ErisX Clearing WebAPI V2.0

Please contact ErisX sales representatives or help desk personnel for more information on this documentation.

Contents

1 Change History

Date	Message(s) or Section	Description
20190731		Version 1
20190809	Filters	In python, filters should be specified in the **json** argument of requests.post function, not in the **data** argument. Some new filters have been added to the different methods. Each token will now be valid for 60 seconds, instead of the previous 30 seconds.
20190819	Trades Response	The trades response will now include 3 new fields (tcr_id, client_order_id, fix_id)
20190925	Trades Response	The trades response will now include one new field: product_code
20200130		Version 1.5
	Messages updated; Account, Balances and Trades.	New fields introduced to expose Futures information to clients (highlighted in green).
	New message added; Positions	New positions endpoint to query the positions for a given account.
20200301		Version 2.0
	Movements & Trades Filter changes	Removed asset_type filter from Movements and fee_type filter from Trades.
	New methods: deposit_address, linked_accounts, build_withdrawal_request and submit_withdrawal_request	A set of new methods to allow users to process deposits and withdrawals.
	Authentication	Removed Python 2 authentication example

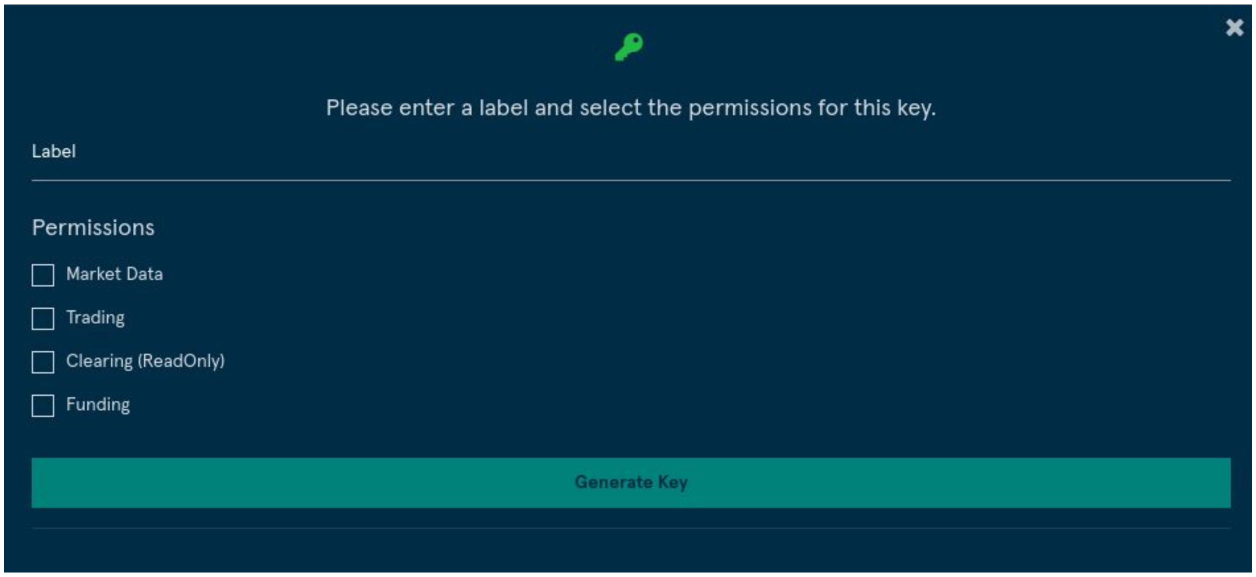
2 General Concepts

2.1 API Credentials

In order to sign your API requests, you will need to create a set of API Credentials.

From the Eris Member Portal, navigate to the dropdown next to your username in the top right of the page and select API Settings.

After clicking **Create New API Key** you will be asked to select the permissions you want to enable.


Please enter a label and select the permissions for this key.

Label

Permissions

- [ ] Market Data
- [ ] Trading
- [ ] Clearing (ReadOnly)
- [ ] Funding

API Key permissions

- **Market Data:** An API key can query historical data or subscribe to real time data (Coming soon).
- **Trading:** Allows an API key to enter, modify and cancel orders (Coming soon).
- **Clearing (ReadOnly):** Allows an API key to query information about their clearing accounts.
- **Funding:** Allows an API key to initiate withdrawal requests.

When ready click **Generate Key** and you will be presented with two pieces of information that must be kept safe as they will be needed for authentication of calls to the end points and will not be shown again:

- **API key**
- **Secret**

2.2 Authentication

A json web token should be generated using the HS256 algorithm on the API key, secret and timestamp as described in the examples below. This token should be included in the header of every request.

- **Timestamp:** The authentication token requires a Unix Epoch timestamp.
- **Token Age:** Each token will only be valid for 60 seconds after the timestamp.

Notes:

- In python use the **pyjwt** package to generate the token (https://pyjwt.readthedocs.io/en/latest/).
- In python 3 you will need to use the **decode('utf-8')** function to convert the token from a bytes like object to a string.
- Be aware that there must be a blank space between **Bearer** and the token.

