

ECB Exchange Rates Data Model

for use with Invantive SQL

24.0



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This manual is a reference guide intended to clarify usage. If data in the sample images match data in your system, the similarity is coincidental.

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1 SQL Driver for ECB Exchange Rates API

Invantive SQL is the fastest, easiest and most reliable way to exchange data with the ECB Exchange Rates API.

Use the "Search" option in the left menu to search for a specific term such as the table or column description. When you already know the term, please use the "Index" option. When you can't find the information needed, please click on the Chat button at the bottom or place your question in the user community. Other users or Invantive Support will try to help you to our best.

ECB Exchange Rates.

The ECB Exchange Rates driver covers 2 tables and 6 columns.

ECB Exchange Rates API Clients

Invantive SQL is available on many user interfaces ("clients" in traditional server-client paradigma). All Invantive SQL statements can be exchanged with a close to 100% compatibility across all clients and operating systems (Windows, MacOS, Linux, iOS, Android).

The clients include Microsoft Excel, Microsoft Power BI, Microsoft Power Query, Microsoft Word and Microsoft Outlook. Web-based clients include Invantive Cloud, Invantive Bridge Online as OData proxy, Invantive App Online for interactive apps, Online SQL Editor for query execution and Invantive Data Access Point as extended proxy.

For technical users there are command-line editions of Invantive Data Hub running on iOS, Android, Windows, MacOS and Linux. Invantive Data Hub is also often used for enterprise server applications such as ETL. High-volume replication of data taken from the ECB Exchange Rates API into traditional databases such as SQL Server (on-premise and Azure), MySQL, PostgreSQL and Oracle is possible using Invantive Data Replicator. Invantive Data Replicator automatically creates and maintains ECB Exchange Rates datawarehouses, possibly in combination with data from over 70 other (cloud) platforms. Data Replicator supports data volumes up to over 1 TB and over 5.000 companies. The on-premise edition of Invantive Bridge offers an ECB Exchange Rates ADO.net provider.

Monitor API Calls

When a query or DML-statement has been executed on Invantive SQL a developer can evaluate the actual calls made to the ECB Exchange Rates API using a query on sessionios@DataDictionary. As an alternative, extensive request and response logging can be enabled by setting log-native-calls-to-disk to true. In the %USERPROFILE% \Invantive\NativeLog folder Invantive SQL will create log files per API request and response.

Specifications

The SQL driver for ECB Exchange Rates does not support partitioning. Define one data container in a database for each company in ECB Exchange Rates to enable parallel access for data from multiple companies.

An introduction into the concepts of Invantive SQL such as databases, data containers and partitioning can be found in the Invantive SQL grammar.

The configuration can be changed using various attributes during log on and use. A full list of configuration options is listed in the driver attributes 2.

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The catalog name is used to compose the full qualified name of an object like a table or view. The schema name is used to compose the full qualified name of an object like a table or view. On ECB Exchange Rates the comparison of two texts is case sensitive by default.

Changes and bug fixes on the ECB Exchange Rates SQL driver can be found in the release notes. There is currently no specific section on the Invantive forums for ECB Exchange Rates. Please reach out to other users of ECB Exchange Rates by leaving a question or contact request.

Driver code for use in settings.xml: `EcbExchangeRates`

Alias: `ecbexref`

Recommended alias: `exr`

General documentation on ECB Exchange Rates is available at https://www.ecb.europa.eu/stats/exchange/eurofxref/html/index.en.html

Updated: 15-06-2022 21:41 using Invantive SQL version 22.0.232-PROD+3445.

2 SQL Driver Attributes for ECB Exchange Rates API

The SQL driver for ECB Exchange Rates has many attributes that can be finetuned to improve handling in scenarios with unreliable network connections to the API server of ECB Exchange Rates or high-volumes of data. Also, many drivers have driver-specific attributes to finetune actual behaviour or handle data not matching specifications.

The ECB Exchange Rates driver attributes are assigned a default value which seldom requires change. However, changes can be applied when needed on four levels, which are reflected in the table below by separate checkmarks:

- Connection string: the connection string from the settings*.xml file and applied during log on.
- Set SQL statement: a set SQL-statement to be executed once connection has been established.
- Drivers file: the providers.xml file (obsolete starting release 17.32).
- Log on: value to be specified interactively by user during log on in a user interface.

