# FX Anomaly Scoring API — v1

## 1  Developer Guide

### 1.1 Overview

The FX Anomaly Scoring API ingests a single FX‑deal record, performs feature engineering, scaling, auto‑encoder inference, and LLM‑based reasoning, then returns:

* Anomaly — "Yes" or "No"
* Reason — ≤ 500‑character human‑readable explanation
* UniqueId and Client

All logic is encapsulated behind one endpoint hosted on Databricks.

### 1.2  Base URL & Versioning

https://example\_url.com/ anomaly/v1

### 1.3  Authentication (TBD)

| Scheme | How to supply |
| --- | --- |
| API Key | X-API-Key: <token> header |

### 1.4  Rate limiting

* 60 requests per second per API key (based on Azure OpenAI plan bottleneck).
* Exceeding the limit returns 429 RATE\_LIMIT\_EXCEEDED with Retry-After header.

### 1.5  Request

* Method/Path - POST /v1/
* Content‑Type - application/json
* Max size      100 kB
* Date format   YYYY-MM-DD (ISO‑8601). Internally parsed via datetime.strptime("%Y-%m-%d").

#### 1.5.1 JSON schema (required unless noted)

| Field | Type | Example | Description |
| --- | --- | --- | --- |
| Client | string | "IXOM" | Client name |
| FX\_Instrument\_Type | string | "FX\_FORWARD" | Instrument type |
| BUnit | string | "2430-IMP" | Business unit |
| Cpty | string | "ICAO" | Counter‑party |
| PrimaryCurr | string | "GBP" | Primary currency |
| BuyCurr | string | "GBP" | Currency being bought |
| SellCurr | string | "USD" | Currency being sold |
| BuyAmount | number ≥ 0 | 99990.0 | Amount in buy currency |
| SellAmount | number ≥ 0 | 12000.0 | Amount in sell currency |
| SpotRate | number ≥ 0 | 0.65 | Spot FX rate |
| ForwardPoints | number ≥ 0 | 1.101 | Forward points |
| ActivationDate | string date | "2025-07-01" | Activation date |
| MaturityDate | string date | "2025-12-31" | Maturity date |
| UniqueId | integer | 109001 | Unique deal identifier |
| ContLeg | integer (optional) | 0 |  |

#### 

#### 1.5.2  Example request

{  
 "Client": "IXOM",  
 "FX\_Instrument\_Type": "FX\_FORWARD",  
 "BUnit": "2430-IMP",  
 "Cpty": "ICAO",  
 "PrimaryCurr": "GBP",  
 "BuyCurr": "GBP",  
 "SellCurr": "USD",  
 "BuyAmount": 99990.0,  
 "SellAmount": 12000.0,  
 "SpotRate": 0.65,  
 "ForwardPoints": 1.101,  
 "ActivationDate": "2025-07-01",  
 "MaturityDate": "2025-12-31",  
 "UniqueId": 109001,  
 "ContLeg": 0  
}

### 1.6  Responses

#### 200 – Success

{  
 "Anomaly": "Yes",  
 "Reason": "BuyAmount deviates >4σ from peer distribution.",  
 "UniqueId": 109001,  
 "Client": "IX"  
}

Processing replaces any previous record with the same .

#### Error Catalogue

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | HTTP | Code | Message template | | --- | --- | --- | | 400 | UNSUPPORTED\_FIELD | "Unexpected field '<name>'" | | 400 | MISSING\_FIELD | "Field '<name>' is required" | | 413 | PAYLOAD\_TOO\_LARGE | "Max request size is 100 kB" | | 422 | INVALID\_TYPE | "<name> must be <type>" | | 422 | VALUE\_OUT\_OF\_RANGE | "<name> must be ≥0" | | 429 | RATE\_LIMIT\_EXCEEDED | "Too many requests; retry after <n>s" | | 401 | UNAUTHORIZED | "Valid API key required" | | 500 | MODEL\_FAILURE | "Internal prediction failed; try again later" | |

Retry logic The service retries Azure OpenAI calls up to 3× internally before returning 500 MODEL\_FAILURE.

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### 1.6.1  Edge‑case Handling

The application team can expect deterministic behavior for the following scenarios. Where relevant, the mapping to the Error Catalogue (Sec. 1.6) is shown.

| Scenario | Behavior | HTTP / Code |
| --- | --- | --- |
| Missing required field | Request rejected | 400 MISSING\_FIELD |
| Unexpected / extra field | Request rejected (schema is closed) | 400 UNSUPPORTED\_FIELD |
| Blank string for optional | Accepted as provided; interpreted as present but empty | Processed; incoming record replaces prior one | — |
| Payload > 100 kB | Rejected | 413 PAYLOAD\_TOO\_LARGE |
| Batch (array) submission | Rejected – only single object allowed | 400 UNSUPPORTED\_FIELD |
| Exceed rate limit (60 RPS) | Throttled; client should back‑off | 429 RATE\_LIMIT\_EXCEEDED |
| Missing / invalid API‑Key | Rejected | 401 UNAUTHORIZED |
| Internal model or LLM failure after 3 retries | Generic error response | 500 MODEL\_FAILURE |

Note : All other unforeseen errors also return 500 MODEL\_FAILURE with the same body schema as above.

### 1.7  Performance & SLA  Performance & SLA

| Stage | Typical latency (p50) |
| --- | --- |
| Feature engineering | 0.003 s |
| Scaling & transform | 0.007 s |
| LLM reasoning | 0.302 s |
| End‑to‑end | ≈ 0.32 s |
| No hard timeout is enforced yet; client‑side 60s is recommended. |  |

### 1.8  Idempotency

If a request repeats an existing UniqueId, the API processes and replaces the prior record; response represents the new computation.