Javascript Example:

```
const jwt = require('jsonwebtoken');
const axios = require('axios').default;
const apiKey = '9106676d85f1163f.d1ba2efac8bc1e0a';
const secret = '31b6b61606588580';
var payload = {
 iat: Date.now(),
 sub: apiKey
};
var token = jwt.sign(payload, secret, { algorithm: 'HS256'});
axios({
  method: 'POST',
  url: `https://clearing.erisx.com/api/v1/${method_name}`,
  timeout: 30000, // 30 seconds
  headers: {
    Authorization: `Bearer ${token}`,
  },
  data: {}
});
```

Python 3 Example:

```
import jwt
import time
import requests

def gen_token(secret, api_key):
   unix_timestamp = int(round(time.time()))
   payload_dict = {'sub': api_key, 'iat': unix_timestamp}
   return jwt.encode(payload_dict, secret, algorithm='HS256').decode('utf-8')
```

```
my_secret = '31b6b61606588580'
my_api_key = '9106676d85f1163fgd1ba2efac8bc1e0a'
url = 'https://clearing.erisx.com/api/v1/'
token = gen_token(my_secret, my_api_key)
requests.post(url= url + method_name, headers={'Authorization': 'Bearer ' +
token}, json={}) # Be aware that there is a blank space after Bearer
```

2.3 Funding Password Signing

In order to enhance security in funding related operations, some methods of the Clearing API require a two step process authentication. The first authentication is based on the API credentials and the token derivation described in the section above. The second authentication is based on the generation of an encrypted signature based on the member user's Funding Password. In order to correctly perform the signature, the clearing member should follow the following steps:

- Generate a key from the funding password using the Password-Based Key Derivation Function 2 (PBKDF2) with the following parameters:
    - Hashing algorithm: SHA-256
    - Password: Clearing member user's Funding Password.
    - Salt: Auth ID for the clearing member user, which can be found in the response from the method Build Withdrawal Request in the field 'auth_id'.
    - Iterations: 100,000
    - Derive Key Length: 32 bytes (256 bits).
- Generate a canonical signature for the appropriate message using the Elliptic Curve Digital Signature Algorithm (ECDSA) with the elliptic curve SECP256k1, where the key used in the signature should be the key generated in the previous step. Encoding of the signature should be in DER format.
- Encode the signature using Base58 encoding. Note that some base58 encoding functions may return a byte array rather than a string, and some languages require explicit conversion. For example, in Python, you must use the decode() function.

This signature will enable the ErisX ClearingHouse to verify the correctness of the funding password without the clearing member having to expose the funding password at any moment over the internet, which provides a higher layer of security for the safe keeping of the clearing member's credentials.

Javascript Example:

```
const bs58 = require('bs58');
const ecdsa = require('ecdsa');
const pbkdf2 = require('pbkdf2-sha256');
const BigInteger = require('bigi');

function privateKeyFromPassword(authId, password) {
  return pbkdf2(password, authId, 100000, 32);
}

function signMessage(message, privateKey) {
  let shaMsg = sha256(message);
  let signature = ecdsa.sign(shaMsg, BigInteger.fromBuffer(privateKey));
  return signature.toDER();
}
const privateKey = sign.privateKeyFromPassword(authId, password);
const signature = bs58.encode(sign.signMessage(transactionId, privateKey));
```

Python3 Example:

```
import hashlib
import ecdsa
from ecdsa.util import sigencode_der_canonize
import base58

def privateKeyFromPassword(authId, password):
      return hashlib.pbkdf2_hmac(
          hash_name='sha256',
          password=password.encode(),
          salt=authId.encode(),
          iterations=100000,
          dklen=32)

def signMessage(message, authId, password):
      privateKey = privateKeyFromPassword(authId, password)
      sk = ecdsa.SigningKey.from_string(privateKey, curve=ecdsa.SECP256k1)
      signature = sk.sign_deterministic(
          message.encode(),
          sigencode=sigencode_der_canonize,
          hashfunc=hashlib.sha256)
      return base58.b58encode(signature).decode('ascii')

signature = signMessage(message, authId, password)
```

3 Clearing Service

This API service enables clients to interact with their Clearing accounts in order to extract data regarding their activity. All requests and responses are application/json content type.

All Clearing API methods are private and every request needs to be signed using the authentication method described.

3.1 REST API Endpoint URL

- **Production:** https://clearing.erisx.com/api/v1
- **New Release (test):** https://clearing.newrelease.erisx.com/api/v1

3.2 Filters

Some methods allow the use of filters. These filters provide a greater level of flexibility to queries. Ultimately, providing more efficient requests and a better API experience.

The filter query has the following json type format. Multiple filters can be applied in a single request to best tailor the query. In python, filters should be given under the **json** argument of the requests.post function.

```
"filter": [{"attr": "attribute_name","op": "eq","value": "attribute_value" }]
```

Field	Value
filter	Name of the query parameter
attr	Name of the attribute that wants to be used in the query
op	Operations present in the query: 'eq' - equal 'ne' - not equal 'gt' - greater than 'gte' - greater than or equal 'lt' - less than 'lte' - less than or equal
value	Value or array of values of the attribute to which the query will compare.

