

FIRDS Reference Data System

**Instructions on download and use of full, delta and cancellations
reference data files**



Document control:

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1	28/09/2017	ESMA	Version for review by the Markets IT Task Force / FIRDS Delegated Project Task Force
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Reference documents:

Ref	Title	Version	Author	Date
RTS23	COMMISSION DELEGATED REGULATION (EU) 2017/585 of 14 July 2016 supplementing Regulation (EU) No 600/2014 of the European Parliament and of the Council with regard to regulatory technical standards for the data standards and formats for financial instrument reference data and technical measures in relation to arrangements to be made by the European Securities and Markets Authority and competent authorities	1	European Commission / ESMA	31/03/2017
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1 Introduction

1.1 Purpose and intended audience of this document

1. The purpose of this document is to provide details on the reference data files that ESMA will be publishing, how to access them, and how to use them.
2. The intended audience are the EU market participants that need to make use of the instrument reference data for the purpose of MiFIR, as well as National Competent Authorities from EU and EEA countries.
3. Paragraphs highlighted in blue are applicable to National Competent Authorities only, and will be removed from the document published to avoid confusion.

1.2 Scope

4. The scope of this document is the instruments reference data files.

1.3 Abbreviations

Acronym	Definition
RM	Regulated Market
MTF	Multilateral Trading Facility
OTF	Organised Trading Facility
SI	Systematic Internaliser

2 Description of the reference data files generated by the FIRDS system

5. The system makes reference data available in the form of machine-readable files:
 - a. **Full file:** the full file contains the full reference data received by ESMA before the applicable cut-off time, for all instruments that are still active and that have been admitted to trading on RM, including where a request for admission to trading has been made, or that are traded on a MTF, OTF, or SI.
 - b. **Delta file:** the delta file contains all records for which a change has occurred (addition, modification, deletion) since the generation of the last set of files, e.g. in the following situations
 - i. An instrument starts being traded on a trading venue: new (ISIN, MIC) - <NewRcrd>
 - ii. An instrument ceases being traded on a trading venue: the (ISIN, MIC) is terminated - <TermntdRcrd>
 - iii. A modification has been made in the reference data fields or in the relevant competent authority for the instrument - <ModfdRcrd>
 - iv. Note that in exceptional cases, some of these records may relate to instruments that were already terminated, e.g. it may be that an ISIN-MIC is reported for the first time very late, after it was terminated, or may undergo a correction in its reference data, after it was terminated. In these cases the corresponding record will only be available in the Delta / Invalid records file and will not appear in the Full file.
 - c. **Invalid records file:** this file contains all records that are not part of the full file anymore and, in exceptional cases, records that were never published as part of the full file. This includes instruments that are not valid anymore, as well as out-of-date versions of records that have been modified over time. As for Delta files, in exceptional cases it will also contain records of instruments that are reported for the first time after they are terminated, or modifications that are made on instruments after they are terminated. In these exceptional cases the corresponding record will only be available in the Delta / Invalid records file and will not appear in the Full file.
 - d. **Cancelled records file :** This file contains the full set of consolidated cancelled reference data which has been submitted to ESMA before the applicable cut-off time submitted on the previous working day by Trading Venues, Systematic Internalisers and National Competent Authorities that have not delegated collection. The file contains all cancelled records reported.
6. The list of reference data fields published by the system are:
 - a. Fields described in Tables 1, 2 and 3 of the Annex of the Regulatory Technical Standard 23;
 - b. The country of the Relevant Competent Authority for the instrument;
 - c. For NCAs' full file only:
 - i. the date / time when the record was last received from the corresponding submitting entity (RefData/TechAttrbts/LastUpd in the full file)
 - ii. a flag indicating whether an inconsistency has been detected for the corresponding record (RefData/TechAttrbts/IncnsstncyInd).

Given the high volume of data, the files are split in several, in particular when they exceed 500,000 records, or based on the first letter of the CFI code in the case of the full file.

3 Instructions to download full, delta and Cancellations reference data files from ESMA website

3.1 Timing of generation

7. The files published by ESMA on its website are generated:
 - a. on a weekly basis for the Full File – on Sunday morning by 09:00 CET
 - b. on a daily basis for the Delta File – every morning by 09:00 CET
 - c. on a daily basis for the Cancellations File – every morning by 09:00 CET
8. The files provided to NCAs on the HUB are generated on a daily basis.

