlphBanX are dynamically distributed between auction pool Liquidity providers and ABX stakers. For

example:

- If 10% of ABDs are staked in auction pools, 90% of fees go to ABD bidders and 10% to ABX stakers, incentivizing ABD demand.
- If 80% of ABDs are staked, 80% of fees go to ABX stakers and 20% to ABD bidders, reducing ABD demand incentives.



This approach prioritizes growth by incentivizing ABD bidding early on and shifting profits to ABX stakers as the system matures.

- **Buying at a Discount:** You have the opportunity to purchase Alph tokens at discounted prices during liquidations. This allows you to take a risk-free short position on overleveraged loans. You can either dollar-cost average (DCA) into Alph or arbitrage the discount by selling the tokens back to ABD, securing an immediate 5-20% profit through a risk-free trade. Meanwhile, if no liquidations occur, you still earn yield on your stablecoin.

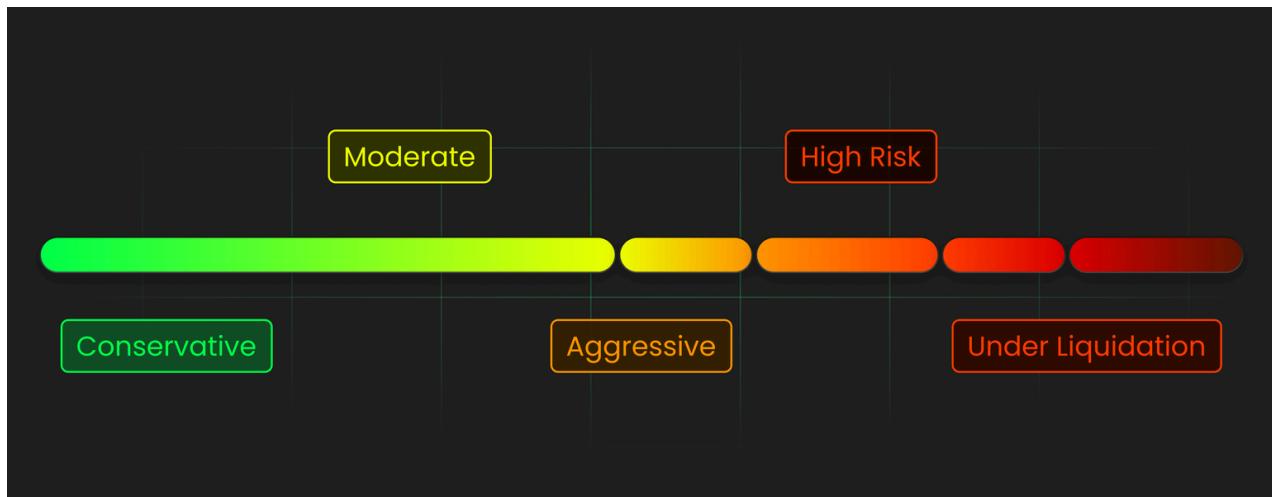
This setup allows ABD providers to profit whether the ALPH token price rises or falls. If the price rises, more borrowing occurs, increasing the fees they earn. If the price falls, more collateral is liquidated, giving them chances to buy Alph tokens below market value.

In essence, AlphBanX lets you borrow against your Alph tokens while maintaining system stability through auction pools, offering advantages for both borrowers and ABD providers regardless of market conditions.

Collateralization ratio

Understanding the Collateralization Ratio in AlphBanX

In the AlphBanX platform, the collateralization ratio (CR) is a critical metric that ensures the stability and security of loans.



Definition and Importance

The **Collateralization Ratio** is the ratio of the value of your deposited ALPH to the amount of ABD you've borrowed. A higher CR indicates that your loan is well-secured, lowering the risk of liquidation. Maintaining a strong CR helps safeguard your position against market volatility and ensures the overall health of the protocol.

Minimum requirement

AlphBanX mandates a **minimum CR of 200%**. This means your collateral must be worth **at least 2x** the amount of ABD you borrow. If your CR drops below 200%, your vault is flagged for liquidation.

Collateral Ratio Formula

Collateral Ratio (CR%) = (Value of Collateral / Outstanding ABD Debt) × 100

Example:

- You deposit **\$3,000** worth of ALPH
- You borrow **1,000 ABD**
- Your CR = $(3,000 / 1,000) \times 100 = 300\%$

What Happens If CR Drops?