3.3 Sorting

Queries also provide the ability to sort the results using the following format.

```
"sort": [{ "attr": "attribute_name", "value": "desc" }]
```

Field	Value
sort	Name of the query parameter
attr	Name of the attribute that wants to be used in the query
value	Direction of the sort: 'desc' - descending or 'asc' - ascending

3.4 Pagination

Some requests can be paginated. The offset and limit parameters on the request allows the user to choose how many results should be included in the return message and where the results should begin.

Maximum number of results per request is 100.

These two parameters are optional and available parameters in all methods except in the Balances method.

```
"offset":0, "limit":10
```

Field	Value
offset	Integer. The number of entries to skip (default: 0).
limit	Integer. Maximum number of results to be returned (default: 100).

3.5 Rate Limiting

Requests are throttled per IP address. Limit: 5 requests in a 10 second period.

When the rate limit is exceeded, a response with status **429 -> Too Many Requests** is returned.

If the limit is exceeded the IP address will be restricted from making new requests for a 30 seconds.

3.6 Trade Date and Business Date

A new trade date starts at 4:00:00pm CST and finishes at 3:59:59pm CST the following day. All trading activity will be included in the appropriate trade date depending on the time of the activity. (I.e. trading activity at 2019-01-01 15:59:59 CST will be included in 2019-01-01 trade date but trading activity at 2019-01-01 16:00:00 CST will be included in 2019-01-02 trade date).

A new business date starts at 6:00pm CST and finishes at 5:59pm CST of the following day. All asset movements will be included in the appropriate business date depending on the time of the asset movement. (I.e. a deposit made at 2019-01-01 17:59:59 CST will be included in 2019-01-01 business date but a deposit made at 2019-01-01 18:00:00 CST will be included in the 2019-01-02 business date).

3.7 Funds Designation

All customer funds for trading on designated contract markets (futures exchanges like ErisX) must be kept apart ("segregated") from non customer funds.

ErisX currently supports three funds designations:

- N: Represents "non-segregated" funds held on behalf of members trading ErisX Spot products.
- P: Represents "member property" funds held on behalf of direct members trading ErisX futures products.
- S: Represents "segregated" funds held on behalf of the clients of Futures Commission Merchants (FCM's) trading ErisX futures products.

4 Clearing Methods

4.1 Accounts

This method will return a list of all accounts a member has available to them, as well as basic balance information. More detailed balance information is returned in the getBalances method.

- **HTTP Request Type:** POST
- **Method:** /accounts
- **API security:** This API method requires an authentication token with Clearing API read permission.

Inputs

Field	Value
filter (optional)	Default: `"filter": [{ "attr": "account_id", "op": "eq", "value": member_account_id }]` account_id — Account ID
offset (optional)	Number of elements to be offset in the request for pagination purposes
limit (optional)	Limit of elements returned in the request

Example Requests:

```
requests.post(
    url="https://clearing.erisx.com/api/v1/accounts",
    headers={"Authorization": "Bearer " + token},
    json={})

requests.post(
    url="https://clearing.erisx.com/api/v1/accounts",
    headers={"Authorization": "Bearer " + token},
    json={
        "filter": [{
            "attr":
                "account_id",
            "op":
                "eq",
            "value": [
                "27ff6d34-523d-476d-9ad5-edeb373b83dc"
            ]
        }],
        "offset": 0,
        "limit": 10
    })
```

Outputs

Field	Value	Updated?
count	Number of member accounts found	
timestamp	Time of the request	
accounts	List of all available accounts	
account_id	Account ID	
account_number	Account Number	
fix_ids	List of all available FIX Trading IDs	
member_users	Member users associated with the account	
balances	Balances of the account at the time of the request	
cti	Customer Type Indicator (For futures accounts)	
origin	Origin (For futures accounts)	

Example Response:

```
{
  "count": 1,
  "timestamp": "2018-01-01T06:00:00.000Z",
  "accounts": [
    {
      "account_id": "27ff6d34-523d-476d-9ad5-edeb373b83dc",
      "account_number": "DM-000001",
      "member_users": [
        "5c532a02f2530e906a9c065f"
      ],
      "balances": [
        {
          "asset_type": "USD",
          "amount": "100.5"
        },
        {
          "asset_type": "TBTC",
          "amount": "1.5"
        }
      ],
      "fix_ids": [
        "trading_id"
      ],
      "cti": 1,
      "origin": 2
    }
  ]
}
```

4.2 Balances

This method will return a detailed set of balance information for a given account.

- **HTTP Request Type:** POST
- **Method:** /balances
- **API security:** This API method requires an authentication token with Clearing API read permission.

