Data Flow Controller DX-series

Practices Guide

SynapseSync RDB Components

DX100-□□□□

V310-E1-01

Revision History

Version	Revised content	Date
Version 2.0	Original production	September 30, 2025
Version 2.0.1	• Removed MS SQL Server from the supported targets and deleted related descriptions. • Added the versions of the RDBs that have been verified. • Corrected the Dependent Modules. • Corrected typographical errors and inconsistent wording.	January 9, 2026
Version 2.0.2	• Corrected the Dependent Modules.	February 27, 2026
Version 2.0.3	• Changed the activation code determination conditions.	March 13, 2026
Version 2.1.0	• Added support for English UI display.	March 31, 2026
Version 2.1.1	• Added RDB Dependent Module Supporting Version • Corrected the Dependent Modules • Added Installation of Dependent Modules • Added Installation of Dependent Modules Using whl Files	April 10, 2026

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1.About the RDB Components Package

1.1.Overview

This package provides additional custom components that run with SpeeDBee Synapse (hereinafter referred to as Synapse). The components added by the package can connect to various types of relational databases (RDBs) and retrieve and register data.

When the package is registered, two components are added: RDB Collector and RDB Emitter.

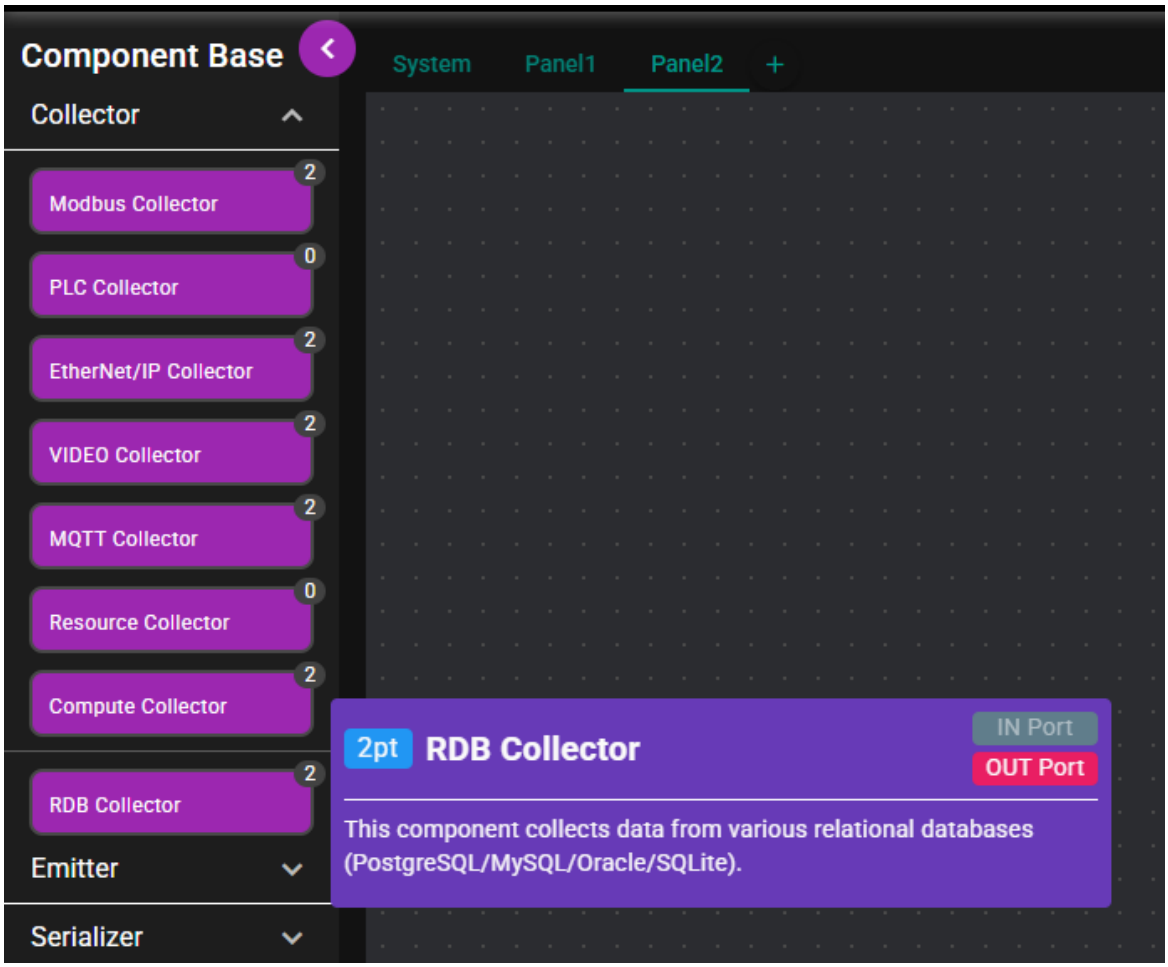
1.2.Basic Information About the Package

The component package provided is as follows.