- If your CR falls **below 200%**, the vault becomes eligible for **liquidation**
- The loan is then auctioned off using bids from **Auction Pools** (5%, 10%, 15%, and 20% discount tiers)
- Your ALPH is sold at a discount to repay your ABD debt
- Any leftover collateral is returned to you

Tools to Help You

AlphBanX provides users with visual tools and live metrics:

- Live **CR% tracker** in your dashboard
- Options to **add more ALPH** or **repay ABD** at any time

Factors That Influence CR

- **ALPH price volatility** (down = CR drops)
- **Borrowing more ABD** without increasing collateral
- **Partial loan repayment** (improves CR)
- **Additional ALPH deposits** (also improves CR)

AlphBanX classifies vault health into several collateralization ratio (CR) zones to help you manage risk:

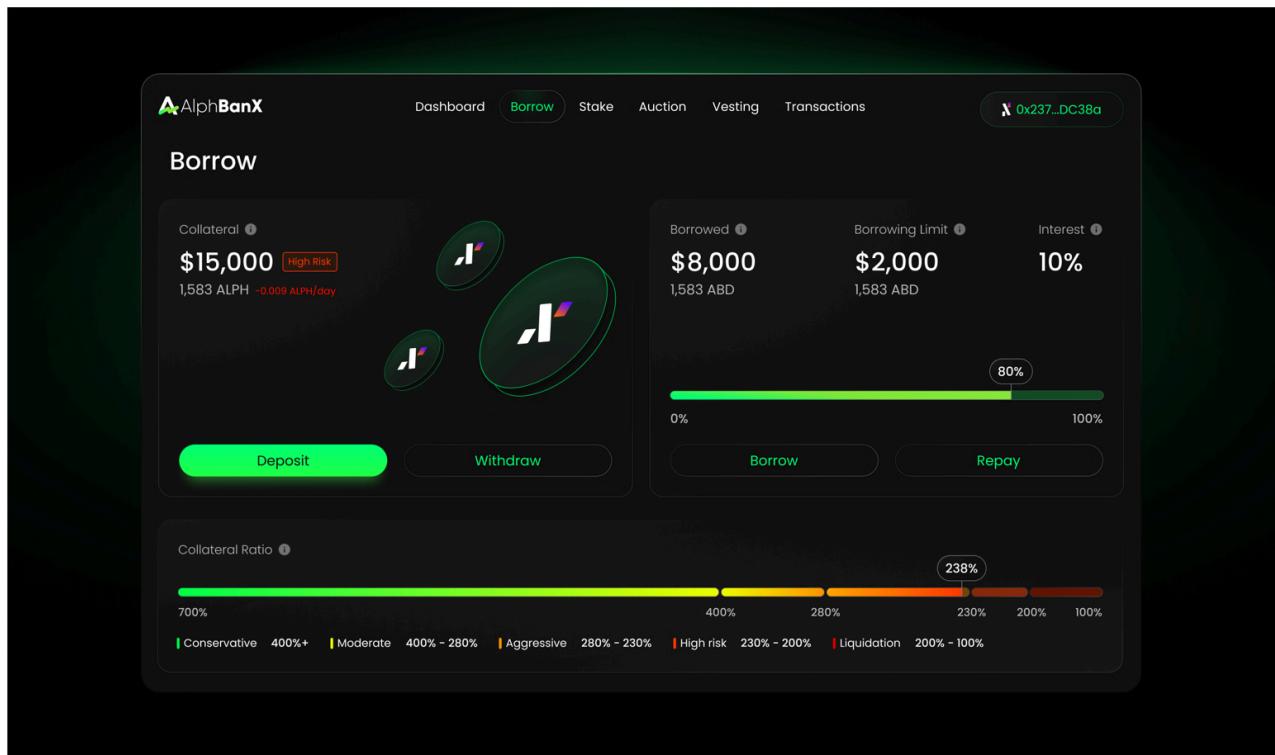
- **Conservative:** A CR above 400% is considered very safe. Vaults in this zone are well-collateralized and unlikely to face liquidation under normal market conditions.
- **Moderate:** A CR between 280% and 400% is also safe, but users should keep an eye on market movements that could push their vaults into a riskier state.
- **Aggressive:** A CR between 230% and 280% means your vault is becoming riskier. While still above the minimum, significant price drops could move you into the danger zone.
- **High Risk:** A CR between 200% and 230% is very close to the liquidation threshold. Vaults in this zone are at elevated risk and should be monitored closely.
- **Liquidation Zone:** If your CR falls between 100% and 200%, your vault is eligible for liquidation and auction. You should act immediately to add collateral or repay debt to avoid loss.