Inputs

Field	Value
account_id	Account ID

Example Request:

```
requests.post(
    url="https://clearing.erisx.com/api/v1/balances",
    headers={"Authorization": "Bearer " + token},
    json={"account_id": "27ff6d34-523d-476d-9ad5-edeb373b83dc"})
```

Outputs

Field	Value	Updated?
account_id	Account ID	
timestamp	Time of the request	
report_date	Business date associated with the request	
asset_type	Asset Type	
opening_balance	Balance at the beginning of the corresponding business date	
asset_movement	Amount of asset movements for the business date up to the time of the request.	
spot_movement	Amount of Spot trade movements for the trade date up to the time of the request.	
closing_balance	Balance as of the time of the request.	
change_in_balance	Change in balance between the beginning of the request's business date and the time of the request.	
exchange_fees	Exchange fees paid during the request's trade date	
clearing_fees	Clearing fees paid during the request's trade date	
other_fees	Other fees paid during the request's business date	
realized_p_and_l	Realized Profit and Loss in Futures trades	
futures_delivery	Quantity of Futures contract delivered	
total_equity	Total Equity	
reserved_margin	Reserved Margin for Futures positions	
total_excess_deficit	Total Excess Deficit	

net_liquidating_value	Net Liquidating Value	
available_to_trade	Balance available to trade (does not include working orders)	
reserved_ote	Reserved OTE	
fd	Funds designation	
closing_price	Closing price of each asset at the end of the previous trade date	
closing_price_date	Trade date to which the closing price belongs	
usd_value	The USD equivalent balance for each asset based on the closing price of the previous trade date from the time of the request.	

Example Response:

```
{
  "account_id": "3cfb773e-3a71-42c8-bab5-037ca4ae616f",
  "timestamp": "2020-01-30T16:52:41.900Z",
  "report_date": "2020-01-30",
  "balances": [
    {
      "opening_balance": "100621.4286",
      "spot_movement": "0.0",
      "exchange_fees": "-1.8",
      "clearing_fees": "-0.2",
      "other_fees": "0.0",
      "asset_movement": "0.0",
      "realized_p_and_l": "81.8",
      "futures_delivery": "0.0",
      "closing_balance": "100701.2286",
      "total_equity": "100701.2286",
      "reserved_margin": "-21294.6",
      "total_excess_deficit": "79406.6286",
      "net_liquidating_value": "100701.2286",
      "available_to_trade": "79406.6286",
      "reserved_ote": "1375.4",
      "fd": "P",
      "asset_type": "USD",
      "closing_price": "1.0",
      "closing_price_date": "2020-01-28",
      "usd_value": "100701.2286",
      "change_in_balance": "79.8"
    },
    {
      "opening_balance": "0.79925",
      "spot_movement": "0.0",
      "exchange_fees": "0.0",
      "clearing_fees": "0.0",
      "other_fees": "0.0",
      "asset_movement": "0.0",
      "realized_p_and_l": "0.0",
      "futures_delivery": "0.0",
      "closing_balance": "0.79925",
      "total_equity": "0.79925",
      "reserved_margin": "0.0",
      "total_excess_deficit": "0.79925",
      "net_liquidating_value": "0.79925",
      "available_to_trade": "0.79925",
      "reserved_ote": "0.0",
      "fd": "P",
      "asset_type": "TBTC",
      "closing_price": "9068.0",
      "closing_price_date": "2020-01-28",
      "usd_value": "7247.599",
      "change_in_balance": "0.0"
    }
  ]
}
```

4.3 Movements

This method will return a detailed set of asset movements information for a given account.

- **HTTP Request Type:** POST
- **Method:** /movements
- **API security:** This API method requires an authentication token with Clearing API read permission.

Inputs

Field	Value
filters (optional)	Default: `"filter": [{ "attr": "account_id", "op": "eq", "value": member_account_id }]` account_id — Account ID time — Start time using “op”:gte or gt and End time using “op”:lte or lt. If no time query is made it will return all the available data (subject to the specified limit)
offset (optional)	Number of elements to be offset in the request for pagination purposes
limit (optional)	Limit of elements returned in the request
Sort (optional)	Default: `"sort": [{ "attr": "time", "value": "desc"}]`

Example Request:

```
requests.post(
    url="https://clearing.erisx.com/api/v1/movements",
    headers={"Authorization": "Bearer " + token},
    json={
        "filter": [{
            "attr": "account_id",
            "op": "eq",
            "value": "27ff6d34-523d-476d-9ad5-edeb373b83dc"
        }, {
            "attr": "time",
            "op": "lte",
            "value": "2018-01-01T05:59:30.000Z"
        }, {
            "attr": "time",
            "op": "gte",
            "value": "2017-12-01T05:59:30.000Z"
        }],
        "sort": [{
            "attr": "time",
            "value": "asc"
        }],
        "offset": 0,
        "limit": 10
    })
```

Outputs

Field	**Value**
count	Number of results returned
description	Description of the asset movement
time	Timestamp of the asset movement
date	Business date of the asset movement
type	Type of the asset movement
posting_summary	Details of the asset movement (account ID, Asset type, Key (specifies what the amount refers to), Amount and Report Date). List of available keys: ● "amount": General movement amount. ● "bank_fee": Bank Fees Charged ● "clearing_fee": Clearing House Fees Charged ● "exchange_fee": Trading Fees Charged ● "other_fees": Other Fees Charged