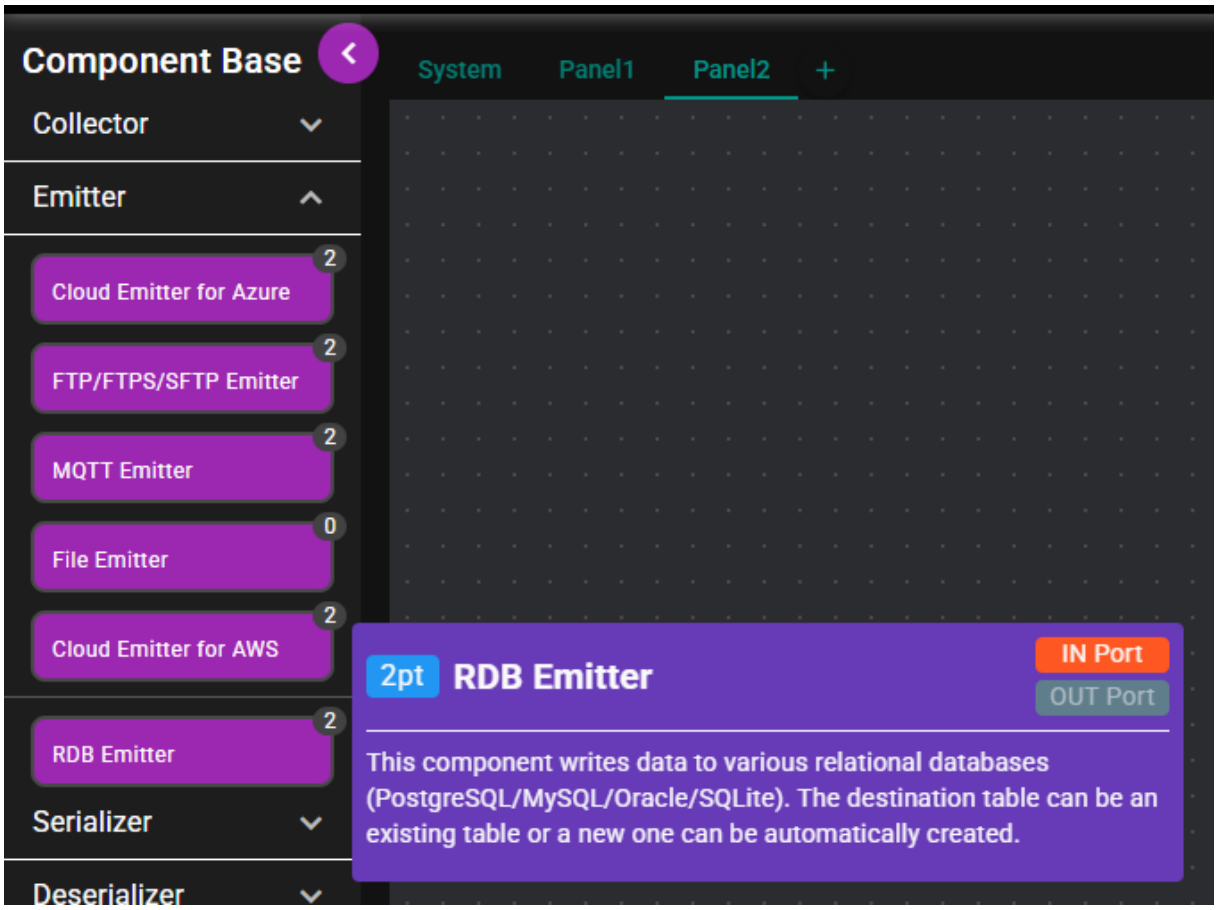
Package file name (*1)	synapsesync_rdb_components.sccpkg
Operating environment	Platforms on which Synapse 4.9.5 or later is running
Components to be registered	• RDB Collector (*2) • RDB Emitter (*3)

*1 Refer to *6.2.6.4 Registering SCCPKG File in and Deleting SCCPKG File from Synapse* in the *DX-series SpeeDBee Synapse User's Manual (Cat. No. V243)* for information on registering the package.

*2 The registered component will be displayed under the *Collector* category in the component list.