 Tip: Keeping your CR above **400%** is a recommended best practice. It gives you a cushion against market swings and helps protect your vault from liquidation.

Borrowing

How to Borrow on AlphBanX

Borrowing on AlphBanX is a straightforward process designed to provide liquidity while ensuring the stability of the ecosystem. Here's how you can do it:



- 1. Deposit alph as collateral:** This collateral serves as a security measure, ensuring that the value of the loan is backed by sufficient assets.
- 2. Mint ABD Stablecoins and set own interest rate:** Once your collateral is deposited, you can choose your own interest rate and mint ABD stablecoins. The platform requires you to maintain a minimum collateralization ratio of 200%, meaning your collateral must be worth at least 200% of the loan amount.
- 3. Receive ABD Tokens:** After the loan information is recorded, the ABD tokens are sent directly to your wallet. You can then use these stablecoins for various purposes within the ecosystem or externally.

Loan Lifecycle Overview

1. **Create Vault** – Deposit ALPH as collateral
2. **Mint ABD** – Choose interest rate and mint (within limits)
3. **Loan Active** – Monitor collateral ratio and interest
4. **Repay Loan** – Burn ABD partially or fully
5. **Withdraw ALPH** – After repayment, withdraw collateral
6. **Close Vault** – Vault closes when fully repaid and emptied

Each wallet address can only have one active loan (vault) open at a time on AlphBanX. To open another loan, you must fully repay and close your existing vault.

Minting Fee

A **0.5% minting fee** is charged on every loan withdrawal — both initial and any future ABD mints. This fee is deducted from your ALPH collateral and distributed to ABX stakers and auction pool participants.

Example:

1. You deposit **\$10,000** worth of ALPH
2. You mint **1,000 ABD**
3. **0.5% fee = 5 ABD = \$5**
4. **\$5 worth of ALPH** is deducted from your collateral
5. Remaining collateral = **\$9,995 → CR = 9995 / 1000 = 9.995**