Example Response:

```
{
 "result": {
   "count": 1,
   "movements": [
     {
       "description": "DEPOSIT 0.13057719 TBTC",
       "time": "2018-01-01T06:00:00.000Z",
       "type": "deposit",
       "posting_summary": [
               {
                 "account_id": "27ff6d34-523d-476d-9ad5-edeb373b83dc",
                 "asset_type" : "TBTC",
                 "key": "notional",
                 "amount": "0.25486",
                 "report_date": "2018-01-01"
               },
               {
                 "account_id": "27ff6d34-523d-476d-9ad5-edeb373b83dc",
                 "asset_type": "TBTC",
                 "key": "clearing_fee",
                 "amount": "0.00002549",
                 "report_date": "2018-01-01"
               },
               {
                 "account_id": "27ff6d34-523d-476d-9ad5-edeb373b83dc",
                 "asset_type": "TBTC",
                 "key": "exchange_fee",
                 "amount": "0.00022937",
                 "report_date": "2018-01-01"
               }
             ],
           }
         ]}
```

4.4 Trades

This method will return a set of trade information for a given account.

- **HTTP Request Type:** POST
- **Method:** /trades
- **API security:** This API method requires an authentication token with Clearing API read permission.

Inputs

Field	Value
filters (optional)	Default: `"filter": [{ "attr": "account_id", "op": "eq", "value": member_account_id }]`
	account_id: Account ID
	time: Start time using “op”:gte or gt and End time using “op”:lte or lt. If no time query is made it will return all the available data (subject to the specified limit)
	trade_id: Trade ID
	side: Side of the trade (BUY, SELL)
	aggressor: Aggressor in the trade (Y, N)
	qty: Quantity of the trade
	px: Price of the trade
	qty_type: Base currency
	px_type: Quoted currency
	type: Types: futures, spot, delivery or reversal
offset (optional)	Number of elements to be offset in the request for pagination purposes
limit (optional)	Limit of elements returned in the request
Sort (optional)	Default: `"sort": [{ "attr": "time", "value": "desc"}]`

Example Request:

```
requests.post(
    url="https://clearing.erisx.com/api/v1/trades",
    headers={"Authorization": "Bearer " + token},
    json={
        "filter": [{
            "attr": "account_id",
            "op": "eq",
            "value": "27ff6d34-523d-476d-9ad5-edeb373b83dc"
        }
    }
)
```

Outputs

Field	Value	Updated?
count	Number of results returned	
trade_id	Trade ID of the trade	
tcr_id	Trade Capture Report ID	
client_order_id	Client Order ID	
fix_id	FIX ID	
time	Timestamp of the trade	
description	Description of the trade	
side	Side of the trade (BUY, SELL)	
account_id	Account ID	
aggressor	Aggressor of the trade (Y, N)	
qty	Quantity	
px	Price	
clearing_fee	Clearing fee of the trade	
exchange_fee	Exchange fee of the trade	
product_code	Product code	
qty_type	Base currency	
px_type	Quote currency	
fee_type	Fee currency	
report_date	Business date of the trade	
contract_symbol	Contract Symbol	
asset_type	Asset Type	
trader_type	Trade Type	
record_type	Record Type	
notional	Notional Amount	
total_amount	Total Amount charged to the Account	
trade_report_id	Trade Report ID	
customer_account_ref	Customer Account Reference	
product_suffix	Product Type: SP, FUT	
state	State of the Trade	
expiration_time	Expiration date and Time of the futures contract involved in the trade	
cti	CTI	
origin	Origin	

Example Response:

```
{
  "count": 1,
  "trades": [
    {
      "account_id": "27ff6d34-523d-476d-9ad5-edeb373b83dc",
      "contract_symbol": "TBTCZ9",
      "asset_type": "TBTC",
      "px_type": "USD",
      "side": "BUY",
      "trade_type": "REGULAR",
      "record_type": "T",
      "qty": "1.0",
      "px": "6994.0",
      "notional": "699.4",
      "aggressor": "Y",
      "fee_type": "USD",
      "exchange_fees": "0.001",
      "clearing_fees": "0.001",
      "total_amount": "699.402",
      "tcr_id": "477188150",
      "trade_report_id": "1125899907429878",
      "trade_id": "B2019196081HP00",
      "customer_account_ref": "buy_side",
      "fix_id": "1",
      "product_suffix": "FUT",
      "state": "posted",
      "time": "2018-01-01T06:00:00.000000Z",
      "expiration_time": "2030-01-01T06:00:00Z",
      "cti": 1,
      "origin": 1,
      "product_code": "TBTC/USD",
      "client_order_id": "1",
      "description": "BUY 1.0 TBTCZ9 @ 6994.0 USD"
    }
  ]
}
```

4.5 Requests

This method will return the asset movements requests made by the appropriate account and their current status.

- **HTTP Request Type:** POST
- **Method:** /requests
- **API security:** This API method requires an authentication token with Clearing API read permission.

