



# Automated processing and management of measurement data

ibaDatCoordinator



# Automated data processing

ibaDatCoordinator is a powerful tool for processing and managing measurement data automatically. Typical fields of application are automatic data management, creating reports or the extraction of product-related characteristic values in databases or other systems. In synergy with ibaAnalyzer, various tasks can be done fully automatically and routine procedures can be simplified.



## At a glance

- › Powerful tool for automated data processing
- › Automated processing of measurement data recorded with the iba system - both measurement files and data from ibaHD-Server - or third party files
- › Automatic extract of time-series data to databases or files
- › Publish batch-wise aggregated data via different connectors
- › Automatic generation of quality and fault reports, triggered or timebased
- › Notifications based on measurement data (e.g. limit exceedance)
- › Copy DAT-files based on different criteria
- › Integrated status monitoring
- › Script function as open interface for free processing of data files

ibaDatCoordinator is the central component for the automatic processing of measurement data and thus decisive for the use of the iba system in production systems. Measurement data files generated with ibaPDA, ibaQDR or ibaLogic as well as measurement data from ibaHD-Server can be processed. With the integrated tools, data management and other

tasks can be set up individually, such as transferring measurement data to central locations, extraction into databases and calculation of characteristic values.

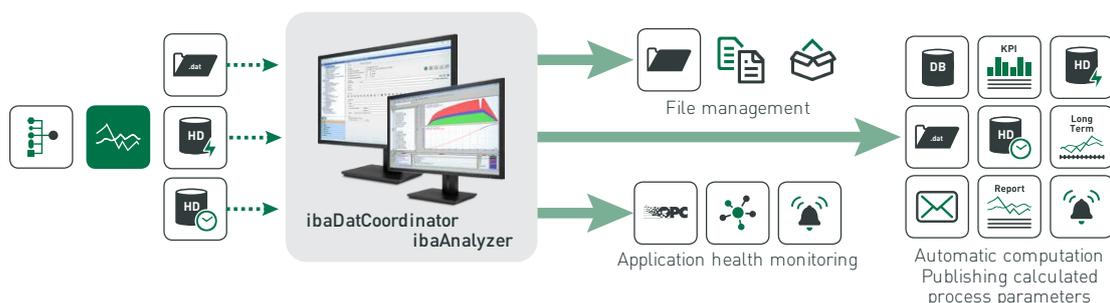
ibaDatCoordinator can be used as a stand-alone program or installed as client and server. The client-server principle allows distributed, decentralized servers

in the network to be configured from a central location.

## Easy and intuitive data flow design

ibaDatCoordinator processes data files by means of the so-called "jobs". Each job is made up of one or more tasks. With just a few mouse-clicks, you can generate and edit new jobs and the related tasks.

By using the endless possibilities of ibaAnalyzer for computing and analyzing in the background, ibaDatCoordinator can retrieve any information from your acquired data automatically and without further interaction. Notifications and alarms can be configured easily and data clean up can be set up. Further, other housekeeping tasks like copying or uploading files to other systems and clean up of processed files can be configured.



Use ibaDatCoordinator to automate any workflow based and measurement data acquired with other iba software.

# Processing data files or data stored in ibaHD-Server

## Process data from different data sources

Usually, data acquired with ibaPDA or other iba tools are either stored as files or in the long-term storage ibaHD-Server. With ibaDatCoordinator you can configure your workflow based on DAT-files, time-based data in ibaHD-Server, and also based on events stored in ibaHD-Server. In all cases it is possible to specify additional conditions to decide which data to process and what to do depending on the situation.

## Individually configurable tasks

Independent of the data source (DAT-files or data from ibaHD-Server), the actual processing of data is organized in tasks in ibaDatCoordinator. For every job, determining the data source, free combinations of tasks can be configured ranging from simple clean up tasks to offline event creation tasks which can be used to build complex chains of data and event processing.

## DAT-file triggered jobs (1)

When using a DAT-file triggered job a specified folder is monitored and every new DAT-file (e. g. written there by ibaPDA) is processed automatically. The files are marked by ibaPDA when they are ready to process and thus only complete measurement files are taken into account. Further, ibaDatCoordinator keeps track of already processed files or failed tasks and offers configurable options to retry or to send notifications in case of failure.

