

Trend Export add-on v9.0.0

for v9.0 or later



Important changes are listed in Document Revision History at the end of this document.

All rights reserved. All trademarks are the property of their respective owners.

The content of this guide is furnished for informational use only and is subject to change without notice. Carrier assumes no responsibility or liability for any errors or inaccuracies that may appear in the informational content contained in this guide.

Contents

What is the Trend Export add-on?	1
Prerequisites.....	1
What's new in Trend Export v9.0.0?	2
Configuring the add-on settings	2
To configure System Settings	2
To connect to the Export Trends database	3
Managing trend groups	4
To configure a group	5
Exporting trend groups	6
To view trend data export history	7
Troubleshooting	8
Appendix A – Exported files	9
INDEX file.....	9
RUNPARAMETERS file	10
CSV files	11
Uploading files to a remote user	13
Appendix B – Export database schema	15
METADATA table.....	15
LASTTID table.....	16
TRENDATA table.....	16
Document revision history	17

What is the Trend Export add-on?

The Trend Export add-on allows you to specify, manage, and export:

- trend source data to .csv files
- trend source data into zipped folders of multiple .csv files
- trend source data into an external database

You can export the trend data manually or at scheduled intervals—allowing you to process or analyze trend data outside of your building automation system.



TIPS

- If exporting to a database, we recommend having access to a database administrator or someone comfortable in setting up databases while setting up this add-on. The following products are supported: MySQL, Oracle, PostgreSQL, SQL Server, and SQL Server with SSL.
- To ensure a daily sample for all points that are sampling on COV, set the trend to collect a daily midnight sample. Edit the setting on the driver's **Properties** page under **Trend Sampling**.
- Data is exported from the system Trend Historian database, not from the controllers in the field. Configure the trend sources in your controllers to write to the Trend Historian frequently enough to be available when your export is scheduled to run.
- If trend data is being exported for external consumption, verify at what frequency they are expecting to receive the data. For example, if they expect the data every 15 minutes, set the trend interval for less than 15 minutes and write to Trend Historian every few samples.



CAUTION:

If you are upgrading from a previous version of Trend Export and wish to avoid losing any data, you must uninstall the previous version while keeping the data. (See *Installing an Add-on User Guide* for more information.)

Prerequisites

- If you want to use your existing v6.0 or earlier Trend database as the source database for the Trend Export add-on, first replicate the database, then use the replica for Trend Export.
- If you are not using an existing database, you must create a database in your database system. The add-on will create the necessary tables in your database. See *To connect to the Export Trends database* (page 3).
- You have upgraded to v9.0 or later and installed the latest cumulative patch
- You have downloaded **trendexport.addon**
- You have purchased and downloaded the Trend Export license
- You have adequate disk space available to store the exported files (see *Troubleshooting* (page 8))
- You have the "Engineer System" or "Maintain Graphs and Reports" privilege

All trademarks used herein are the property of their respective owners.

See the "Installing an Add-on User Guide" on the Partner Community Website for the following:

- Installing an add-on
- Applying a license
- Running an add-on
- Upgrading an add-on

What's new in Trend Export v9.0.0?

- Export failures trigger a System Error alarm
- Ability to access the add-on with the "Maintain Graphs and Reports" privilege
- Ability to manually export all available trends rather than only trends within a span of 2 years
- Ability to schedule and suspend exports at the group level
- Ability to bulk delete export history
- Location dependent privileges synced with BAS while creating or editing a group
- Automatic scheduled exports do not include trend data older than the configured trend expiration interval
- Trend expiration schedule runs at 3:00 AM daily
- User interface, logging, and error message improvements

Configuring the add-on settings

To configure System Settings

Go to **Settings** > **System Settings** to manage system-level settings. After making changes, click **Save Settings**.

Field	Description
Enable artifact auto-deletion	Select to automatically delete export artifacts from the Export History list, including csv data files, once they are older than the number of days specified in the following field.
Delete artifacts on disk older than specified # of days	Automatically delete artifacts older than the number of days you enter here (1–180). Adjust this value to increase available disk space.
Suspend export process for all groups	Select to pause all scheduled exports for all groups. This does not affect exports already in progress.
Export artifact directory	Name of the sub-folder of the trend export add-on folder that contains the exported files.