3.2 XML Format

9. The reference data files produced by FIRDS are structured as follows:
 - a. Encapsulation of a Business Application Header (BAH), and a Payload as per XML Schema head.003.001.01.xsd
 - b. The Business Application Header is generated as per XML Schema head.001.001.01_ESMAUG_1.0.0.xsd
 - c. The payload is generated as per XML Schema

File type	xsd
Full file	auth.017.001.02_ESMAUG_FULINS_1.1.0.xsd
Delta file	auth.036.001.03_ESMAUG_DLTINS_1.2.0.xsd
Cancellations file	auth.102.001.01_ESMAUG_CANINS_1.2.0.xsd
10. Link to XML Schema: https://www.esma.europa.eu/sites/default/files/library/esma65-11-1194_annex_1_firds_reference_data_xml_schema_1.1.0.zip (Will be updated with version 1.2.0 once published on the website)

3.3 File naming conventions

11. The full file will follow the following naming convention:

FULINS_<CFI 1st letter>_<Date>_<Key1>of<Key2>.zipWhere:

<Date> =YYYYMMDD.

<Key1> = The number of the file in the range produced for that day and that CFI 1st letter.

<Key2> = The total number of files produced for that day and that CFI 1st letter.

Examples:

FULINS_C_20170625_01of01.zip

FULINS_D_20170625_01of02.zip

FULINS_D_20170625_02of02.zip

FULINS_E_20170625_01of02.zip

FULINS_E_20170625_02of02.zip

FULINS_F_20170625_01of01.zip

FULINS_H_20170625_01of01.zip

FULINS_J_20170625_01of01.zip

12. The delta file will follow the following naming convention.

DLTINS_<Date>_<Key1>of<Key2>.zip

Where:

<Date> =YYYYMMDD

<Key1> = The number of the file within the range produced for that day.

<Key2> = The total number of files produced for that day.

Examples:

DLTINS_20170624_01of01.zip

13. The Cancellations file will follow the following naming convention.

FULCAN_<Date>_<Key1>of<Key2>.zip

Where:

<Date> =YYYYMMDD

<Key1> = The number of the file within the range produced for that day.

<Key2> = The total number of files produced for that day.

Examples:

FULCAN_20170624_01of01.zip

3.4 Access to the files published (human interface)

14. Go to <https://registers.esma.europa.eu/publication/> select register “Financial Instrument Reference Data System” then click on “Financial Instruments Reference Files” ; or go directly to https://registers.esma.europa.eu/publication/searchRegister?core=esma_registers_firds_files



15. Use the Publication Date filter on the left hand side and click on “Filter list” to list all files published within the specified period.

Homepage > Financial Instruments Reference Files

Financial Instruments Reference Files disclaimer

Items: 1-10 / 76

Results per page: 10

Publication Date	File Type	Download Link
2017-09-15	DLTINS	DLTINS_20170915_01aR02.zip
2017-09-15	DLTINS	DLTINS_20170915_02aR02.zip
2017-09-16	FULINS	FULINS_F_20170916_06aR06.zip
2017-09-16	DLTINS	DLTINS_20170916_01aR02.zip
2017-09-16	DLTINS	DLTINS_20170916_02aR02.zip
2017-09-16	FULINS	FULINS_C_20170916_01aR01.zip
2017-09-16	FULINS	FULINS_D_20170916_01aR02.zip
2017-09-16	FULINS	FULINS_D_20170916_02aR02.zip
2017-09-16	FULINS	FULINS_E_20170916_01aR02.zip
2017-09-16	FULINS	FULINS_F_20170916_02aR02.zip

1 2 3 4 5 6 7 8

Print Export to CSV

16. Click on the Download Link for any of the files returned, in order to download the corresponding file.

3.5 Access to the files published (machine-to-machine interface)

17. To support automated download of the files, it is possible to list the files published on a specific date by sending an HTTP request.
18. The following HTTP request will return the list of the files published by ESMA on 25 August 2017.

https://registers.esma.europa.eu/solr/esma_registers_firds_files/select?q=*&fq=publication_date:%5B2017-08-25T00:00:00Z+TO+2017-08-25T23:59:59Z%5D&wt=xml&indent=true&start=0&rows=100

19. The below table explains each aspect of the above query so that it can be modified as required to meet necessary usage requirements

Query component	Description
q=*	This is the general query part of the request and tells the response to return all columns for a given result if one exists
fq=publication_date:%5B2017-08-25T00:00:00Z+TO+2017-08-25T23:59:59Z%5D	fq means the filtered query and supports restricting the data that is being search for. For the filtered query here, we are restricting by date – note both the latest date and earliest date are present and follow the ISO date format. Change the date to look for files from a different day or range of days
wt=xml	Response type e.g. xml, json
indent=true	Not necessary but assists to make the output more readable

start=0	The result to start outputting from. 0 works best but any number can be here and corresponds to which set of records to start outputting from
rows=100	The number of results to return. Default is 10

20. The combination of start and row is used to assist cycling over the results when multiple results are returned e.g. more than 100. To read a secondary list (100+) change start to 100 and leave rows as 100. The number of records that the query returns is given by attributes of the resultsFound list.
21. The response is an XML document. The URL to the files are located under the following XPath:
`/response/result/doc/str[@name='download_link']`
22. Note that the number of returned files returned will usually be greater than 1 for a given date.