Inputs

Field	Value
filters (optional)	Default: `"filter": [{ "attr": "account_id", "op": "eq", "value": member_account_id }]` account_id — Account ID time — Start time using "op":gte or gt and End time using "op":lte or lt. If no time query is made it will return all the available data (subject to the specified limit) asset_type — Asset type (BTC, BCH, ETH, LTC) amount — Amount of the request transaction_type — Request type (withdrawal, deposit)
offset (optional)	Number of elements to be offset in the request for pagination purposes
limit (optional)	Limit of elements returned in the request
Sort (optional)	Default: `"sort": [{ "attr": "time", "value": "desc"}]`

Example Request:

```
requests.post(
    url="https://clearing.erisx.com/api/v1/requests",
    headers={"Authorization": "Bearer " + token},
    json={
        "filter": [{
            "attr": "account_id",
            "op": "eq",
            "value": "27ff6d34-523d-476d-9ad5-edeb373b83dc"
        }],
        "sort": [{
            "attr": "time",
            "value": "asc"
        }],
        "offset": 0,
        "limit": 10
    })
```

Outputs

Field	Value
count	Number of results returned
account_id	Account ID
dest_address	Destination Address of the request (Digital Assets Only)
time	Timestamp of the asset movement request
asset_type	Asset type
amount	Amount of the request
fee	Fees
fee_type	Fee currency
transaction_type	Transaction type (deposit, withdrawal)
state	State of the request (pending, rejected, posting)

Example Response:

```
{
  "result": {
    "count": 1,
    "requests": [
      {
        "account_id": "27ff6d34-523d-476d-9ad5-edeb373b83dc",
        "dest_address": "2MvQsnz92K5DmKe9fd2GHPz4oRKJXoAR1m4",
        "time": "2018-01-01T06:00:10.000Z",
        "asset_type": "TBTC",
        "amount": "-0.0001",
        "fee": "-0.0000001",
        "fee_type": "TBTC",
        "transaction_type": "withdrawal",
        "state": "pending"
      }
    ]
  }
```

4.6 Positions

This method will return the list of open positions for each account.

- **HTTP Request Type:** POST
- **Method:** /positions
- **API security:** This API method requires an authentication token with Clearing API read permission.

Inputs

Field	Value
filters (optional)	Default: `"filter": [{ "attr": "account_id", "op": "eq", "value": member_account_id }]` account_id — Account ID contract_symbols — Contract symbol
offset (optional)	Number of elements to be offset in the request for pagination purposes
limit (optional)	Limit of elements returned in the request
Sort (optional)	Default: `"sort": [{ "attr": "time", "value": "desc"}]`

Example Request:

```
requests.post(
    url="https://clearing.erisx.com/api/v1/positions",
    headers={"Authorization": "Bearer " + token},
    json={
        "filter": [
            {
                "attr": "account_id",
                "op": "eq",
                "value": "27ff6d34-523d-476d-9ad5-edeb373b83dc"
            },
            {
                "attr": "contract_symbols",
                "op": "eq",
                "value": "BTCW44"
            },
        ],
        "sort": [{
            "attr": "time",
            "value": "asc"
        }],
        "offset": 0,
        "limit": 10
    })
```

Outputs

Field	Value
account_id	Account ID
positions	List of Open positions
contract_symbol	Exchange Contract Symbol
contract_code	Clearing House Contract Symbol
product_code	Product Code
closing_px_date	Date utilize for the closing price
total_long	Total Long positions open for a certain contract
total_short	Total short positions open for a certain contract
total_reserve_ote	Total reserved OTE for a certain contract
expiration_time	Expiration time of the contract
position_id	Position ID
qty	Quantity
px	Price
notional	Notional
reserve_margin_s	Reserve Margin for short position
reserve_margin_l	Reserve Margin for long position
et	Expiration Time of position
customer_account_ref	Customer Account Reference
cl_ord_id	Client Order ID

Example Response:

```
[
  {
    "account_id": "27ff6d34-523d-476d-9ad5-edeb373b83dc",
    "positions": [
      {
        "contract_symbol": "BTCUSD1W",
        "contract_code": "BTCW44",
        "product_code": "BTC",
        "closing_px_date": "2018-01-01",
        "total_long": "400.0",
        "total_short": "0.1",
        "total_reserve_ote": "0.0",
        "expiration_time": "2019-01-01T06:00:00.000Z",
        "positions": [
          {
            "position_id": "t2",
            "qty": "-2",
            "px": "6000.0",
            "notional": "6000",
            "reserve_margin_s": "0.2",
            "reserve_ote": "-2000.0",
            "et": "2018-01-01T06:00:00.000Z",
            "customer_account_ref": "customer_account_ref",
            "cl_ord_id": "cl_ord_id"
          },
          {
            "position_id": "t1",
            "qty": "1",
            "px": "4000.0",
            "notional": "-4000",
            "reserve_margin_l": "400.0",
            "reserve_ote": "1000.0",
            "et": "2018-01-01T06:00:00.000Z",
            "customer_account_ref": "customer_account_ref",
            "cl_ord_id": "cl_ord_id"
          }
        ]
      }
    ]
  }
]
```

4.7 Deposit Address (NEW)

This method will return the address to which a client can deposit funds for a specified digital asset.