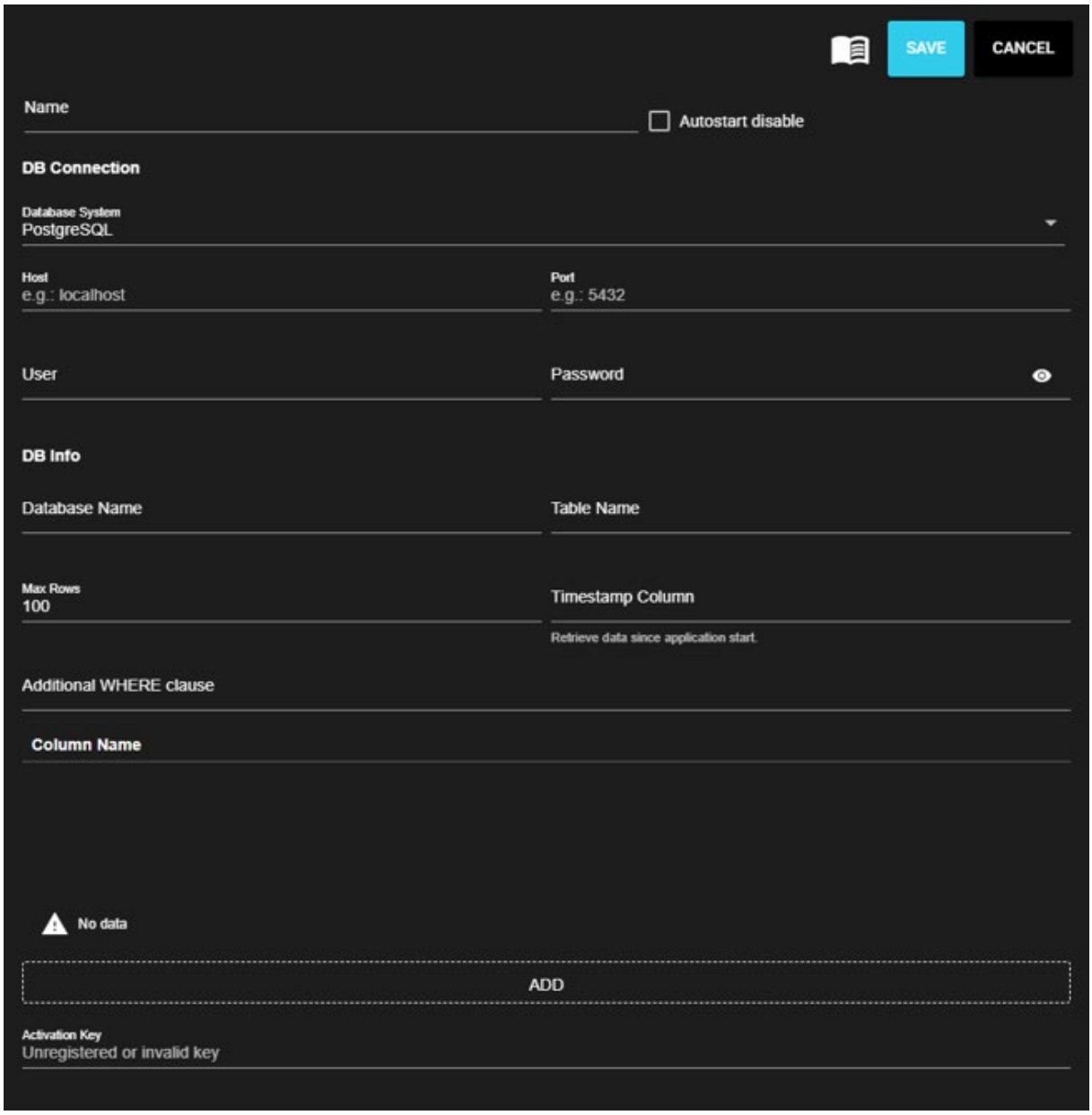


*3 The registered component will be displayed under the *Emitter* category in the component list.



1.3.Setting Screens

1.3.1.RDB Collector



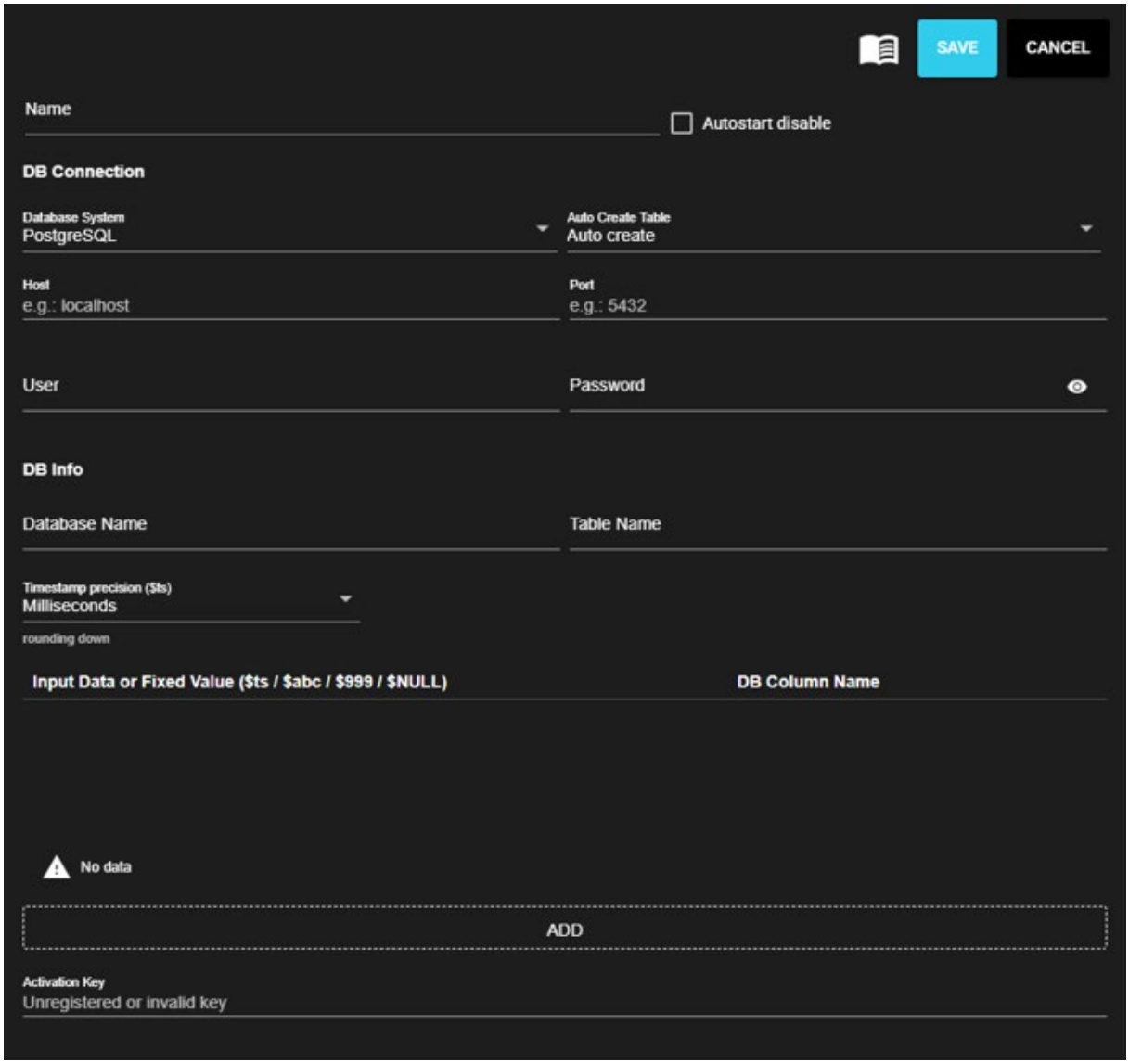
Item	Description (Values in red are default values)
Name	Component name (any name that is not duplicated)
Database System	Select the database system to be connected. PostgreSQL, MySQL, Oracle, or SQLite
DB File Path	This is displayed only when the database system to be connected uses SQLite. Set the save location file path.
Host	This is displayed when the database system to be connected does not use SQLite. Host name or IP address of the database system to be connected

