

MakerTraits

MakerTraitsLib

A library to manage and check MakerTraits, which are used to encode the maker's preferences for an order in a single uint256. @dev The MakerTraits type is a uint256 and different parts of the number are used to encode different traits. High bits are used for flags 255 bit `NO_PARTIAL_FILLS_FLAG` - if set, the order does not allow partial fills 254 bit `ALLOW_MULTIPLE_FILLS_FLAG` - if set, the order permits multiple fills 253 bit - unused 252 bit `PRE_INTERACTION_CALL_FLAG` - if set, the order requires pre-interaction call 251 bit `POST_INTERACTION_CALL_FLAG` - if set, the order requires post-interaction call 250 bit `NEED_CHECK_EPOCH_MANAGER_FLAG` - if set, the order requires to check the epoch manager 249 bit `HAS_EXTENSION_FLAG` - if set, the order has extension(s) 248 bit `USE_PERMIT2_FLAG` - if set, the order uses permit2 247 bit `UNWRAP_WETH_FLAG` - if set, the order requires to unwrap WETH

Low 200 bits are used for allowed sender, expiration, nonceOrEpoch, and series uint80 last 10 bytes of allowed sender address (0 if any) uint40 expiration timestamp (0 if none) uint40 nonce or epoch uint40 series

Functions

hasExtension

```
function hasExtension(MakerTraits makerTraits) internal pure returns (bool)
```

Checks if the order has the extension flag set.

If the `HAS_EXTENSION_FLAG` is set in the makerTraits, then the protocol expects that the order has extension(s).

Parameters

Name	Type	Description
makerTraits	MakerTraits	The traits of the maker.

Return Values

Name	Type	Description
[0]	bool	result A boolean indicating whether the flag is set.

isAllowedSender

```
function isAllowedSender(MakerTraits makerTraits, address sender) internal pure returns (bool)
```

Checks if the maker allows a specific taker to fill the order.

Parameters

Name	Type	Description
makerTraits	MakerTraits	The traits of the maker.
sender	address	The address of the taker to be checked.

Return Values

Name	Type	Description
[0]	bool	result A boolean indicating whether the taker is allowed.

isExpired

```
function isExpired(MakerTraits makerTraits) internal view returns (bool)
```

Checks if the order has expired.

Parameters

Name	Type	Description
makerTraits	MakerTraits	The traits of the maker.

Return Values

Name	Type	Description
[0]	bool	result A boolean indicating whether the order has expired.

nonceOrEpoch

```
function nonceOrEpoch(MakerTraits makerTraits) internal pure returns (uint256)
```

Returns the nonce or epoch of the order.

Parameters

Name	Type	Description
makerTraits	MakerTraits	The traits of the maker.

Return Values

Name	Type	Description
[0]	uint256	result The nonce or epoch of the order.

series

```
function series(MakerTraits makerTraits) internal pure returns (uint256)
```

Returns the series of the order.

Parameters

Name	Type	Description
makerTraits	MakerTraits	The traits of the maker.

Return Values

Name	Type	Description
[0]	uint256	result The series of the order.

allowPartialFills

```
function allowPartialFills(MakerTraits makerTraits) internal pure returns (bool)
```

Determines if the order allows partial fills.

If the `_NO_PARTIAL_FILLS_FLAG` is not set in the `makerTraits`, then the order allows partial fills.

Parameters

Name	Type	Description
makerTraits	MakerTraits	The traits of the maker, determining their preferences for the order.

Return Values

Name	Type	Description
[0]	bool	result A boolean indicating whether the maker allows partial fills.

needPreInteractionCall

```
function needPreInteractionCall(MakerTraits makerTraits) internal pure returns (bool)
```

Checks if the maker needs pre-interaction call.

Parameters

Name	Type	Description
makerTraits	MakerTraits	The traits of the maker.

Return Values

Name	Type	Description
[0]	bool	result A boolean indicating whether the maker needs a pre-interaction call.

needPostInteractionCall

```
function needPostInteractionCall(MakerTraits makerTraits) internal pure returns (bool)
```

Checks if the maker needs post-interaction call.

Parameters

Name	Type	Description
makerTraits	MakerTraits	The traits of the maker.

Return Values

Name	Type	Description
[0]	bool	result A boolean indicating whether the maker needs a post-interaction call.

allowMultipleFills

```
function allowMultipleFills(MakerTraits makerTraits) internal pure returns (bool)
```

Determines if the order allows multiple fills.

If the `_ALLOW_MULTIPLE_FILLS_FLAG` is set in the `makerTraits`, then the maker allows multiple fills.

Parameters

Name	Type	Description
makerTraits	MakerTraits	The traits of the maker, determining their preferences for the order.

Return Values

Name	Type	Description
[0]	bool	result A boolean indicating whether the maker allows multiple fills.

useBitInvalidator

```
function useBitInvalidator(MakerTraits makerTraits) internal pure returns (bool)
```

Determines if an order should use the bit invalidator or remaining amount validator.

The bit invalidator can be used if the order does not allow partial or multiple fills.

Parameters

Name	Type	Description
makerTraits	MakerTraits	The traits of the maker, determining their preferences for the order.

Return Values

Name	Type	Description
[0]	bool	result A boolean indicating whether the bit invalidator should be used. True if the order requires the use of the bit invalidator.

needCheckEpochManager

```
function needCheckEpochManager(MakerTraits makerTraits) internal pure returns (bool)
```

Checks if the maker needs to check the epoch.

Parameters

Name	Type	Description
makerTraits	MakerTraits	The traits of the maker.

Return Values

Name	Type	Description
[0]	bool	result A boolean indicating whether the maker needs to check the epoch manager.

usePermit2

```
function usePermit2(MakerTraits makerTraits) internal pure returns (bool)
```

Checks if the maker uses permit2.

Parameters

Name	Type	Description
makerTraits	MakerTraits	The traits of the maker.

Return Values

Name	Type	Description
[0]	bool	result A boolean indicating whether the maker uses permit2.

unwrapWeth

```
function unwrapWeth(MakerTraits makerTraits) internal pure returns (bool)
```

Checks if the maker needs to unwraps WETH.

Parameters

Name	Type	Description
makerTraits	MakerTraits	The traits of the maker.

Return Values

Name	Type	Description
[0]	bool	result A boolean indicating whether the maker needs to unwrap WETH.

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