

Spot - Detailed Documentation

The Maker Protocol's liaison between the Oracles and Core Contracts * Contract Name: * spot.sol * Type/Category: * DSS
—> Core Module * [Associated MCD System Diagram](#) * [Contract Source](#) * [Etherscan](#) *

1. Introduction

TheSpot liaison between the oracles and the core contracts. It functions as an interface contract and only stores the current ilk list.

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1. Contract Details

Math

- All mathematical operations will revert on overflow or underflow
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Complexity

- All methods execute in constant time
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Variables

- ilk
- a given collateral type
- ilk.pip
- the contract which holds the current price of a given ilk
- ilk.mat
- the liquidation ratio for a given ilk
- vat
- the core of the mcd system
- par
- value of DAI in the reference asset (e.g. 1 per DAI)
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Collateral

- Only authorized users can update any variables in contract
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1. Key Mechanisms & Concepts

Poke

poke is the only non-authenticated function in spot. The function takes in a bytes32 of the ilk to be "poked". poke calls two external functions:

1. peek
2. calls the [OSM](#)
3. for the given ilk
4. and takes back in the val
5. and has
6. (a boolean which is false if there was an error in the osm)
7.). The second external call only happens if has == true
8. .
9. When calculating the spot
10. , the par
11. is crucial to this calculation as it defines the relationship between DAI and 1 unit of value in the price. The val
12. is then divided by the par
13. (to get a ratio of val
14. to DAI
15.) and then the resulting value is divided by the ilk.mat
16. . This gives us the current spot
17. price for the given ilk
18. .

19. file
20. is then called after calculating thespot
21. . This updates thevat
22. with the current liquidation price of theilk
23. which the function was called for.
- 24.

4. Gotchas

The methods in thespotter are relatively basic compared to most other portions of dss . There is not much room for user error in the single unauthed methodpoke . If an incorrectbytes32 is supplied the call will fail.

Any module that is authed against thespot has full root access, and can, therefore, add and remove whichilks can be "poked". While not completely breaking the system, this could cause considerable risk.

5. Failure Modes

Coding Error

A bug inspot would most likely result in the prices for collaterals not being updated anymore. In this case, the system would need to authorize a newspot which would then be able to update the prices. Overall this is not a catastrophic failure as this would only pause all price fluctuation for some period.

Feeds

Thespot relies upon a set of trusted oracles to provide price data. Should these price feeds fail, it would become possible for unbacked Dai to be minted, or safe Vaults could be unfairly liquidated.

Spot Price Becoming Stale

Whenpoke is not called frequently enough, theVat 'sspot price will become stale. This could arise for a few reasons including tragedy of the commons or miner collusion and could lead to negative outcomes such as inappropriate liquidations, or the prevention of liquidations that should be possible.

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