Port	This is displayed when the database system to be connected does not use SQLite. Port number of the database system to be connected * Access is not available if the connection destination port is not open.
User	This is displayed when the database system to be connected does not use SQLite. User name of the database system to be connected
Password	This is displayed when the database system to be connected does not use SQLite. Password of the database system to be connected
Database Name	This is displayed when the database system to be connected does not use SQLite. Database name of the database system to be connected
Table Name	This is displayed when the database system to be connected does not use SQLite. Table name of the database system to be connected
Max Rows	The maximum number of records to be retrieved in a single SELECT statement. The default value is 100.
Timestamp Column	The timestamp column of records in the RDB. A timestamp-type column such as DATETIME is required for reading data with RDB Collector.
Additional WHERE clause	Conditions for data retrieval other than the timestamp. For example, to retrieve only records that exceed a specific threshold, enter the following: value > 2
Column Name	Enter the name of the column to be registered in Synapse.
ADD button	Click this button to add a column.
Activation Key*1	Enter an activation key to unlock the restricted mode. For details about modes, refer to *1.4.6 Restricted Mode and Full Mode*.

*1 The Activation Key entry field is not displayed on SpeeDBee Synapse installed on products released by OMRON Corporation. This component is automatically set to Full mode.

* To check the data output by the collector, click the icon at the bottom of the screen and then click the collector’s output port.

1.3.2.RDB Emitter



Item	Description (Values in red are default values)
Name	Component name (any name that is not duplicated)
Database System	Select the database system to be connected. PostgreSQL, MySQL, Oracle, or SQLite
Auto Create Table	A processing flag that controls the behavior when the specified table does not exist. During automatic creation, an id column is created automatically. During automatic creation, missing columns are also added to an existing table automatically.
DB File Path	This is displayed only when the database system to be connected uses SQLite. Set the save location file path.

Host	This is displayed when the database system to be connected does not use SQLite. Host name or IP address of the database system to be connected
Port	This is displayed when the database system to be connected does not use SQLite. Port number of the database system to be connected * Access is not available if the connection destination port is not open.
User	This is displayed when the database system to be connected does not use SQLite. User name of the database system to be connected
Password	This is displayed when the database system to be connected does not use SQLite. Password of the database system to be connected
Database Name	This is displayed when the database system to be connected does not use SQLite. Database name of the database system to be connected
Table Name	This is displayed when the database system to be connected does not use SQLite. Table name of the database system to be connected
Timestamp precision	Specifies how fractional seconds of the timestamp inserted with $ts are handled.
Input Data or Fixed Value	The data name output by the collector to be connected to the input port of RDB Emitter.*1 For example, when retrieving memory usage from a resource collector named *Resource*, enter “resource:mem_used”. Fixed value $999: Entering a number after $ sets a fixed value. $null: Entering null after $ sets the value to null. $’text’: Enclosing a string in single quotation marks after $ treats it as a fixed value. $ts: A timestamp value
DB Column Name	Enter the name of the column in the database.
ADD button	Click this button to add a column.
Activation Key*2	Enter an activation key to unlock the restricted mode. For details about modes, refer to *1.4.6 Restricted Mode and Full Mode*.

*2 The Activation Key entry field is not displayed on SpeeDBee Synapse installed on products released by OMRON Corporation. This component is automatically set to Full mode.

1.4.Supplementary Information

1.4.1.Verified RDBs and Versions

Database	Verified version
PostgreSQL	16.4
MySQL	8.0.28
Oracle	23c
SQLite	3.37.2

* The above versions are the RDB versions that were verified during the development and validation of this package.
Connection availability and behavior may vary depending on dependent modules added through Synapse.