- **HTTP Request Type:** POST
- **Method:** /deposit_address
- **API security:** This API method requires an authentication token with Clearing API read permission.

Inputs

Field	Value
account_id	Number of elements to be offset in the request for pagination purposes
asset_type	Limit of elements returned in the request
funds_designation	Types: N, P, S. (See Funds Designation section for reference)

Example Request:

```
requests.post(url="https://clearing.erisx.com/api/v1/deposit_address",
              headers={"Authorization": "Bearer " + token},
              json={"account_id": "27ff6d34-523d-476d-9ad5-edeb373b83dc",
                 "asset_type": "BTC",
                  "funds_designation": "N"})
```

Outputs

Field	Value
address	Address hash
asset_type	Digital Asset type
account_id	Account ID
state	Status of the request
funds_designation	Types: N, P, S. (See Funds Designation section for reference)

Example Response:

```
{
  "address": "2NFVP4gnh4j6GtW8bz2wpXijnWEJ8EAySRq",
  "asset_type": "TBTC",
  "account_id": "ac171a7c-a0de-4e8a-9ce6-8a83d7e3ddd8",
  "state": "succeeded",
  "funds_designation": "N"
}
```

4.8 Linked Accounts (NEW)

This method will return information regarding any digital asset or bank accounts linked to the appropriate clearing member.

- **HTTP Request Type:** POST
- **Method:** /linked_accounts
- **API security:** This API method requires an authentication token with Clearing API read permission.

Inputs

Field	Value
filters (optional)	Default: `"filter": [{ "attr": "account_id", "op": "eq", "value": member_account_id }]`
	id — ID identifying a particular digital asset address or bank account.
	member_id — Clearing Member ID
	asset_type — Symbol corresponding to the appropriate asset
	label — Label given to the linked account when it was input into the system
	state — State of the request to add a new linked account. Valid values: pending, approved, rejected
	usable_at — Time at which the linked account is ready for the user to use
	type — Type of account. Valid values: bank, crypto, collateral
offset (optional)	Number of elements to be offset in the request for pagination purposes
limit (optional)	Limit of elements returned in the request

Example Request:

```
requests.post(
    url="https://clearing.erisx.com/api/v1/linked_accounts",
    headers={"Authorization": "Bearer " + token},
    json={
        "filter": [{
            "attr": "id",
            "op": "eq",
            "value": ["5e4bef801ef35c09af0b42ce", "5e4bef911ef35c2fbf0b42d0"]
        }],
    })
```

Outputs

Field	Value
count	Count of linked accounts returned in the response
accounts	List of linked accounts
label	Label of the linked account as input in the system by the user
asset_type	Asset type of the linked account
usable_at	Time from which the linked account is usable to use
member_id	ID of the clearing member to which the linked account belongs
state	Status of the request (pending, approved, rejected)
id	ID of the linked account. This id will be the one used in the withdrawal endpoint to specify to which linked accounts the funds be withdrawn
created_at	Time at which the linked account was added to the system
type	Type of the linked account (crypto, bank or collateral)
address	For digital asset's linked accounts, address hash of the wallet
account_number	For bank accounts, last 4 digits of account number
routing_number	For bank accounts, routing number
bank_name	For bank accounts, bank name

`Example Response:`

```
{ "count": 2, "accounts": [ {
      "label": "External ETH Wallet",
      "asset_type": "ETH",
      "usable_at": "2020-02-21T14:07:14.855Z",
      "member_id": "5e2b07559228bfd8841fd0ad",
      "state": "pending",
      "address": "bbbbbbb",
      "id": "5e4bef911ef35c2fbf0b42d0",
      "created_at": "2020-02-18T14:07:14.859Z",
      "type": "crypto"
    },{
      "label": "External Checking 0000",
      "asset_type": "USD",
      "usable_at": "2020-02-21T14:07:00.363Z",
      "member_id": "5e2b07559228bfd8841fd0ad",
      "state": "pending",
      "account_number": "0000",
      "routing_number": "011401533",
      "bank_name": "Chase",
      "id": "5e4bef801ef35c09af0b42ce",
      "created_at": "2020-02-18T14:07:00.365Z",
      "type": "bank"
    }]}
```

4.9 Withdrawal Request (NEW)

This section describes the procedure for a clearing member to request a withdrawal via the Clearing API. It is composed of two endpoints. First a request to an endpoint will be required where the clearing member specifies the details of the transaction, this request will return a response including all the necessary information that composes a valid transaction. A second request to the second endpoint is then required, where the user will specify the transaction message, which is the response from the first requests, signed by a secure hash of the funding password following the procedure indicated in the Funding Password Signature section.

4.9.1 Build Withdrawal Request

This method will enable member users to retrieve all necessary information in order to submit a withdrawal request via the Clearing API.