The connection string for ECB Exchange Rates can be found in the settings*.xml file used for the database. Settings*.xml files are typically located in the `%USERPROFILE%\invantive` folder in most deployment scenarios. The reference manuals contain instructions how to relocate the settings*.xml files. Each data container of a database in the connection string can have a `connectionString` element specifying the name and values of attributes. Both name and value must be properly escaped according to XML-semantics. Actual application of the value is solely done during log on. A new connection must be established to change the value of a driver attribute using a connection string.

The set SQL statement can be executed after log on. The syntax is: `set NAME VALUE`, or for a distributed database: `set NAME@ALIAS VALUE`. In some scenarios you may need to enclose the driver attribute name in square brackets to escape it from parsing, for instance when a reserved SQL keyword is part of the name. The new value takes effect straight after execution of the set-statement. The set-statement can be executed as often as needed during a session.

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Driver attributes that can be interactively set to a value are typically presented in the log on window. Depending on the platform and design decisions of the user interface designer, some or all of the available driver attributes can have been made available.

The ECB Exchange Rates driver can be configured using the following attributes:

Code	Description	Origin	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Drivers File	Set from Log On
analysis-enforce-row-uniqueness	Use for analysis only! Enforce rows to be unique.	Shared	False	✓	✓	✓	
bulk-delete-page-size-rows	Number of rows to delete per batch when bulk deleting	Shared	10000	✓	✓	✓	
bulk-insert-page-size-bytes	Approximate maximum size in bytes of batch when bulk inserting	Shared	10000000	✓	✓	✓	
bulk-insert-page-size-rows	Number of rows to insert per batch when bulk inserting	Shared	10000	✓	✓	✓	
force-case-sensitive-identifiers	Consider identifiers as case-sensitive independent of the platform capabilities.	Shared	False	✓	✓	✓	
forced-casing-identifiers	Forced casing of identifiers. Choose from Unset, Lower, Upper and Mixed.	Shared		✓	✓	✓	
http-disk-cache-compression-level	Compression level for the HTTP disk cache, ranging from 1 (little) to 9 (intense). Default is 5.	Shared	5	✓	✓	✓	
http-disk-cache-directory	Directory where HTTP cache is stored.	Shared	C:\Users\gle3.WS212\Invantive\Cache\http\gle3\shared	✓	✓	✓	
http-disk-cache-ignore-write-errors	Whether to ignore write errors to disk cache.	Shared	False	✓	✓	✓	
http-disk-cache-max-age-sec	Maximum acceptable age in seconds for use of data in the HTTP disk cache.	Shared	2592000	✓	✓	✓	
http-get-timeout-max-ms	HTTP GET timeout maximum on retry (ms)	ECB Exchange Rates	300000	✓	✓	✓	
http-get-timeout-ms	HTTP GET timeout (ms)	ECB Exchange Rates	60000	✓	✓	✓	
invantive-sql-compress-sparse-arrays	Whether to compress sparse arrays in result sets during compression.	SQL Engine V1	True	✓	✓	✓	
invantive-sql-correct-invalid-date	Whether to correct dates considered invalid since they are before 01-01-1753. When nullable, they are removed. Otherwise they are replaced by 01-01-1753.	SQL Engine V1	False	✓	✓	✓	
invantive-sql-forward-filters-to-data-containers	Whether to forward filters to data containers.	SQL Engine V1	True	✓	✓	✓	