1.4.2.RDB Dependent Module Supporting Version

Dependent module	Version	Supported database	URL
SQLAlchemy	2.0.48	PostgreSQL 9.6 or later MySQL 5.6 or later	https://docs.sqlalchemy.org/en/20/dialects/postgresql.html, https://docs.sqlalchemy.org/en/20/dialects/mysql.html
PyMySQL	1.1.2	MySQL 5.7 or later MariaDB 10.3 or later	https://pymysql.readthedocs.io/en/latest/user/installation.html
psycopg	3.3.3	PostgreSQL from 10 to 18	https://www.psycopg.org/psycopg3/docs/basic/install.html, https://www.postgresql.org/support/versioning/
oracledb	3.4.2	If you use Oracle Database 12.1 or later (Thin mode) and Oracle Client libraries, it is possible to connect to previous versions.	https://python-oracledb.readthedocs.io/en/latest/user_guide/installation.html#supported-oracle-database-versions
SQLite	3.40.1	Not applicable (embedded DB)	https://www.sqlite.org/download.html

* The above information is valid as of March 2026. Note that the servers that are available for connection may vary depending on any dependent modules version changes.

1.4.3.Dependent Modules

The packaged components depend on the following Python modules.

Module name	Version
SQLAlchemy * Always used	2.0.49
psycopg[binary] * Used when connecting to PostgreSQL	3.3.3
PyMySQL * Used when connecting to MySQL	1.1.2
oracledb * Used when connecting to Oracle	3.4.2

* When you search whl files in *Python Package Index (PyPI)* website, only for psycopg[binary], use “psycopg” as a search key for project names.

The components indirectly depend on the following Python modules. (Indirect dependent modules)

Module name	Version
greenlet	3.3.2
psycopg-binary	3.3.3
typing-extensions	4.15

1.4.4.Installation of Dependent Modules

Install dependent modules as prompted by the confirmation dialog box that appears when you register this package in Synapse.

* Synapse 4.9 and earlier versions do not support automatic installation of dependent modules during package registration. Install *SQLAlchemy==2.0.49*, *psycopg[binary]==3.3.3*, *PyMySQL==1.1.2*, and *oracledb==3.4.2*, according to *6.2.3.5.8 Adding External Libraries* in the *DX-series SpeeDBee Synapse User's Manual (Cat. No. V243)*. By installing these modules, their dependent modules (indirect dependent modules) are installed automatically.

1.4.5.Installation of Dependent Modules Using whl Files

In an offline environment, install dependent modules and their indirect dependent modules using whl files.

Using the whl files obtained in advance, install dependent modules and their indirect dependent modules according to *6.2.3.5.8 Adding External Libraries* in the *DX-series SpeeDBee Synapse User's Manual (Cat. No. V243)*.

* You can download whl files from the Python Package Index (PyPI) website.
  https://pypi.org/

1.4.6.Restricted Mode and Full Mode

The components added in this package operate in restricted mode on DX1 version 1.0 (Synapse 4.9.9) and can continuously run for two hours.

To use without restrictions, use DX1 version 1.1 (Synapse 4.11.4) or later.

Additionally, the Synapse trial version for Windows PCs is also in restricted mode on Synapse 4.9.9.

For unrestricted use, use Synapse 4.11.4.

2.How to Use These Components

This section describes how to use the components provided by this package. Register the package in Synapse before using the components.

* Refer to *6.2.6.4 Registering SCCPKG File in and Deleting SCCPKG File from Synapse* in the *DX-series SpeeDBee Synapse User's Manual (Cat. No. V243)*.
  - SynapseSync RDB Components (*This package)

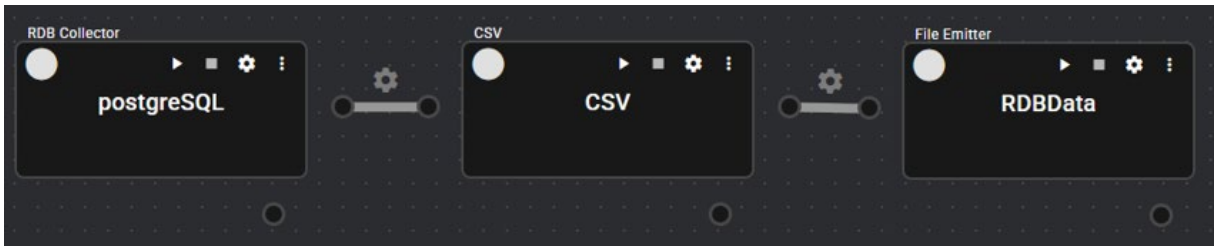
* Since the package uses the same UUID for both V1 and V2, it cannot be used simultaneously in the same environment. If you want to use V2 in an environment where V1 is already installed, uninstall V1 first.

2.1.RDB Collector

This section introduces an example of using RDB Collector.