## Scheduled jobs (2)

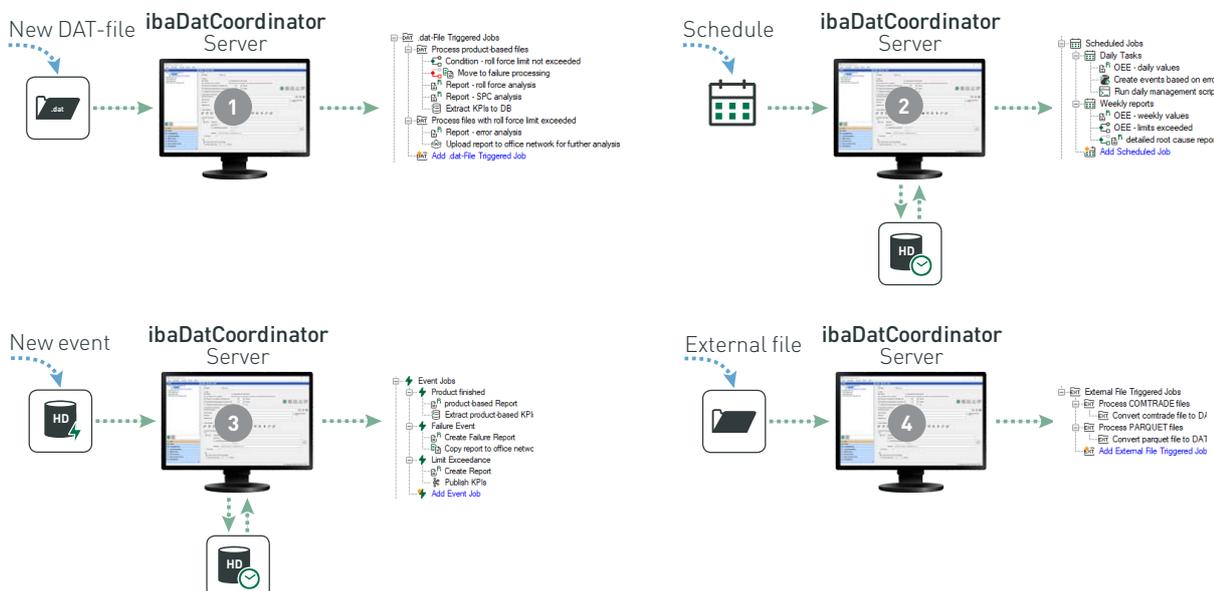
When working with data from ibaHD-Server, data are stored continuously and the file boundaries vanish. In this case, individual schedules can be set up and ibaDatCoordinator does a cyclic processing of data. Of course, also in this case all features to track, reprocess, or notify on completed or failed tasks are available. Typical use case is the creation of time-based reports, however, scheduled jobs can be used for cyclic tasks independent of measurement data as well.

## Event jobs (3)

In several situations, a pure cyclic processing of data is not the method of choice, but data ranges are rather defined by triggers or events. For such applications, the event store in ibaHD-Server is available. In combination with ibaDatCoordinator, data from time-based stores can be queried based on single events or event pairs like e. g. start and stop conditions.

## External file triggered jobs (4)

While most functions in ibaDatCoordinator are designed to work with data acquired using other iba software, it may be required to integrate measurements from third party software into the workflow. Measurement files in different formats can be processed automatically and converted 1:1 into iba-DAT files. Based on these DAT-files the further processing chain can be set up using the full function set of ibaDatCoordinator.



# Automated Reporting

## Creating reports individually with ibaAnalyzer

Different stakeholders like production, quality management or controlling have different demands on reports. With ibaDatCoordinator, reports can be created product or time-related or across products over a long period of time. ibaAnalyzer offers numerous elements that allow the user to design customized analysis reports. The measurement data can be displayed as signal trends, tables or diagrams. Product-related data can be integrated dynamically as variable or comment.

With ibaDatCoordinator, it is possible to automate the generation of these reports. The resulting documents can then be sent as an email or further notifications can be triggered.