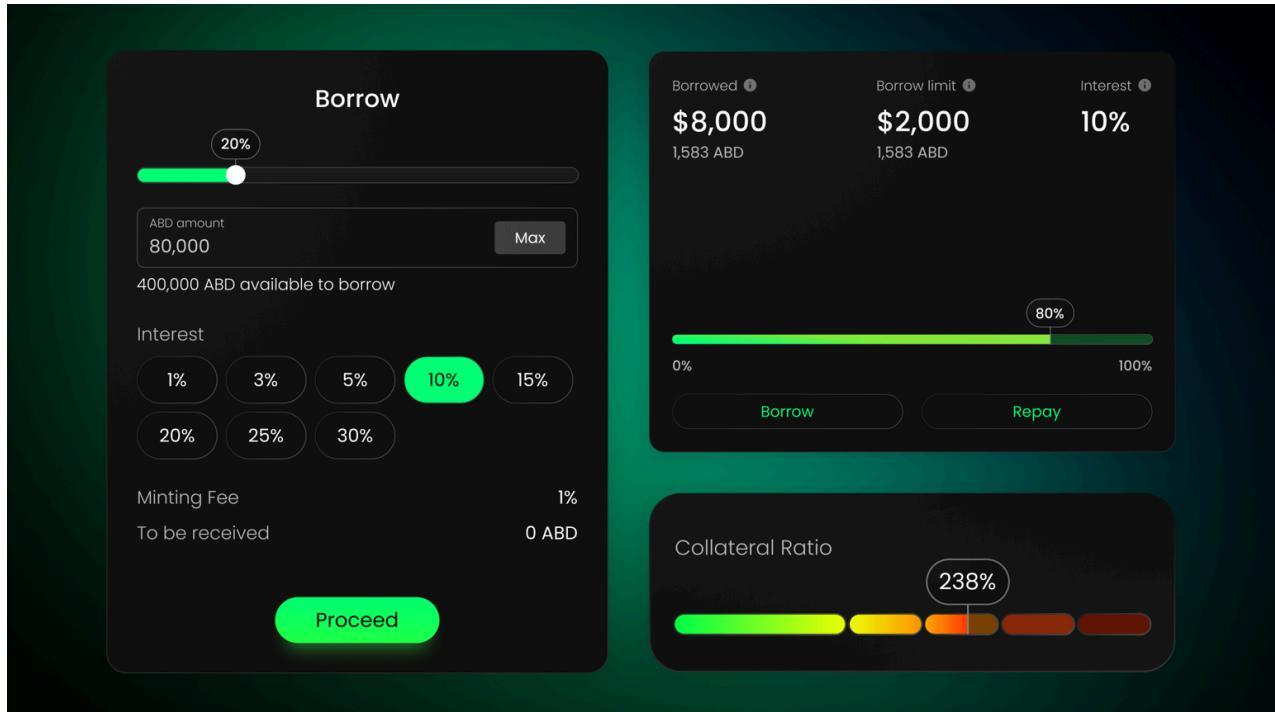
Interest Rate at AlphBanX

Interest Rate: AlphBanX offers users the flexibility to set their own interest rate, with 8 tiers to choose from: **1%, 3%, 5%, 10%, 15%, 20%, 25%,** and **30%**. As AlphBanX operates as a hybrid system combining crypto-backed and collateralized stablecoins, users can always redeem 1 ABD for \$1 worth of Alph. During redemptions, loans with the lowest Interest Rate are prioritized for repayment. Higher interest rate loans are more beneficial to both ABX and ABD holders, as they

generate more interest revenue. Therefore, lower interest rate loans, being less profitable, are redeemed first.

Note: During redemptions, borrowers with the lowest interest rate loans are repaid first. This means those loans are prioritized for settlement using ABD redemptions, and their collateral is used to cover the redeemed amount.

How can you manage your Loan?



- **Loan Management:** You can manage your loans through the platform's user-friendly interface. This includes monitoring your collateralization ratio and adjusting your collateral or loan amount as needed.
- **Increment Loans:** If you need to increase your loan, you can do so by depositing more Alph tokens as collateral or minting additional ABD stablecoins. This flexibility allows you to adapt your loan to changing needs and circumstances.
- **Maintain Collateral Ratio:** It's crucial to maintain healthy collateralization ratios to avoid liquidation. You can increase your collateral at any time to ensure that your loan remains secure.
- **Repayment:** You can repay your loans partially or in full at any time. This flexibility allows you to manage your debt efficiently, reducing your exposure to

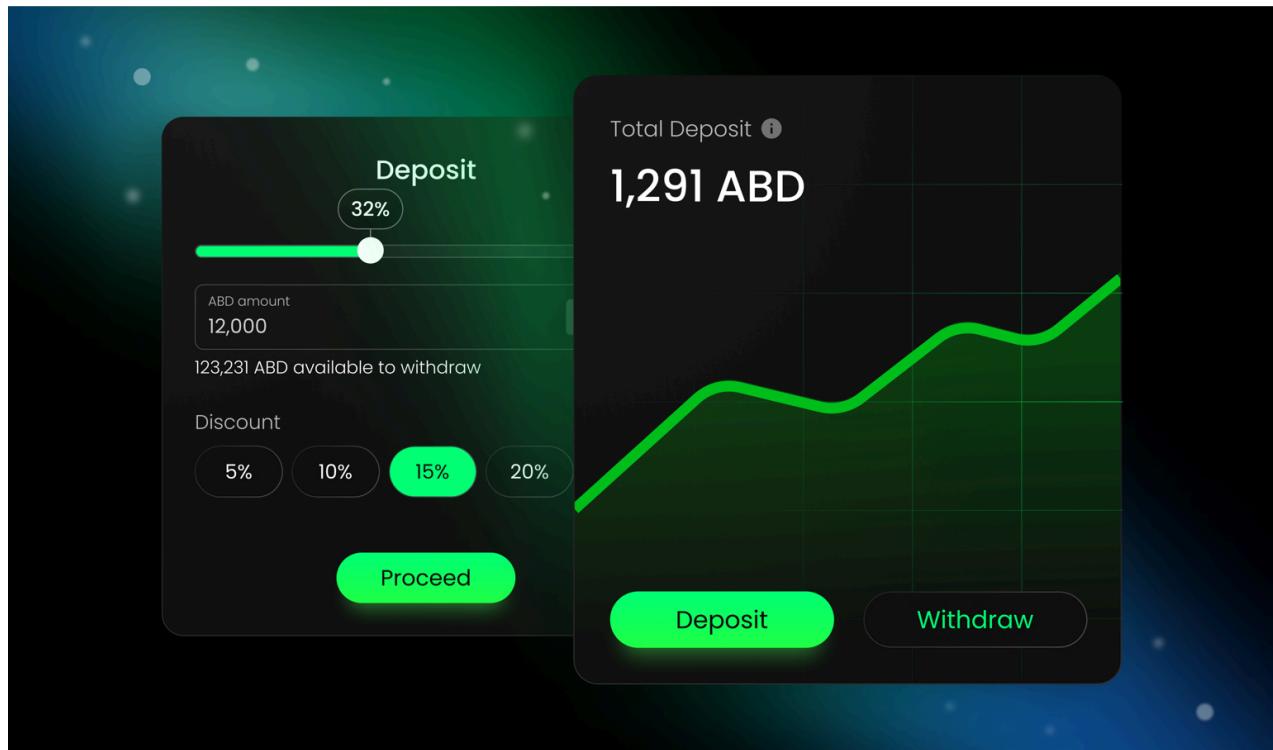
fees and potential liquidation risks.