All trademarks used herein are the property of their respective owners.

Field	Description
Site Identifier	Unique name for the system site. This allows many systems or hierarchical systems to save archive files in a common shared directory without the potential for filename collisions.
Default start hour for daily export schedules	Select a default value for the hour of the day for daily exports to start. This will be the default value for new groups and does not affect existing schedule settings. NOTE You can set the start hour for each group individually in the Manage Groups tab.
Default start minute for hourly export schedules	Select a default value for the minute within the hour for hourly exports to start. This will be the default value for new groups and does not affect existing schedule settings. NOTE You can set the start minute for each group individually in the Manage Groups tab.
Log detail level	Select the degree of detail to include in the add-on logs. NOTE Select to include debug log entries only when actively troubleshooting a problem. Make sure to change the log level back to your normal level after troubleshooting is complete.
Enable BAS alarm for data export failures	Triggers a System Error alarm whenever an export fails. The reason for the failure is available on the Export History page and in the logs.

To connect to the Export Trends database

If you plan to export to a database, you must connect the add-on to your database.

- 1 Click **Settings > Database Settings** and enter the following information. See table below.
- 2 Click **Save Settings**.
- 3 Click **Test Connection** to verify the database is communicating.
- 4 Click **Validate Schema** to create the required tables in the Export Trends database.

Main Database Connect String	
Database type	Select the type of database to use for your Export Trends database from the drop-down menu.
Server	Enter the name or IP address of the machine that the Export Trends database is on.
Port	Enter the port number the Export Trends database will use for communication.
Instance	Enter the name of your Export Trends database.

All trademarks used herein are the property of their respective owners.

Database User	
Login	Enter your database user login name.
Password	Enter your database user password.
Exported Trend Data Expiration	
Enable trend expiration	Select to automatically delete trend data from the third-party database once they are older than the number of days you specify below. NOTE This process occurs once per day at 3:00 a.m. (BAS server time). To avoid conflicts, reschedule any daily export schedules set for 3:00 a.m.
Trend expiration interval (in days)	If trend expiration is enabled, enter the number of days after which to delete trend data in the third-party database. Type a value between 1 and 999 appropriate to the size of your database. NOTE Automatic scheduled exports do not include trend data older than the configured number of days.

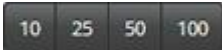
Managing trend groups

A trend group consists of a set of trend data sources to be exported into .csv files or to an external database. You can configure each group to run manually or at scheduled intervals to collect data for a specified time range.

Create and manage your groups in the **Manage Groups** tab under **Trend Group Definitions**. See the table below.

Use this button...	To...
	Create a new group. This opens the Edit Group Definition section where you can define the group's properties and select trend sources to export. See <i>To configure a group</i> (page 5).
	Copy a group.
	Edit a group. This opens the Edit Group Definition section where you can edit the group's properties and trend sources. See <i>To configure a group</i> (page 5).
	Delete a group.
	Display a group's trend sources configured for export.
	Display a group's export history. NOTE To see export history for all groups, go to the Export History tab.
	Export a group manually. See <i>Exporting trend groups</i> (page 6).



TIP Change the number of groups displayed in the table using .

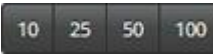
NOTE For more information on the columns shown in the **Trend Group Definitions** table, see *To configure a group* (page 5).

To configure a group

You can define a group's properties and assign trend sources to a group in the **Edit Group Definition** section once you click  or  in the **Manage Groups** tab. After you have made your changes, click **Save**.

To configure system-wide settings for all groups, go to **Settings > System Settings**.