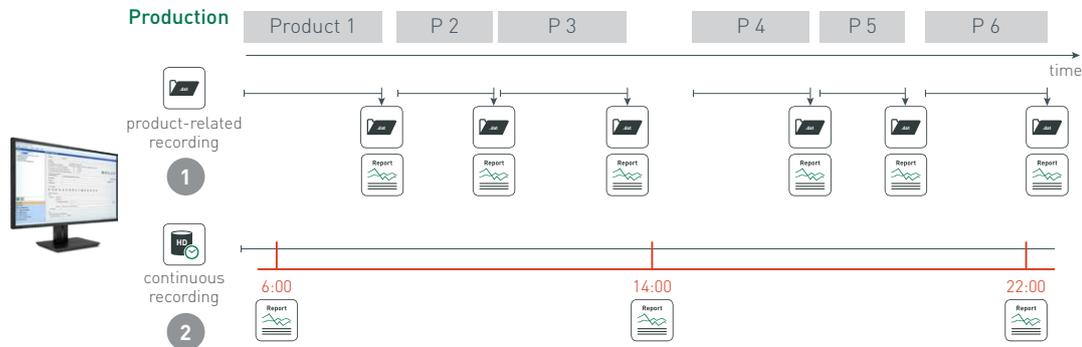
## Trigger reports and their automatic transmission

It is possible to automatically generate reports product- or event-related. For every available DAT-file (e.g. corresponding to one product) or when a certain event occurs, an individual report can be generated [1]. By using a fixed schedule, reports can be generated on a regular basis resulting in shift, daily or monthly reports [2].

The transmission of reports to specific recipients via email or the upload to central storage or cloud systems can be easily configured.

## Use conditions to decide which report to send

With the condition task, an additional layer of flexibility can be added to the processing chain. Based on computed values by ibaAnalyzer, a condition can be configured to send failure reports or send notifications only under certain circumstances. Different reports or actions can be configured for each possible situation.

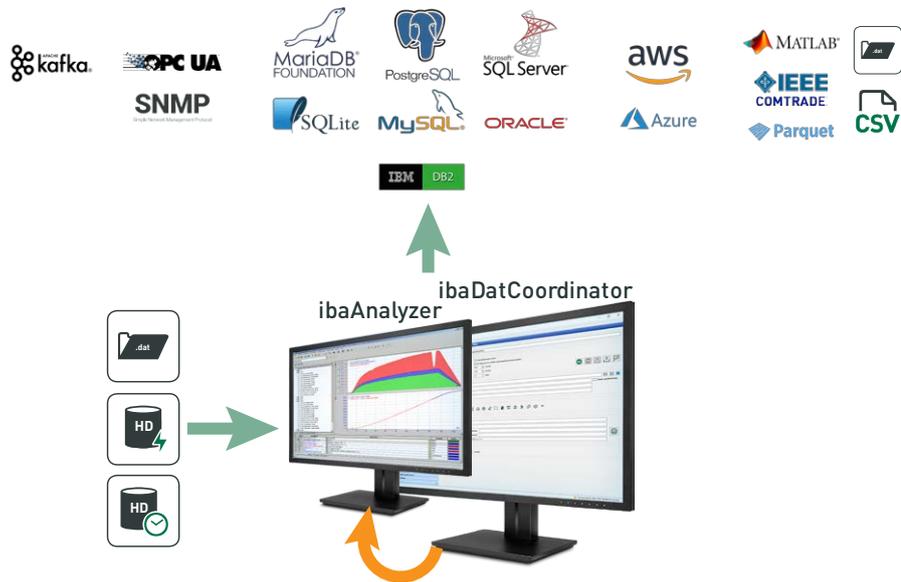


## Report examples

- Thickness deviation or rolling forces as graphs
- Barcodes and numerical display variants
- Calculated values like productivity or average thickness as table or charts



# Automated publication of ibaAnalyzer computations



## Transfer data to superordinate systems

While streaming interfaces in ibaPDA offer the possibility to publish online data, many applications do not have such real-time requirements. Especially, if a processing of data or the derivation of computed values is required before streaming the data, ibaDatCoordinator offers multiple possibilities to fulfill such tasks. Original or modified time-series data can be either stored in different SQL databases or extracted to various freely readable standard file formats. The resulting data files can be transferred automatically e. g. using an upload task. For applications like e. g. the integration to MES systems, so-called computed values (for example quality parameters) can be published to SQL databases or using other data management or messaging systems like Apache Kafka or OPC UA.