By following these steps, you can effectively utilize AlphBanX to access stablecoin liquidity, leveraging your ALPH tokens while maintaining the security and stability of your assets.

Auction Pools and Liquidations

What are Auction Pools?

Auction pools in AlphBanX are an important part of the platform, allowing users to deposit ABD tokens and participate in auctions while earning yield from borrowers. Here's a breakdown of how they work:



- Deposit ABD Tokens:** Users can deposit ABD tokens into designated earn pools to participate in the auction process.
- Earning Borrowing Fees:** Users earn borrowing fees from the loans associated with these pools, providing a continuous source of passive income.
- Discount Tiers:** Earn pools are categorized into four tiers based on discount rates: **5%**, **10%**, **15%**, and **20%**, which apply to auctioned loans. Only the lowest discount pool with sufficient ABD balance is used to repay each liquidated loan.
- Repayment of Auctioned Loans:** The ABD tokens deposited in these pools are used to repay loans that are auctioned, supporting under-collateralized loan liquidations.
- Providing Liquidity and Demand:** These pools ensure sufficient liquidity is available for the auction process, maintaining the platform's operational

- efficiency and sustainability.
6. **Reward Distribution:** Rewards are distributed to users based on their participation and contributions to the pools, incentivizing long-term engagement.
 7. **Support for Platform Stability:** Earn pools play a crucial role in supporting the stability and liquidity of AlphBanX, ensuring a well-functioning auction and lending system.
 8. **Performance Monitoring:** Users can easily track the performance of their chosen earn pools via the platform's interface, enabling them to make informed decisions.

How Do Liquidations work?

In AlphBanX, auction pools function as risk-free short positions on under-collateralized loans. The auction and liquidation process is fully automated; users provide liquidity passively through ABD pools without manual bidding.

1. Risk-Free Short Positions:

Auction pools offer a unique advantage compared to traditional short positions. If the value of Alephium increases, users can increase their debt, which increases the yield for liquidity providers in the auction pool. Unlike normal short positions, where an increase in asset value results in a loss, this mechanism enhances returns for pool participants.

2. Multi-Tier Profit Arbitrage:

If Alephium's price drops and users get liquidated, auction participants can benefit from arbitrage across four discount pools (5%, 10%, 15%, and 20%). This allows users to capture profits at each discount tier, ensuring benefits regardless of whether prices rise or fall.

- **Bidding:** Bids are placed in one of four discount pools (5%, 10%, 15%, 20%), and are executed based on the creation time and pool prioritization. Pools with lower discounts have higher priority. If a lower discount pool lacks enough ABD, the protocol will attempt the next available tier.
- **Trigger:** Loans enter the auction process if their collateral ratio (CR) falls below 200%.