Field	Description
Trend Source Group Details	
Name	Enter a unique group name in the Name field.
ID	If needed, edit the auto-filled ID . Value must be 6–25 characters with no spaces.
Suspend export process	Select to pause all scheduled exports for this group. This does not affect exports already in progress.
Schedule	Specify how often the data should be exported: Unscheduled—No schedule set; run this export manually. See <i>To export a group manually</i> (page 6). Daily—export trend samples every day. You can select the time of day at which the scheduled reports will run. Hourly—export trend samples every hour. You can select the minute within the hour at which the scheduled exports will run.
Export format	Select how to export the data: csv per source—produces a .zip file containing one .csv file for each selected trend source in the group. The .csv file names include the associated source ID. csv per group—produces one .csv file containing data for all selected trend sources in the group. Relational Database Export—populates your Export Trends database.
Initial export range	For scheduled exports, select the time range of data to collect for trend sources that have not previously been exported. In the initial export of a trend source, all available samples within the selected time range will be exported. In subsequent exports, all samples since the previous run will be exported. NOTE The Trend Export add-on exports data from the system's Trend Historian database. Make sure the Initial Export Range is long enough to include data previously uploaded to the system database. For instance, if a trend source is configured to only upload data from the controller once per day, you must set the Initial Export Range to be longer than one day.
Export fields	Select one or more fields to include as columns in the .csv file(s), if needed. - For csv per group exports, select at least one export field. - For csv per source exports, this field is optional. - For Relational Database Export exports, this field is not applicable.

Field	Description
Trend scope selection	Select any areas, locations, or points to export as part of this group. Then, click . NOTE If your system has location-dependent privileges configured, your trend scope selections are limited by those privileges.
Selected trend scopes	Select a trend scope to select trend sources from. To remove a trend scope, click . NOTES - If your system has location-dependent privileges configured, then while creating or editing a group, child equipment within the selected parent node to which you have location access will be automatically included. Equipment lacking location access permissions will be automatically excluded. - If you have selected more than 10 items, use the result number buttons  to see the remainder of the list.
Source selection per scope	To export all sources within the scope you selected, click Export all sources within selected scope. To choose which sources to export within the scope you selected, click Select sources to export within selected scope and select the sources in the window.

NOTE When creating multiple groups to schedule the export of trend data to a third-party database, avoid assigning the same trend source to multiple groups.



TIP After configuring the trend group, you can view the trend sources configured for export by clicking  in the group's **Actions** column in the **Manage Groups** tab.

Exporting trend groups

You can schedule a group to export automatically at a specific time, or you can export a group manually. Use the manual export method when you don't need to export data on a set schedule. For example:

- when setting up a new group, you could manually export to determine the size of the file created.
- when you create a group that doesn't need to be run on a regular basis.

NOTES

- Only one export can run at a time per group (scheduled and manual exports).
- Only one manual export can run at a time across all groups.

To schedule a group to export automatically

Select an option under **Schedule** in the **Edit Group Definition** section when creating or editing a group. See *To configure a group* (page 5). You can set up a schedule when creating a group or you can set one up at any time later.

To export a group manually

In the **Manage Groups** tab, in the **Manual Export** column, use the drop-down list that corresponds with the group to select the desired time range of data to export. Then, click .

To view trend data export history

In the **Export History** tab, use the **Trend Data Export History** table to view the detailed history of each of your trend data export runs. You can download history files by clicking  to the left of the file.

NOTE Download files are not available for trend data in **Relational Database Export** export format.



TIPS

- Exports with **Failed** or **Blocked** status are highlighted in red.
- Remove older trend data automatically by enabling the **Enable artifact auto-deletion** setting. See *To configure System Settings* (page 2).
- You can filter by **Group Name**, **Group ID**, **Schedule** or **Status** using the fields and drop-down menus below the column header names.
- Sort the list by clicking on any column header names that are followed by up or down arrows.
- Remove items from the list by selecting the associated checkbox to each item's left, then clicking  at the top of the column.
- Select/de-select the entire displayed list by clicking the checkbox beside the  button.

Column name	Description
Group Name	The group's unique name
Status	The group's current export status: Successful —the group exported successfully In Progress —the group is currently being exported Failed —the group failed to export to the database. Click Failed to see the error description. Suspended —the scheduled exports for this group are suspended or the export process was stopped. Suspensions are set through the Suspend export process option. See <i>To configure System Settings</i> (page 2) or <i>To configure a group</i> (page 5). Blocked —the group failed to export due to a conflict. The group must finish exporting before it can be exported again. Click Blocked to see the error description.
Sources	Number of trend sources included in the group
Failed Sources	Number of trend sources that failed to export successfully. If any have failed, click the number to see the error description.