- **HTTP Request Type:** POST
- **Method:** /build_withdrawal_request
- **API security:** This API method requires an authentication token with Clearing API Funding permissions.
- **Notes:**
    - This request will not initialize a withdrawal request. It will only provide the data required to initialize a withdrawal.
    - The asset of the withdrawal will be inferred based on the Linked Account ID provided. I.e. if the clearing member specified a Linked Account ID that corresponds to a BTC linked account, the method will infer that the clearing member wants to withdraw BTC.

Inputs

Field	Value
account_id	Account ID from which the withdrawal will be made
linked_account_id	Linked Account ID to which the withdrawal will be sent. This value can be found in the field 'id' from the linked_accounts endpoint response.
funds_designation	Types: N, P, S. (See Funds Designation section for reference)
amount	Amount that will be withdrawn

Example Request:

```
requests.post(
    url="https://clearing.erisx.com/api/v1/build_withdrawal_request",
    headers={"Authorization": "Bearer " + token},
    json={'account_id': '48b7d9c5-55c5-4693-b5ec-10a97f7b2333',
          'linked_account_id': '5e4bef4b1ef35c96160b42cb',
          'funds_designation': 'S',
          'amount': '0.001'})
```

Outputs

Field	Value

account_id	Account ID from which account the withdrawal will be made
auth_id	Authentication ID needed to generate the signature in the Submit Withdrawal Request method
linked_account_id	Linked Account ID to which the withdrawal will be sent.
asset_type	Asset Type of the withdrawal. Inferred based on the linked_account_id provided
funds_designation	Types: N, P, S. (See Funds Designation section for reference)
amount	Amount of the withdrawal request
request_data	Base64-encoded withdrawal transaction as specified with the parameters above.

Example Response:

```
{
  "auth_id": "auth0|5e2b2eaeb9f8b40eaf22ec20",
  "account_id": "48b7d9c5-55c5-4693-b5ec-10a97f7b2333",
  "linked_account_id": "5e4bef4b1ef35c96160b42cb",
  "asset_type": "TBTC",
  "amount": "0.001",
  "funds_designation": "N",
  "request_data":
"WyI1ZTJiMDc1NTkyMjhiZmQ4ODQxZmQwYWQiLCJhdXRoMHw1ZTJiMmVhZWI5ZjhiNDBlYWYyMmVjMjAiLC
JhYWFhYWFhYSIsIlRCVEMiLCIwLjAwMSIsIjE1ODMxODk2NTk0OTYiLCI0OGI3ZDljNS01NWM1LTQ2OTMtY
jVlYy0xMGE5N2Y3YjIzMzMiLCI1ZTRiZWY0YjFlZjM1Yzk2MTYwYjQyY2IiLCJTIl0="
}
```

4.9.2 Submit Withdrawal Request

This method enables member users to submit a withdrawal request.

- **HTTP Request Type:** POST
- **Method:** /submit_withdrawal_request
- **API security:** This API method requires an authentication token with Clearing API Funding permissions as well as Funding Password signature security.

Inputs

Field	Value
request_data	Base64-encoded transaction data for the withdrawal that will be submitted. This value can be obtained from the response of the method 'build_withdrawal_request' in the field 'transaction_data'
signature	Signature created using the member user's funding password as described in the section Funding Password Signing

Example Request:

```
requests.post(
      url="https://clearing.erisx.com/api/v1/submit_withdrawal_request",
      headers={"Authorization": "Bearer " + token},
      json={"request_data":
'WyI1ZTJiMDc1NTkyMjhiZmQ4ODQxZmQwYWQiLCJhdXRoMHw1ZTJiMmVhZWI5ZjhiNDBlYWYyMmVjMjAiLC
JhYWFhYWFhYSIsIlRCVEMiLCIwLjAwMSIsIjE1ODMxODk2NTk0OTYiLCI0OGI3ZDljNS01NWM1LTQ2OTMtY
jVlYy0xMGE5N2Y3YjIzMzMiLCI1ZTRiZWY0YjFlZjM1Yzk2MTYwYjQyY2IiLCJTIl0=',
           "signature":
'AN1rKvtNrCF7mWSMbQ3hc4gUtY57C8CREkRNVU3cDdE8QibHgcrvTRmnmjU1SZpX7hDcWr9r8E6Q4Z7HWF
U3JGnTuMDdHPyG4'})
```

Output

Field	Value
request_data	Transaction data for the submitted withdrawal

Example Response:

```
{
  "request_data":
"WyI1ZTJiMDc1NTkyMjhiZmQ4ODQxZmQwYWQiLCJhdXRoMHw1ZTJiMmVhZWI5ZjhiNDBlYWYyMmVjMjAiLC
JhYWFhYWFhYSIsIlRCVEMiLCIwLjAwMSIsIjE1ODMxODk2NTk0OTYiLCI0OGI3ZDljNS01NWM1LTQ2OTMtY
jVlYy0xMGE5N2Y3YjIzMzMiLCI1ZTRiZWY0YjFlZjM1Yzk2MTYwYjQyY2IiLCJTIl0="
}
```