- **Collateral Sale:** Collateral is sold at a discount based on the active pool to repay the loan.
- **Rewards:** Users earn rewards from successful bids through discounted purchases of collateral.

The auction process ensures timely liquidation of under-collateralized loans, maintaining healthy collateral ratios across the platform. AlphBanX provides seamless participation for users in the auction process, optimizing liquidity flow.

In essence, AlphBanX auctions create a win-win scenario for liquidity providers, offering increased yields when prices rise and potential arbitrage profits (up to 20%) when prices fall, across four discount pools.

How fee distribution works in AlphBanx auction pools?

- If **10% of ABDs are staked in auction pools, 90% of fees** go to ABD bidders and **10% to ABX stakers**, incentivizing more ABD to be locked in pools.
- If **80% of ABDs are staked in auction pools, 20% of fees** go to ABD bidders and **80% to ABX stakers**, reducing incentives as more ABD is already locked up.

Bidder Reward Calculation

The amount of ALPH you receive for participating in an auction pool is based on the discount tier you selected.

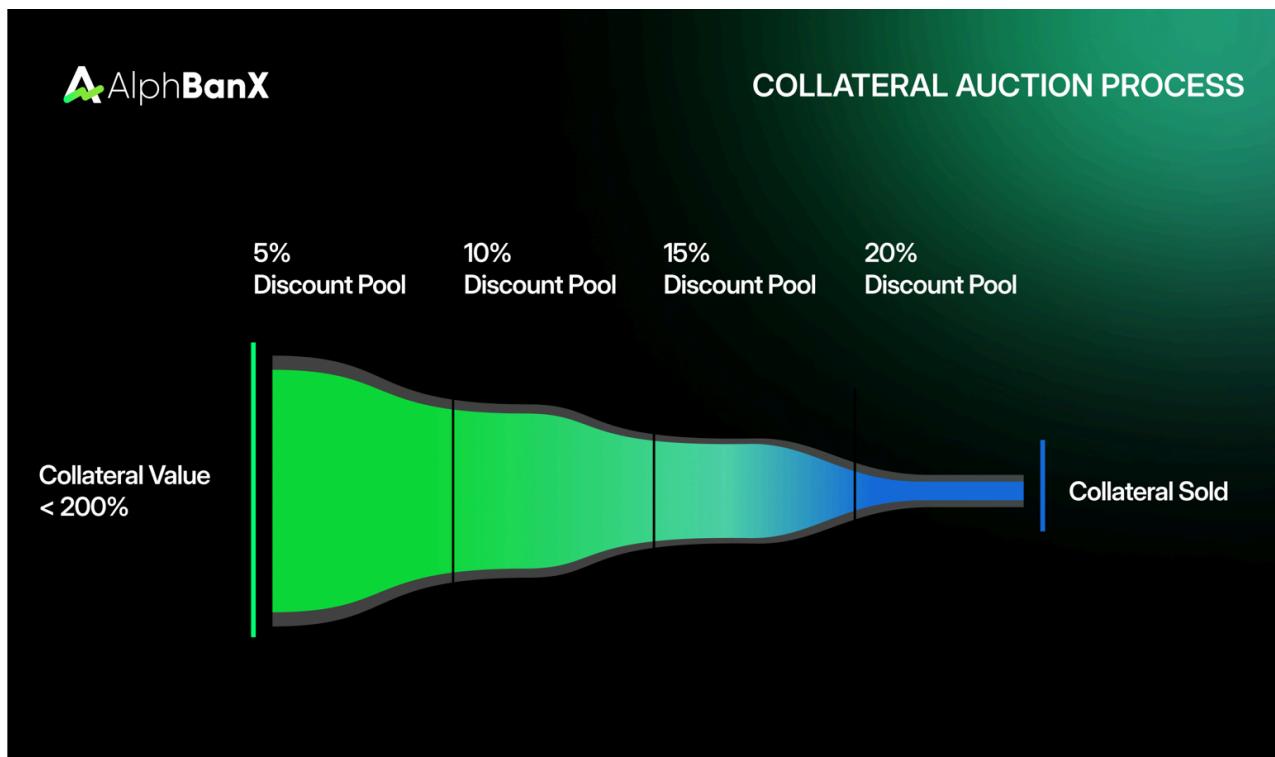
For example, in a 20% discount pool, depositing 1000 ABD will result in ALPH equivalent to 1200USD returned upon successful liquidation ($1000 \times 1.2 = \$1200$ in ALPH).