Column name	Description
Sample Count	Number of data points exported NOTE This number may be up to 5% higher than the actual number of samples transferred.
Group ID	The group's unique ID
Run Time	Duration of the export process
Start Time	The time and date the export process started
End Time	The time and date the export process finished
Schedule Time	The time and date the export process was scheduled to run. If you exported a group manually, this shows the time and date of when you started the export process.
Schedule	Shows whether the group was exported manually or through a daily or hourly schedule.
Export Format	The format into which the data was exported: csv per source — a .zip file containing one .csv file for each source in the group csv per group — one .csv file containing data for all sources in the group Relational Database Export —populates your Export Trends database

Troubleshooting

If the trend data fails to export, try the following:

- Increase the java memory/heap in the core console at: /help/about <server_name>/Java VM /Memory settings.
- Reduce the number of points in the group by de-selecting areas, locations, or points from the **Trend Scope Selection** field (or the items in the **Source Selection per Scope** field). See *To configure a group* (page 5).
- Select a smaller time range from the **Initial Export Range** drop-down list when creating or editing a group. See *To configure a group* (page 5).

Appendix A – Exported files

The following files are produced each time trend data is exported:

- INDEX.json
- RUNPARAMETERS.json
- A single .csv file OR a .zip file containing multiple .csv files

These files are placed in a .zip file named with the GroupID, ScheduleID, and export timestamp and are located in

`<system_name>\webapp_public\trendexport\<export_artifact_directory>`.

INDEX file

The INDEX.json file contains the table of contents of the .zip file, which contains:

- Format of the CSV files (headers)
- Meta data describing each trend's sourceid, display path, display name, and location (system reference name). The trend's sourceid value is very important, as it is used in the name of the single source CSV files stored as a peer to this file.

NOTE If you move a piece of equipment within the tree, a new sourceid is assigned to it at the new location.

Where to find the INDEX file

The INDEX.json file is in the .zip file found in

`<system_name>\webapp_public\trendexport\<export_artifact_directory>`.

Name	Size	Packed Size	Created	Accessed	A
INDEX.json	35 726	5 703	2016-11-23...	2016-11-23 09:23	
RUNPARAMETERS.json	916	414	2016-11-23...	2016-11-23 09:23	
TrendData_0041F3A03F882A09BA88B6B1AD51E4D8.csv	0	2	2016-11-23...	2016-11-23 09:23	
TrendData_0100448F693F56F972D7C75E72ABC60F.csv	0	2	2016-11-23...	2016-11-23 09:23	
TrendData_010C3D61B243CD72D2528FF331B6B3E3.csv	0	2	2016-11-23...	2016-11-23 09:23	
TrendData_06ED68534B820D653F83DBD7A491DA8D.csv	84	43	2016-11-23...	2016-11-23 09:23	
TrendData_087E9D3635B5958AD2A02AD3E7F47E48.csv	0	2	2016-11-23...	2016-11-23 09:23	
TrendData_09903CE2C1F624D5C5DA8A46F18F8724.csv	0	2	2016-11-23...	2016-11-23 09:23	
...	...	...	...	...	...

What is in the INDEX file

Code Fields	Descriptions
sourceid	Unique identifier for the trend source EXAMPLE: 0041F3A03F882A09BA88B6B1AD51E4Db
displayPath	Path to the trend source EXAMPLE: BAS / OA Conditions / update stamp

All trademarks used herein are the property of their respective owners.

Code Fields	Descriptions
displayName	Name displayed for the trend source EXAMPLE: update stamp
locationId	Location of the trend If this changes, a new sourceId is assigned to the trend at the new location. EXAMPLE: ABSPATH:1:#oa_conditions/update stamp_tn

EXAMPLE:

```
{
  "description" : "Trend Export Source Index",
  "combinedTidFileCsvHeaders" : [ "sourceId", "sampleTime", "sampleValue" ],
  "separateTidFileCsvHeaders" : [ "sampleTime", "sampleValue" ],
  "indexEntries" : [ {
    "sourceId" : "0041F3A03F882A09BA88B6B1AD51E4DB",
    "displayPath" : "BAS / OA Conditions / update stamp",
    "displayName" : "update stamp",
    "locationId" : "ABSPATH:1:#oa_conditions/update stamp_tn",
    "error" : ""
  }, {
    "sourceId" : "01004E03A392A09BA88B6B1AD57F2894",
    "displayPath" : "BAS / Zone Applications / VAV Terminal ZS / Heat",
    "displayName" : "Heat",
    "locationId" : "ABSPATH:1:#vav_terminal_zs/heat_tn",
    "error" : ""
  }, {
    "sourceId" : "00403F8827A1F3A14A392A09BA88B6B1",
    "displayPath" : "BAS / Zone Applications / VAV AHU / Sup Fan S/S",
    "displayName" : "Sup Fan S/S",
    "locationId" : "ABSPATH:1:#vav_ahu/sfan",
    "error" : ""
  }
]
```