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Code	Description	Origin	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Drivers File	Set from Log On
invantive-sql-share-byte-arrays	Whether to share the memory used by identical byte arrays in result sets during compression.	SQL Engine V1	True	✓	✓	✓	
invantive-sql-share-strings	Whether to share the memory used by identical strings in result sets during compression.	SQL Engine V1	True	✓	✓	✓	
invantive-sql-shuffle-fetch-results-data-containers	Whether to shuffle results fetched from data containers.	SQL Engine V1	False	✓	✓	✓	
invantive-use-cache	Whether to cache the results of a query.	SQL Engine V1	True	✓	✓	✓	
log-native-calls-to-disk-max-events	Maximum number of events to register from last activation.	Shared		✓	✓	✓	
log-native-calls-to-disk-max-seconds	Maximum number of seconds to register from last activation.	Shared		✓	✓	✓	
log-native-calls-to-disk-on-error	Registers native calls to data container backend as disk files when an error occurred.	Shared	False	✓	✓	✓	
log-native-calls-to-disk-on-success	Registers native calls to data container backend as disk files when successful.	Shared	False	✓	✓	✓	
log-native-calls-to-trace	Log native calls to data container backend on the trace.	Shared	False	✓	✓	✓	
maximum-length-identifiers	Non-default maximum length in characters of identifier names.	Shared		✓	✓	✓	
max-url-length-accepted	The maximum accepted URL length before raising an error.	Shared	8000	✓	✓	✓	
max-url-length-desired	The maximum desired URL length.	Shared	8000	✓	✓	✓	
partition-slot-based-rate-limit-length-ms	Total length in ms across all slots of a partition-based rate limit.	Shared	60000	✓		✓	
partition-slot-based-rate-limit-slots	Number of slots per partition-based rate limit. Null means no slot-based rate limit	Shared		✓		✓	
pre-request-delay-ms	Pre-request delay in milliseconds per request.	Shared	0	✓	✓	✓	
requested-page-size	Preferred number of rows to exchange per round trip; only effective on limited platforms such as AFAS Online	Shared		✓	✓	✓	
requests-parallel-max	Maximum number of parallel data requests from individual partitions on the data container.	Shared	32	✓	✓	✓	
slot-based-rate-limit-length-ms	Total length in ms across all slots of a slot-based rate limit.	Shared	60000	✓		✓	
slot-based-rate-limit-slots	Number of slots of a slot-based rate limit. Null means no slot-based rate	Shared		✓		✓	

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Code	Description	Origin	Default Value	Set from Connection String	Set from Set SQL-Statement	Set from Drivers File	Set from Log On
	limit						
standardize-identifiers	Rewrite all identifiers to the preferred standards as configured by standardize-identifiers-casing and maximum-length-identifiers.	Shared	True	✓	✓	✓	
standardize-identifiers-casing	Rewrite all identifiers to the recommended standard platform-specific casing when changing a data model on a case-dependent platform.	Shared	True	✓	✓	✓	
use-http-disk-cache-read	Whether to use HTTP responses from previous queries stored on disk to answer the current query.	Shared	False	✓	✓	✓	
use-http-disk-cache-write	Whether to memorize HTTP responses on disk.	Shared	False	✓	✓	✓	

3 ecb_euro_exchange_rates_last_90_days: ECB Exchange Rates Euro Exchange Rates Last 90 Days

Catalog: EcbExchangeRates

Schema: EcbExchangeRates

Label: Euro Exchange Rates Last 90 Days

This is a read-only table. The ECB Exchange Rates API may not support changing the data or the Invantive SQL driver for ECB Exchange Rates does not cover it. In the latter case, please use the table `NativePlatformScalarRequests` to upload data to the ECB Exchange Rates API.

Table Columns

The columns of the table `ecb_euro_exchange_rates_last_90_days` are shown below. Each column has an SQL data type.

Name	Data Type	Label	Required	Documentation
currency	string	Currency	☐	
rate	decimal		☐	
time	datetime		☐	

4 ecb_euro_exchange_rates_last_day: ECB Exchange Rates Euro Exchange Rates Last Day

Catalog: EcbExchangeRates

Schema: EcbExchangeRates

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Label: Euro Exchange Rates Last Day

This is a read-only table. The ECB Exchange Rates API may not support changing the data or the Invantive SQL driver for ECB Exchange Rates does not cover it. In the latter case, please use the table `NativePlatformScalarRequests` to upload data to the ECB Exchange Rates API.

Table Columns

The columns of the table `ecb_euro_exchange_rates_last_day` are shown below. Each column has an SQL data type.

Name	Data Type	Label	Required	Documentation
currency	string	Currency	☐	
rate	decimal		☐	
time	datetime		☐	

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