## DB and file extract

If time-series data need to be made available to other systems, ibaDatCoordinator offers the possibility to automatically extract data to SQL databases or different file formats. The configuration is mainly done with an ibaAnalyzer PDO-file and thus it is not only possible to simply convert available data, but rather to apply complex time-series computations from down-sampling to time-to-length conversion. Any result of an ibaAnalyzer expression can automatically be extracted by such a workflow.

## Publish computed values

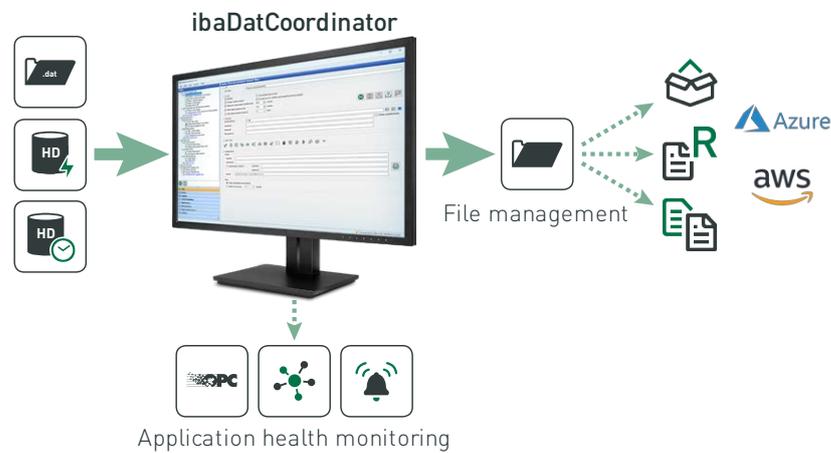
In many applications the raw time-series data are not required in superordinate systems. For example when using a product-based data acquisition configuration, ibaDatCoordinator and ibaAnalyzer can be used to automatically compute quality parameters or other statistical values (so-called key performance indicators, KPI) for each

batch or product. The resulting KPIs can automatically be published to SQL databases or using other connectors like OPC UA, Apache Kafka or SNMP.

## Offline Event Task

Especially for data recorded with ibaHD-Server, it can be required to define triggers or events, giving more structure to the process, post-mortem. With the Offline Event Task, events can be created based on available measurement data and can be written to an event store in ibaHD-Server. The events can be enriched with computed values, similar to other tasks where such values are published. The advantage of using ibaHD-Server is that consecutive event jobs can be configured to react on the created events. In this way complex event-based data-processing chains can be set up, keeping all available data within the iba-system which makes them easily available for all other iba products like ibaAnalyzer or ibaDaVIS.

# Integrated monitoring and data management



## Application health monitoring

ibaDatCoordinator monitors the status of each job and task. Important quality measures like execution duration, memory consumption, or the number of failed, done, and pending files, and many more are available. These values can be published via the integrated OPC UA and SNMP servers and can be easily consumed by third-party applications in order to monitor and visualize the behavior of ibaDatCoordinator. A limited set of status information can also be sent via TCP/IP Watchdog telegram.

## Notifications

Notifications about success, failure and status of tasks and jobs can be sent to keep users informed. Individual notifications can be sent for example via email. Furthermore, ibaDatCoordinator is able to monitor if data values are in accordance with defined limit values. If the limits are exceeded, various actions can be started, such as sending a message to the responsible persons.

## File management

Another important functionality of ibaDatCoordinator is an automated (and conditional) file management. Based on defined conditions, data files can be automatically moved, copied, or deleted.

Clean up tasks can be configured to monitor the number of files or the storage size and delete oldest files automatically. As extension to a simple copy, the upload task is available to transfer files to external systems via ftp, sftp, ssh, AWS S3 storage, Azure Data Lake.

The pause task allows to delay the execution of consecutive tasks, e.g. an update data task which can add information fields to a measurement file or rename the measurement file using data available in a database. With the ibaHD import task, measurement files can be imported into a timebased HD-store of an ibaHD-Server.

# Task overview



## Copy task

Copying or moving measurement files, e.g., from the acquisition system to a file server to create a backup of the measurement data.



## Report task

Automatic report generation. Reports can be created and printed at specified times or after completion of a product or batch, or exported as a file in various file formats.