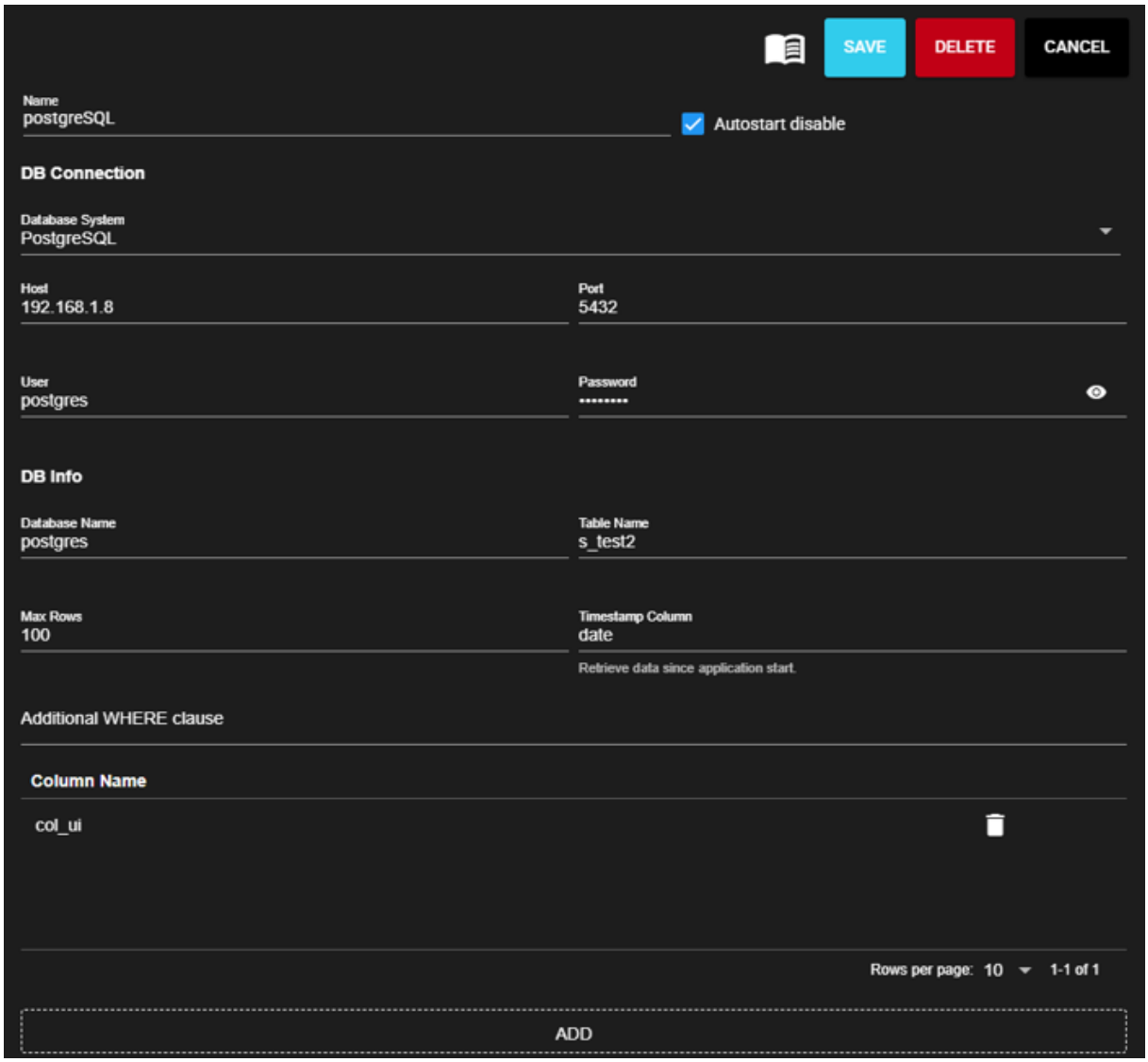
2.1.1.Data Flow Creation

In this example, the following data flow is created: RDB Collector is used as the input, the data is formatted into CSV using the CSV serializer, and the resulting file is saved to local storage using the File Emitter.