RUNPARAMETERS file

The RUNPARAMETERS.json file is in the .zip file found in
 \<system name>\webapp_public\trendexport\<export_artifact_directory>.

This file contains runtime information including:

- Group configuration parameters
- Status
- Statistics such as sample count, trend source count, and start and end times

Name	Size	Packed Size	Created	Accessed	A
 INDEX.json	35 726	5 703	2016-11-23...	2016-11-23 09:23	
 RUNPARAMETERS.json	916	414	2016-11-23...	2016-11-23 09:23	
 TrendData_0041F3A03F882A09BA88B6B1AD51E4D8.csv	0	2	2016-11-23...	2016-11-23 09:23	
 TrendData_0100448F693F56F972D7C75E72ABC60F.csv	0	2	2016-11-23...	2016-11-23 09:23	
 TrendData_010C3D61B243CD72D2528FF331B6B3E3.csv	0	2	2016-11-23...	2016-11-23 09:23	
 TrendData_06ED685348820D653F83DBD7A491DA8D.csv	84	43	2016-11-23...	2016-11-23 09:23	
 TrendData_087E9D3635B5958AD2A02AD3E7F47E48.csv	0	2	2016-11-23...	2016-11-23 09:23	
 TrendData_09903CE2C1F624D5C5DA8A46F18F8724.csv	0	2	2016-11-23...	2016-11-23 09:23	

EXAMPLE:

RUNPARAMETERS.json

```
{
  "description" : "Trend Export Runtime Parameters",
  "groupName" : "MELGR25 AIBI",
  "groupId" : "MELGR25AIBI",
  "scheduleId" : "hourly",
  "runStatus" : "@lang_Artifact_Success",
  "totalSampleCount" : 14077602,
  "trendSourceCount" : 1600,
  "exportStartTime" : "Tue Sep 13 10:00:00 EDT 2016",
  "exportStartTimeMs" : 1473775200062,
  "exportEndTime" : "Tue Sep 13 10:01:17 EDT 2016",
  "exportEndTimeMs" : 1473775277177,
  "scheduledStartTime" : "Tue Sep 13 10:00:00 EDT 2016",
  "scheduledStartTimeMs" : 1473775200000,
  "artifactFileName" :
"F:\\BAS6.5_TESTING\\webroot\\de1627\\webapp_public\\trendexport\\exportartifacts\\MELGR25AIBI_hourly_SiteI
d_09-13-2016-10_00_00_AM_EDT.zip",
  "exportDurationMs" : 77115,
  "exportDurationStr" : "00:01:17",
  "artifactLink" : "",
  "artifactId" : "MELGR25AIBI_hourly_SiteId_09-13-2016-10_00_00_AM_EDT",
  "failureCount" : 0
}
```

CSV files

Depending on how each Trend Group was defined to be exported, the trend sample data is provided in one of the following file formats:

- A .zip file containing multiple.csv files—one for each source in the group.
Example: TrendData_0041F3A03F882A09Ba88B6B1AD51E4Db.csv
- A single combined .csv file containing data from all sources in the group.
Example: Combined.csv

CSV files per source

Name	Size	Packed Size	Created	Accessed	A
 INDEX.json	35 726	5 703	2016-11-23...	2016-11-23 09:23	
 RUNPARAMETERS.json	916	414	2016-11-23...	2016-11-23 09:23	
 TrendData_0041F3A03F882A09BA88B6B1AD51E4D8.csv	0	2	2016-11-23...	2016-11-23 09:23	
 TrendData_0100448F693F56F972D7C75E72ABC60F.csv	0	2	2016-11-23...	2016-11-23 09:23	
 TrendData_010C3D61B243CD72D2528FF331B6B3E3.csv	0	2	2016-11-23...	2016-11-23 09:23	
 TrendData_06ED68534B820D653F83DBD7A491DA8D.csv	84	43	2016-11-23...	2016-11-23 09:23	
 TrendData_087E9D3635B5958AD2A02AD3E7F47E48.csv	0	2	2016-11-23...	2016-11-23 09:23	
 TrendData_09903CE2C1F624D5C5DA8A46F18F8724.csv	0	2	2016-11-23...	2016-11-23 09:23	
...	...	...	...	...	...