Note:

*The current protocol calculates USD returned in ALPH as: **USD returned in ALPH = ABD deposited × (1 + discount)***

This means, for a 20% pool, you receive 20% more USD in ALPH than ABD provided.

Who Can Liquidate Undercollateralized Loans?



Anyone can initiate the liquidation of a Loan, when its collateral ratio drops below the minimum of 200%.

Why Should You Deposit ABD Into Earn Pools?

Depositing ABD into Earn pools offers several benefits:

1. **Earn Rewards:** By participating in Earn pools, you earn a share of the borrowing fees, providing a steady income. Note that ABX rewards are vested linearly over 12 months.

2. Arbitrage Opportunities: Earn pools are categorized by discount values, offering potential profits from arbitraging liquidated collateral up to 20% discount.

Redemptions

The Redemption Mechanism in AlphBanX

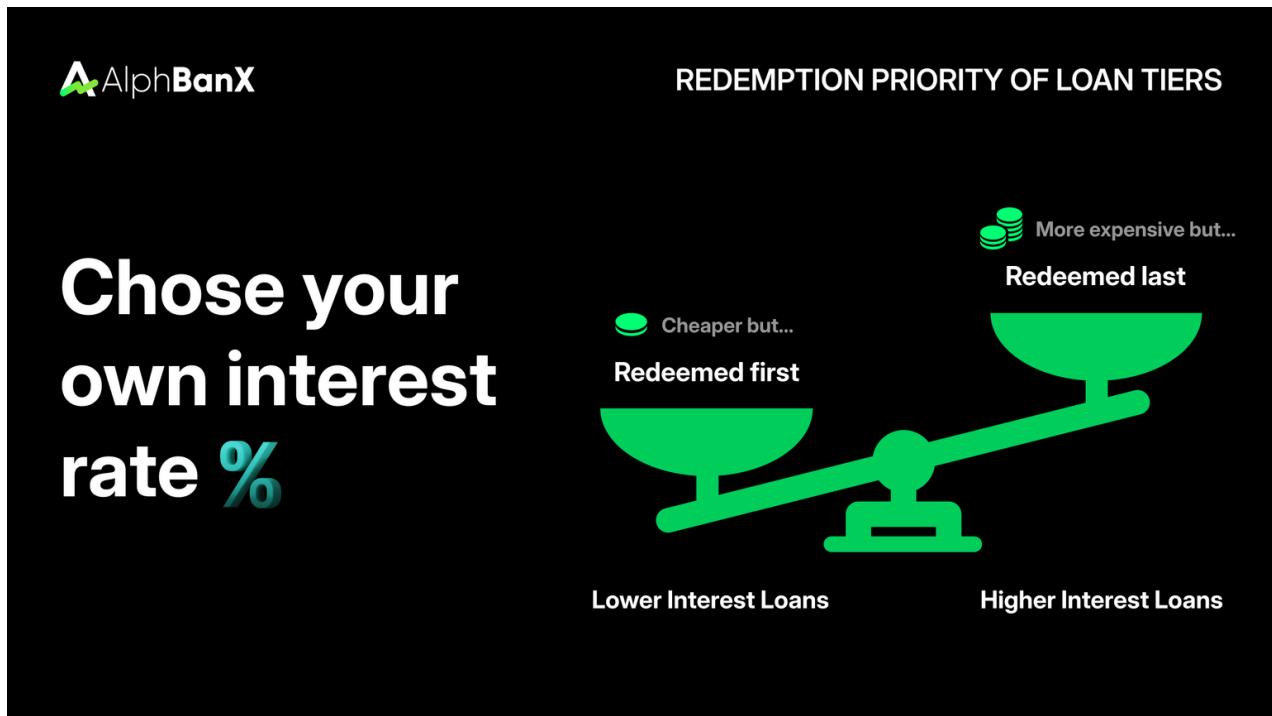
In AlphBanX, the redemption mechanism allows users to redeem ABD stablecoins for ALPH to maintain ABD's 1:1 peg to USD.