## Extraction task

With the extraction task, data can be transferred from a measurement file to a database or another file format. Additionally, data can be extracted from an ibaHD-Server into a measurement file. (subject to license)



## Script task

Execution of self-created scripts. This task provides an open interface for free processing of the measurement files.



## Upload task

Transfer files (DAT-files or also the result files of an extraction or report task) to external (cloud) systems. ftp, sftp, ssh, Amazon S3 and Azure Data Lake are supported.



## Condition task

Conditions can be used to control the execution of subsequent tasks. This can be used to find „outlier signals“ or to compile measurement files of specific product groups.



## Update data task

With an update data task, you can add info fields to a DAT file and rename the DAT file on the basis of the data available in a database. (subject to license)



## Pause task

The pause task allows you to pause a job for a defined period of time. This allows, for example, the delayed execution of an update task.



## Cleanup task

With a cleanup task, you can limit the data volume. This ensures that there is always sufficient storage capacity available for new data.



## Splitter task

Split a measurement file into several files with shorter time ranges.



## HD offline event task

With the HD offline event task, events can be written to HD stores of the ibaHD-Server and calculated values (KPIs) can be stored as numeric or text fields of the events. Like report and extraction tasks, predefined analysis files (PDO files) can be used to configure the calculations carried out by ibaAnalyzer.



## Publish task

Publish calculated data via Apache Kafka as well as the integrated OPC UA and SNMP servers. Calculated values can also be extracted to a database. (subject to license)



## Transfer task

Transfer files (DAT-files or also the result files of an extraction or report task) between two instances of ibaDatCoordinator server.



## ibaHD-Import task

Import a measurement file into ibaHD-Server.

## S7

### S7-Writer task

With the S7-Writer task, it is possible to extract or calculate data from a measurement file and write this data in data blocks (DB) within an S7-PLC. (subject to license)

# Order information

## License free functions

ibaDatCoordinator is basically a freely installable and usable software product. A comprehensive basic functionality can be used free of charge, for more advanced functions the appropriate licenses per configured task or job have to be purchased.

The tasks for simple processing of DAT files (copy, cleanup, upload, report and splitter task), the general tasks (pause, condition, script and transfer data task) as well as the ibaHD tasks (ibaHD import and HD offline event task) can be used free of charge and allow the configuration of extensive automated processing workflows.

## Additional licenses and extensions

Automated extraction of data (time series and calculated values) in databases requi-

res one purchased license per configured task (ibaDatCoordinator-DB). Extracting data in files requires one purchased ibaDatCoordinator-File-Extract license per configured task.

The automated conversion of files from external formats into DAT files requires one purchased license (ibaDatCoordinator Convert-CSV-to-dat / DAS-to-dat / COMTRADE-to-dat / Parquet-to-dat) per configured job, depending on the external format used.