4 Use of full , delta and Cancellations reference data files

4.1 Background

23. The reference data associated with each (ISIN, MIC) may undergo modifications over time, e.g. for the following reasons:

- When an instrument starts being traded, its termination date may not be known and in that case TradgVnRltdAttrbts/TermntnDt will not be present. When the termination date is known, it will be populated.
- The Relevant Competent Authority of the instrument may change over time. For example, RTS 22 foresees that the relevant market is reassessed every year for equity instruments.
- Some information may change over time, e.g. the name of the financial instrument may be updated.
- Reporting entities may send corrections to the data previously submitted.

24. The table below gives an example of changes occurring over time for a specific (ISIN, MIC)

Date of reception	ISIN, MIC	Name	Field 11	Field 12	RCA	Record present in the FULINS files from... / to...	Record present in the DLTINS files on	Record present in the INVINS file from
01/09/2016	ISIN, MIC	Company X	05/09/2016	(null)	AT	From: 02/09/16 To:03/09/2016	02/09/2016	04/09/2016
03/09/2016	ISIN, MIC	Company X	05/09/2016	(null)	BE	From: 04/09/16 To:07/11/2016	04/09/2016	08/11/2016
07/11/2016	ISIN, MIC	X Corporation	05/09/2016	(null)	BE	From: 08/11/16 To:01/12/2016	08/11/2016	02/12/2016
01/12/2016	ISIN, MIC	X Corporation	05/09/2016	05/12/2016	BE	From: 02/12/16 To:06/12/2016	02/12/2016 07/12/2016	07/12/2016

4.2 Building a historical database using FULINS / DLTINS / INVINS / FULCAN

25. To build a historical database and be able to support queries described in 3.4, it is recommended to associate to each record:

- a. Validity dates: ValidFromDate / ValidToDate
- b. Latest record flag: true if the record is the latest version of the record received, false for historical versions of the record.

26. To build a historical database starting from day T:

- a. On day T download the FULINS file and register all records it contains
 - i. Register all data for all fields provided under <RefData>, including the <TechAttrbts> and in particular RefData/TechAttrbts/PblctnPrd/FrDt as ValidFromDate. Leave ValidToDate empty (null).
 - ii. Set the LatestRecordFlag as true
- b. From day T+1, download the DLTINS file every day, and process it as follows:
 - i. for each DLTINS record in <NewRcrd>, <ModfdRcrd>, <TermntdRcrd>
 1. Select the rows of the historical database such that
 - ISIN = ISIN of the DLTINS record
 - MIC = MIC of the DLTINS record
 - ValidToDate is null
 2. Set ValidToDate of these rows to (date of publication of the DLTINS – 1)
 3. Set LatestRecordFlag of these records to false
 4. Insert the content of the DLTINS record in the database, including the <TechAttrbts> and in particular
 - If PblctnPrd child is FrDt: register FrDt as ValidFromDate and leave ValidToDate empty
 - If PblctnPrd child is FrDtToDt: register FrDt as ValidFromDate and ToDt as ValidToDate
 - If there is no PblctnPrd element under <TechAttrbts>: set ValidFromDate as the (date of publication of the DLTINS) and leave ValidToDate empty
 5. Set the LatestRecordFlag of the new DLTINS record to true
 - ii. for each DLTINS record in <CancRcrd>
 1. Select the rows of the historical database such that
 - ISIN = ISIN of the DLTINS record
 - MIC = MIC of the DLTINS record
 - ValidToDate is null
 2. Set ValidToDate of these rows to (date of publication of the DLTINS – 1)
 3. Set LatestRecordFlag of these records to false