EXAMPLE:

	A	B
1	2016-09-12T16:55:24-04:00	70.33683
2	2016-09-12T16:55:27-04:00	72.699524
3	2016-09-12T16:55:30-04:00	75
4	2016-09-12T16:55:33-04:00	77.23195
5	2016-09-12T16:55:36-04:00	79.38927
6	2016-09-12T16:55:39-04:00	82.13938
7	2016-09-12T16:55:42-04:00	83.45653
8	2016-09-12T16:55:45-04:00	85.35534
9	2016-09-12T16:55:48-04:00	87.15724
10	2016-09-12T16:55:51-04:00	88.8573
11	2016-09-12T16:55:54-04:00	90.45085
12	2016-09-12T16:57:51-04:00	88.8573
13	2016-09-12T16:57:54-04:00	90.45085
14	2016-09-12T16:57:57-04:00	91.93353
15	2016-09-12T16:58:00-04:00	50
16	2016-09-12T16:58:03-04:00	52.6168
17	2016-09-12T16:58:06-04:00	55.226425
18	2016-09-12T16:58:09-04:00	57.821724
19	2016-09-12T16:58:12-04:00	60.395584
20	2016-09-12T16:58:15-04:00	62.940952

All trademarks used herein are the property of their respective owners.

Combined CSV

One .csv file for the group that includes a column identifying the trend source for each row.

Name	Type	Modified	Size	Ratio	Packed	Pa
Combined.csv	Microsoft Excel Comma Separated Values File	9/13/2016 10:00 AM	270,956,787	90%	28,285,935	
INDEX.json	JSON File	9/13/2016 10:00 AM	65,711	95%	2,972	
RUNPARAMETERS.json	JSON File	9/13/2016 10:00 AM	915	57%	396	

EXAMPLE:

	A	B	C
1	06ED68534B820D653F83DBD7A491DA8D	2016-03-08T08:45:00-05:00	1
2	06ED68534B820D653F83DBD7A491DA8D	2016-03-08T09:40:00-05:00	1
3	06ED68534B820D653F83DBD7A491DA8D	2016-03-08T16:55:00-05:00	1
4	0A7254B9F65C2E9FC3FA5A2D6B773920	2016-03-08T08:45:00-05:00	1
5	0A7254B9F65C2E9FC3FA5A2D6B773920	2016-03-08T09:40:00-05:00	1
6	0A7254B9F65C2E9FC3FA5A2D6B773920	2016-03-08T16:55:00-05:00	1
7	0D9E4829525E3290AA300FB03975CDAC	2016-03-07T09:05:00-05:00	55
8	0D9E4829525E3290AA300FB03975CDAC	2016-03-07T09:10:00-05:00	55
9	0D9E4829525E3290AA300FB03975CDAC	2016-03-07T09:15:00-05:00	55

Uploading files to a remote user

If updated or newly created artifact files must be uploaded to a remote server, the process can be automated. While there are many ways to do this, this section outlines one method to accomplish it in a Windows® environment.

Tools required

Use...	to...
WinSCP - FTP client	push or upload the artifact files. https://winscp.net/eng/index.php
Windows Task Scheduler	automate the upload using the Microsoft® Windows® Scheduling tool found in the Control Panel.

In the example below, this task will run every five minutes, executing a script. The script will then synchronize the data, uploading any changed or newly created artifacts to the remote location.

Step 1: Set up FTP client

- 1 Verify that the remote location where the files will be pushed has already been defined and configured.
- 2 Verify that the remote location has an FTP server listening for incoming files.
- 3 Set up the FTP client using a script. The script will open the FTP connection pointing to the remote FTP server and upload the files. For more information regarding the FTP client, see the link above.