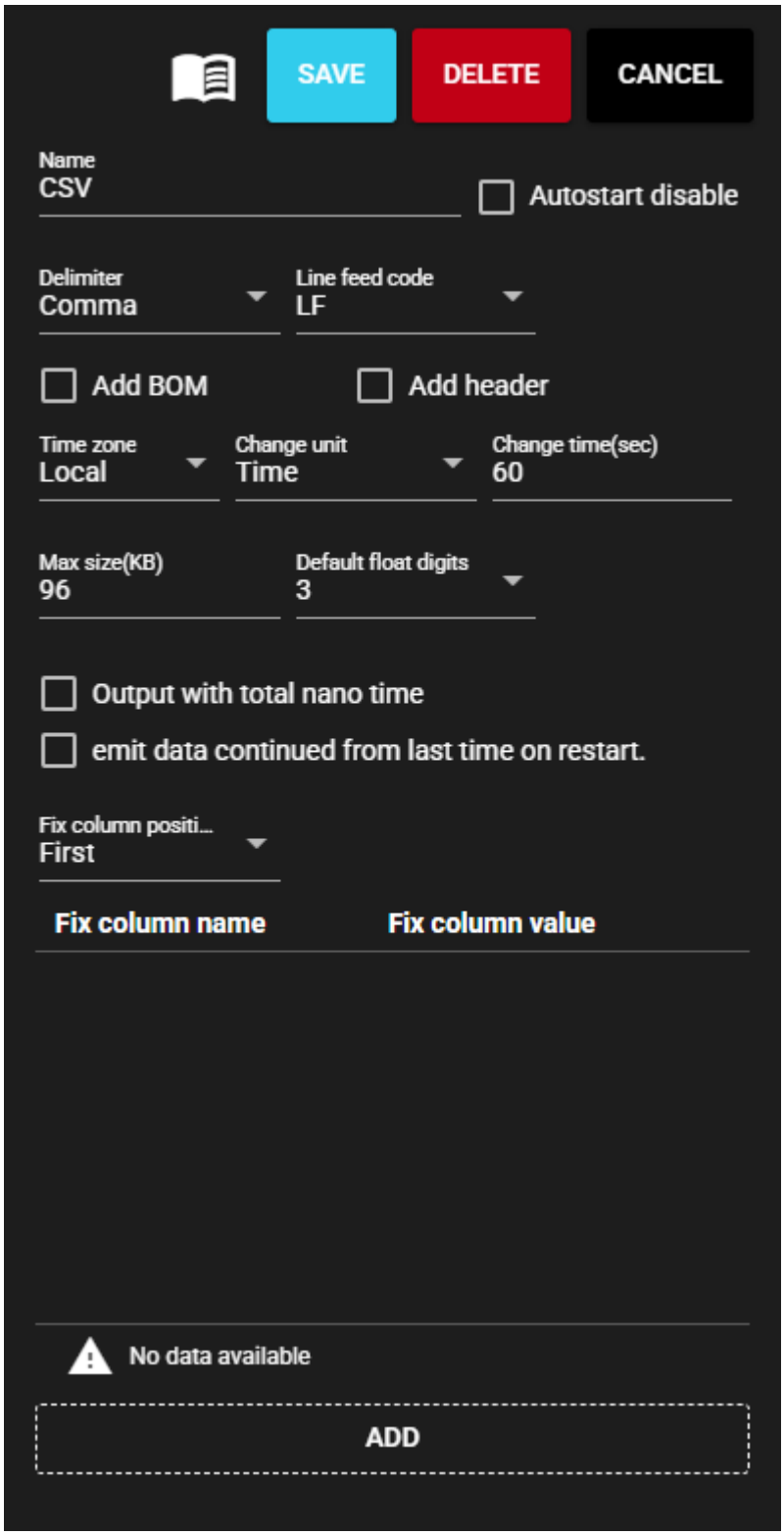
2.1.2.RDB Collector

RDB Collector retrieves data from the col_ui column in a PostgreSQL database.



2.1.3.CSV Serializer

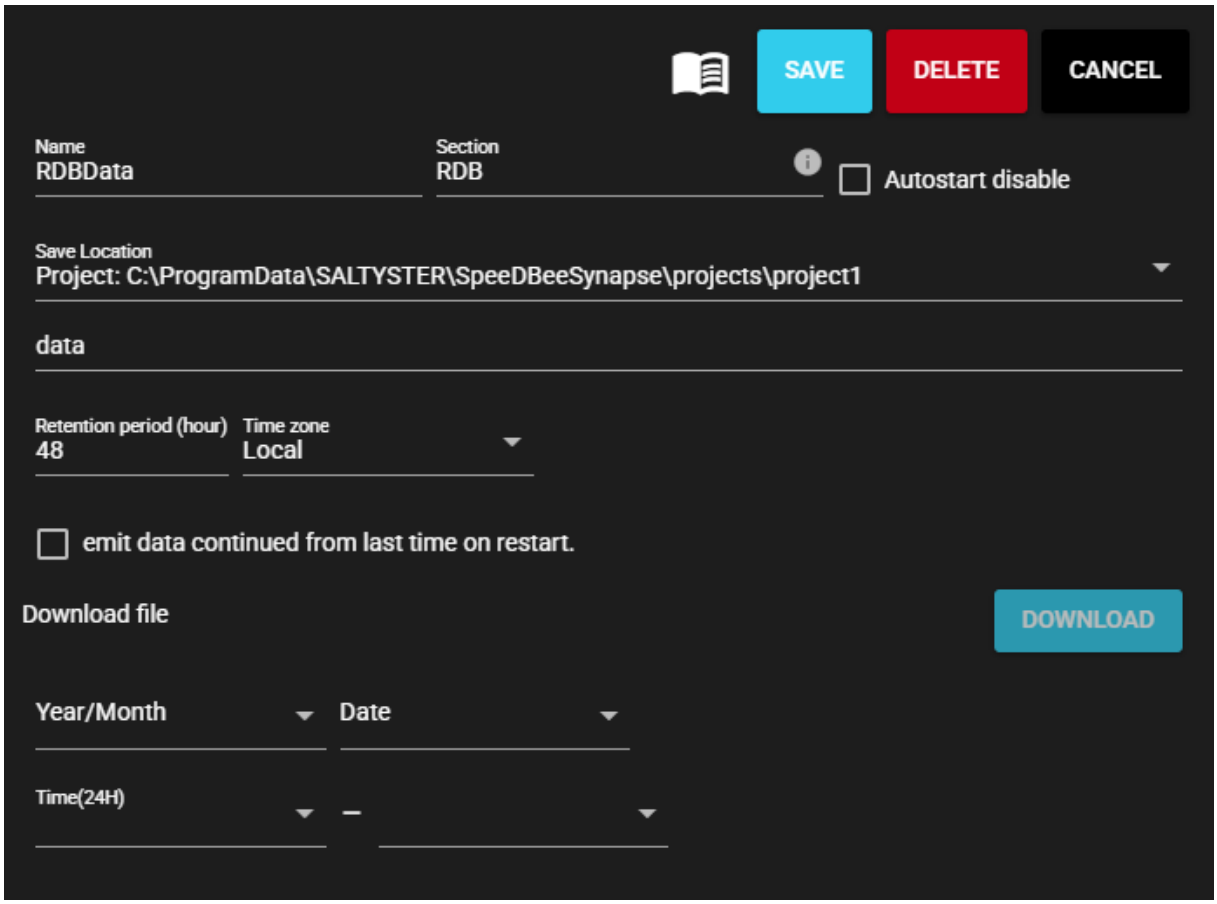
The CSV serializer formats the retrieved data into CSV.