4. Set this record as Cancelled
5. Set the LatestRecordFlag of the new DLTINS record to true

27. To build a historical database on day T going back to the full history of the system since go-live

- a. On day T download the FULINS file and register all records it contains
 - i. Register all data for all fields provided under <RefData>, including the <TechAttrbts> and in particular RefData/TechAttrbts/PblctnPrd/FrDt as ValidFromDate. Leave ValidToDate empty.
- b. On day T download the INVINS file and register all records it contains
 - i. Register all data for all fields provided under <RefData>, including the <TechAttrbts>
 1. If PblctnPrd child is FrDtToDt: register FrDtToDt/FrDt as ValidFromDate and FrDtToDt/ToDt as ValidToDate
 2. If there is no PblctnPrd element under <TechAttrbts>:
 - a. register <LastUpd> as ValidFromDate for the new row;
- c. On day T download the FULCAN file and register all records it contains
 - i. Register all data for all fields provided under <CxlData>
 - ii. Set as Cancelled the records with
 1. ISIN=CxlData\FinInstrmGnlAttrbts\id
 2. MIC= CxlData\TradgVnRtldAttrbts\id
- d. Finally, on day T, for each distinct ISIN, MIC,
 - i. select all rows having the same ISIN, MIC
 - ii. order the rows by ValidFromDate ascending
 - iii. for each of these rows except the last one, set ValidToDate as [(ValidFromDate of the next row) – 1], and set LatestRecordFlag to false
 - iv. set LatestRecordFlag of the last row to true
- e. From day T+1, download the DLTINS file every day, and process it as in 26.b

4.3 Querying the historical database

28. Once the historical database has been built according to 3.3, the database can be queried for example as follows:
29. In order to get the latest reference data for all (ISIN, MIC), regardless whether they are terminated or not:
 - a. Select * from <table> where table_ISIN = ISIN and table_MIC = MIC and LatestRecordFlag = true
30. In order to list the reference data for all (ISIN, MIC) that where active on day T, based on the latest reference data available

- a. Select * from <table> where table_ISIN = ISIN and table_MIC = MIC and LatestRecordFlag = true and Field 11 <= T and (Field 12 is null or Field 12 >= T)
31. In order to know what was the reference data for an (ISIN,MIC) on a given day T in the past:
- a. Select * from <table> where table_ISIN = ISIN and table_MIC = MIC and ValidFromDate <= T and (ValidToDate is null or ValidToDate >= T)
32. In order to list the reference data for all (ISIN, MIC) that were active on day T, based on the reference data that was available on a given day X in the past
- a. Select * from <table> where table_ISIN = ISIN and table_MIC = MIC and ValidFromDate <= X and (ValidToDate is null or ValidToDate >= X) and Field 11 <= T and (Field 12 is null or Field 12 >= T)

5 Use of other reference data files for the purpose of Transaction Reporting

5.1 CFI, MIC, Currency, Country and Index reference data

33. For the CFI, MIC, Currency, Country and Index expression of interest reference data only a single file is produced for each type of data and it includes the currently active as well as inactive reference records. Therefore, the historical database for these files should be equivalent to the file content.
34. The CFI, MIC, Currency and Country reference data is generated and published on the HUB on weekly basis, every Saturday by 9:00am CET.
35. The Index expression of interest data is published on the HUB on daily basis.
36. In order to list the reference data for all reference records that were active on day T in the past, based on the latest reference data available:
- Select * from <CFITable> where CFITable_CFI = CFI and ValidFromDate <= T and (ValidToDate is null or ValidToDate >= T);
 - Select * from <MICTable> where MICTable_MIC = MIC and ValidFromDate <= T and (ValidToDate is null or ValidToDate >= T);
 - Select * from <CurrencyTable> where CurrencyTable_CurrencyCode = CurrencyCode and ValidFromDate <= T and (ValidToDate is null or ValidToDate >= T) and CurrencyTable_CurrencyCode NOT LIKE 'XX_*';
 - Select * from <CountryTable> where CountryTable_CountryCode = CountryCode and ValidFromDate <= T and (ValidToDate is null or ValidToDate >= T);
 - Select * from <IndexTable> where IndexTable_Index = Index and ValidFromDate <= T and (ValidToDate is null or ValidToDate >= T).
37. Please note that the currency data file includes separate records per the combination of currency and country code (i.e. a currency might be valid in more than one country). For the purpose of the transaction data validation it is sufficient that a currency is valid in any country, i.e. at least one record is returned for a given day.

5.2 LEI reference data

38. The LEI reference data is provided on daily basis.
39. The data provided by FIRDS is identical to the data published by GLEIF. This file does not include the full history of LEI; in particular, the history of the LEI status changes. It implies that NCAs shall build the historical database for this data.
40. In order to list the reference data for a record active on day T in the past:
- For the purpose of the Executing Entity validation: Select * from <LEITable> where LEITable_LEI = LEI and PublicationDate = T+1 and LEITable_Status in ('Issued', 'Pending transfer', 'Pending archival') and LEITable_InitialRegistrationDate<=T and (LEITable_EntityStatus='Active' or LEITable_LastUpdateDate>=T); or
 - For the purpose of other validations: Select * from <LEITable> where LEITable_LEI = LEI and PublicationDate = T+1 and LEITable_Status in ('Issued', 'Pending transfer', 'Pending archival', 'Lapsed') and LEITable_InitialRegistrationDate<=T and (LEITable_EntityStatus='Active' or LEITable_LastUpdateDate>=T).

¹ Technical currency codes starting with 'XX' shall be excluded from transaction data validation.