- Guaranteed Redemption Rate:** Users can always redeem 1 ABD for \$1 worth of ALPH, as long as the protocol-wide collateral ratio is above 100%. This mechanism ensures ABD remains fully backed and stable. In the unlikely event that the overall CR drops below 100%, redemption becomes partial and proportional — meaning the user receives less ALPH, in line with the protocol's remaining collateral. This helps prevent mass liquidations or panic redemptions.
- Loan Repayment Sorting:** When redemptions are triggered, loans are sorted and repaid starting from those with the lowest interest rates. This prioritization ensures that less profitable loans for the protocol are redeemed first, maintaining economic efficiency.
- Loan Source Clarification:** The ABD used in redemptions is burned, and the protocol repays the corresponding loan using the borrower's ALPH collateral. This repayment reduces the borrower's outstanding debt and removes that loan from the system.

- No Net Loss for Redeemed Users: Users whose loans are force-redeemed will not suffer a net loss. The amount of ALPH taken from their collateral matches the ABD value used for repayment. The user simply ends up with fewer outstanding liabilities, balancing their financial position without penalty.

The borrower does not incur a net loss during redemption — the ALPH removed from their vault is equal in value to the ABD burned, ensuring their financial position remains balanced.



By integrating this redemption mechanism, AlphBanX ensures the stability and reliability of ABD, protecting it against depegging risks and reinforcing user confidence in volatile markets.

Fees on AlphBanX

AlphBanX charges various fees to support its stability and long-term sustainability. Collected fees are dynamically distributed between ABD liquidity providers (auction pool depositors) and ABX stakers.

The distribution ratio is determined by the TVL in Earn auction pools:

- A higher percentage of ABD locked in Auction pools increases fee rewards for ABX stakers.
- A lower ABD participation rate in Auction pools channels more fees to ABD bidders.

This creates a feedback mechanism that helps dampen demand bubbles and maintain economic balance.

Below is a comprehensive list of fees charged by the protocol:

- **Minting Fee:** 0.5% of the loan value.
 - Paid by the borrower when minting ABD (initial or incremental).
 - Deducted from the borrower's ALPH collateral.
 - Distributed to ABD auction pool depositors and ABX stakers.
- **Borrowing Fee:** 1% - 30% of the loan value per year, based on selected interest rate.
 - Based on the user's selected interest rate when creating the loan.
 - Accrues continuously and is payable upon repayment.
 - Distributed to ABD depositors and ABX stakers.
 - Borrowing fees accrue every 6 hours and are calculated each time the borrower interacts with their loan, such as withdrawing more ABD, repaying, or during liquidation and redemption events.
- **Successful Bid Fee:** 0.5% (5% pool), 1% (10% pool), 1.5% (15% pool), 2% (20% pool).
 - Applied when ABD deposits are matched with liquidated loans.
 - Charged on the value of the collateral received.

- Distributed to the protocol treasury and stakers.
- **Closing Bid Fee:** 0.5%.
 - Charged when a user manually withdraws their ABD from an auction pool.
 - Encourages long-term participation in the Earn mechanism.
- **Redemption Fee:** 1.5% of the ABD amount redeemed.
 - 1.5% is sent to the loan borrower (whose position is force-closed).
- **Liquidation Fee:** 0.5% of the loan value.
 - Taken from the borrower's collateral during liquidation.
 - Distributed to ABD depositors and ABX stakers.

Roles in AlphBanx

Borrower

- Deposits ALPH as collateral to mint ABD
- Chooses interest rate tier when borrowing
- Must maintain CR $\geq 200\%$ or face liquidation
- Can repay loan at any time to reclaim collateral
- May have their vault repaid (redeemed) by other users if ABD is redeemed for ALPH

In a redemption event, borrowers with the lowest interest rate loans are prioritized. If your vault is selected for redemption, a portion of your collateral is used to repay ABD burned by the redeemer, but your total value remains unchanged.

Earn Pool Participant (Stability Provider)

- Deposits ABD into auction pools (5%, 10%, 15%, 20%)
- Earns borrowing fees and discounted collateral from liquidations
- Passively contributes to system stability

Liquidator (Triggering Role)

- Anyone can initiate liquidation when CR $< 200\%$
- Triggers auctions to protect the protocol
- Does not need to hold any tokens

ABX Staker

- Stakes ABX tokens to earn protocol fees
- Shares fees from minting, borrowing, redemptions, and liquidations

- Aligned with long-term protocol health