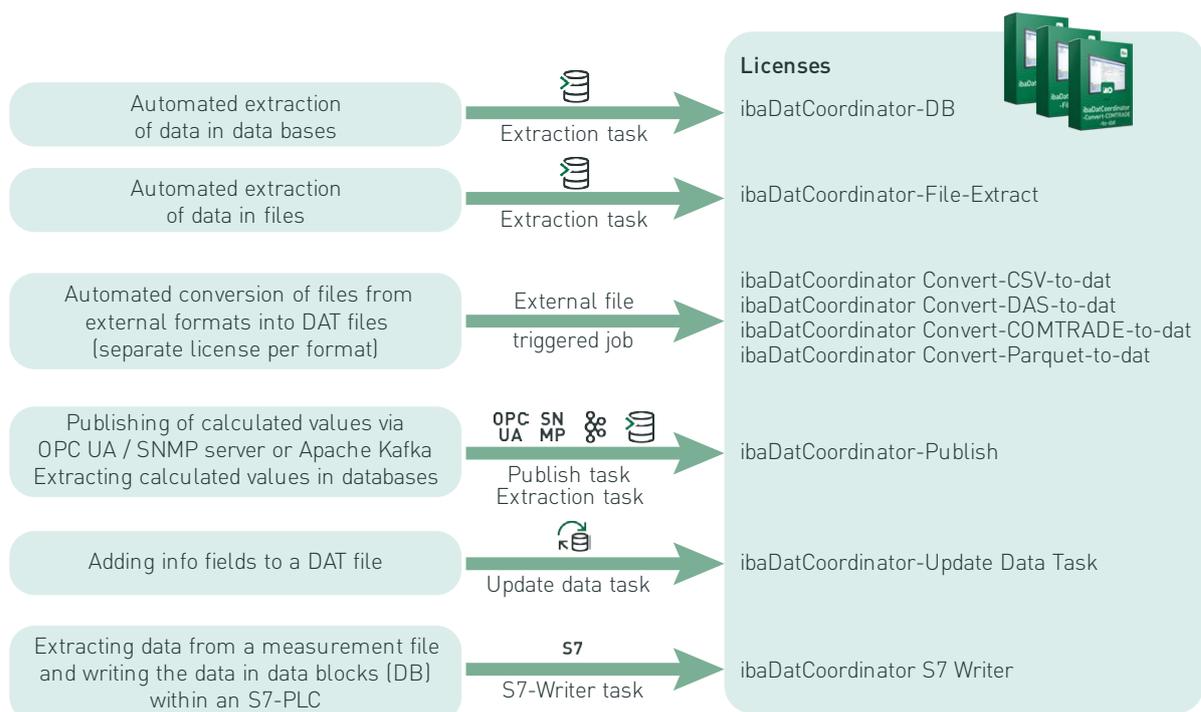
Publishing calculated values via one of the publish tasks (OPC UA, SNMP or Kafka) requires the purchased ibaDatCoordinator-Publish license per configured task. In case of an extraction in databases, this license is also sufficient, as long as only scalar values („Info assignments“ and „Calculated columns“ in the ibaAnalyzer data extractor) and no time series are extracted.

The special tasks for the subsequent update of measurement files (update data task) and for writing into SIMATIC S7 data blocks (S7 Writer task) also require separate licenses but are not limited by counters per configured task (ibaDatCoordinator-Update Data Task, ibaDatCoordinator S7 Writer).

Attractively priced 10-task bundles are also available for some task types.

## System requirements

- › Windows 8.1 (x86/x64), 10 (x86/x64), 11 (x64), Windows Server 2012 (x64), 2012 R2 (x64), 2016 (x64), 2019 (x64), 2022 (x64)
- › .NET-Framework 4.8



## ibaDatCoordinator

Order no.	Name	Description
34.010550	ibaDatCoordinator	Tool for data management automation
34.010510	ibaDatCoordinator-DB	Automatically extract data to databases (per task)
34.010520	ibaDatCoordinator-DB-10	Bundle to automatically extract data to databases (10 tasks)
34.010511	ibaDatCoordinator-File-Extract	Automatically extract data to datfiles or other file formats such as CSV, COMTRADE, Parquet, Matlab, TDMS (per task)
34.010521	ibaDatCoordinator-File-Extract-10	Bundle for automated file extract (10 tasks)
34.010512	ibaDatCoordinator Convert-CSV-to-dat	Automatically convert CSV files to datfiles (per job)
34.010513	ibaDatCoordinator Convert-DAS-to-dat	Automatically convert DAS files from Danieli FDA systems to datfiles (per job), limited to the 32-bit version of ibaAnalyzer
34.010514	ibaDatCoordinator Convert-COMTRADE-to-dat	Automatically convert COMTRADE files to datfiles (per job)
34.010516	ibaDatCoordinator Convert-PARQUET-to-dat	Automatically convert PARQUET files to datfiles (per job)
34.010515	ibaDatCoordinator-Publish	Publish computed values via OPC UA, SNMP, Apache Kafka, or SQL database (per task)
34.010525	ibaDatCoordinator-Publish-10	Bundle to publish computed values (10 tasks)
34.010552	ibaDatCoordinator-Update Data Task	Plugin for input function, subsequent entries in measurement files
34.010556	ibaDatCoordinator S7 Writer	Plugin for extracting data from a measurement file and writing it to data blocks (DB) of an S7-SPS

## ibaAnalyzer

Order no.	Name	Description
33.010000	ibaAnalyzer	Offline analysis tool
33.010003	ibaAnalyzer-DB-Read	Read data from SQL or ODBC databases
33.010445	ibaAnalyzer-E-Dat	Offline analysis for external data formats







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