Script.txt

```
open ftp://username:password@xxx.xxx.xxx.xxx/
synchronize -filemask="*.zip" remote c:\temp\artifacts\
/home/storedata
exit
```

All trademarks used herein are the property of their respective owners.

The "synchronize" step in the script above is used to detect changes in the source folder. For additional information on the syntax of the script file including encryption options, see https://winscp.net/eng/docs/scriptcommand_synchronize#examples

NOTE If you choose to use a different FTP client, it may not contain a synchronize feature similar to WinSCP. If it does not, you must implement an additional step, such as a batch file, that manually checks for file changes in the artifacts folder.

Step 2: Automate the upload process when modifications are present

- 1 Launch **Task Scheduler** from **Control Panel > Administrative Tools**.
- 2 Under **Actions**, click **Create Task**.
- 3 On the **General** tab:
 - a) Type a file name, such as `ftp`.
 - b) Select **Run whether user is logged on or not**.
 - c) Check **Run with highest privileges**.
- 4 On the **Triggers** tab:
 - a) Click **New**.
 - b) Under **Settings**, select **Daily**.
 - c) Under **Advanced Settings**, check **Repeat task every**; then select time increment such as every 5 minutes.
 - d) Select **Enabled**.
 - e) Click **OK**.
- 5 On the **Actions** tab:
 - a) Click **New**.
 - b) Under **Settings**, browse to **WinSCP.exe**:
`C:\Program Files (x86)\WinSCP\WinSCP.exe`
 - c) In the **Add arguments** text field, type:
`/log=C:\LogfileDir\WinSCP.log /script=C:\LogfileDir\script.txt`
 - d) Click **OK**.
- 6 Click **OK**.

Appendix B — Export database schema

The schema of the export database matches the schema of the BAS Trend Historian database as it was before it was changed in v6.5. It consists of three tables: METADATA, LASTTID, and TRENDATA.

METADATA table

The METADATA table contains information about each trend source that has been exported to the database. Its primary key is the tid_.

Column name	Data type	Notes
tid_	integer	Primary key
sourcepath_	varchar(8000)	Trend source's full source path
oldestsampletime_	datetime	Oldest sample for this trend source. This value is updated when trend expiration is enabled and samples that have exceeded the expiration interval have been deleted. See <i>To connect to the Export Trends database</i> (page 3).
newestsampletime_	datetime	Newest sample for this trend source. This value is updated after trend data for this data source has been exported into the database.
recordcount_	integer	Number of samples for this trend source in the database.
datatype_	smallint	Not used
lastsequencenumber_	integer	Last sequence number for this trend source in the TRENDATA table.
protocolstring_	varchar(100)	Not used
source_property_	varchar(150)	Not used
equipment_dbid_	integer	Not used
relative_path_	varchar(125)	Persistent lookup string that identifies this trend source.

LASTTID table

The LASTTID table keeps track of the last tid_ value in the METADATA table. It is incremented when a new trend source row is added to the METADATA table.

Column name	Data type	Notes
lasttid_	integer	Last tid_ in the METADATA table.

TRENDDATA table

The TRENDDATA table contains the exported trend data samples for exported trend sources. Its primary key consists of the tid_ and sequencenumber_.

Column name	Data type	Notes
tid_	integer	The tid_ associated with this sample's trend source in the METADATA table.
sequencenumber_	integer	Unique number for this trend source.
date_stamp_	datetime	Date/time sample was taken
record_type_	smallint	0 = Log status (log enable/disable) 1 = Boolean ("true"/"false") 2 = Real (number) 3 = Enum (0/1 for binary) 8 = Failure 9 = Time change / time sync 11 = ALC status (trend DB manual save, historian enable/disable, comms down, etc.)
data_value_	varchar(50)	Value of trend when this sample was taken
status_flags_	smallint	Not used

Document revision history

Important changes to this document are listed below. Minor changes such as typographical or formatting errors are not listed.

Date	Topic	Change description	Code*
5/21/26	All topics	Updated to v9.0	X-D
8/14/24	All topics	Updated for v2.6	X-PM-RM-J
1/28/22	Connecting to the Export Trends database	Added Validate Schema instructions	X-TS-SR-R
2/16/21	Book	Updated catalog number	C-TS-RD

* For internal use only

All trademarks used herein are the property of their respective owners.