2.1.4.File Emitter

The File Emitter saves the file under the following directory:

C:¥ProgramData¥SALTYSTER¥SpeeDBeeSynapse¥projects¥project1¥data¥RDB



2.1.5.Component Execution

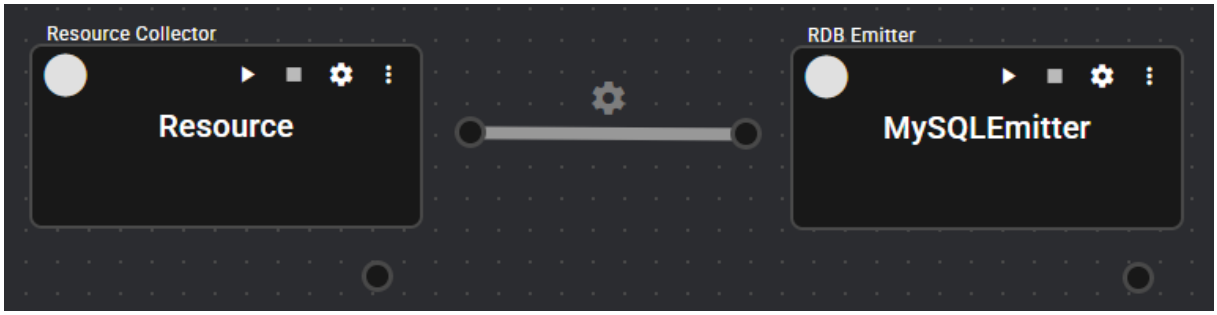
You can confirm that data has been successfully retrieved by starting all components and checking the output port of RDB Collector in the data monitor.

2.2.RDB Emitter

This section introduces an example of using RDB Emitter.

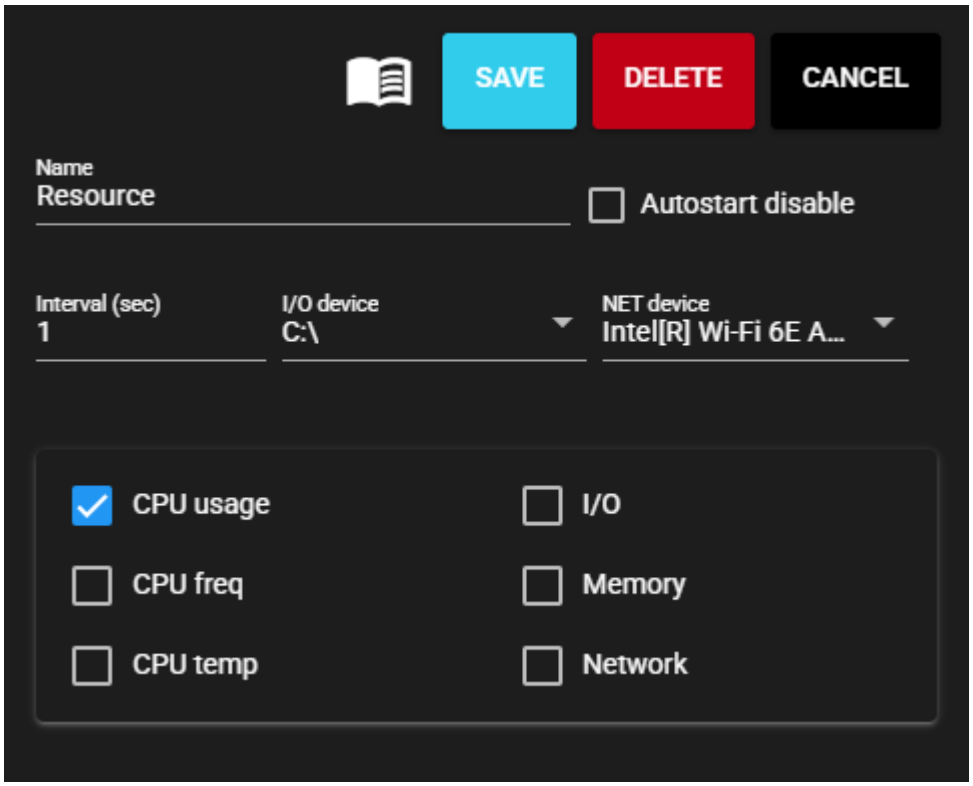
2.2.1.Data Flow Creation

In this example, the following data flow is created: the resource collector is used as the input and CPU usage is stored in MySQL using RDB Emitter.



2.2.2.Resource Collector

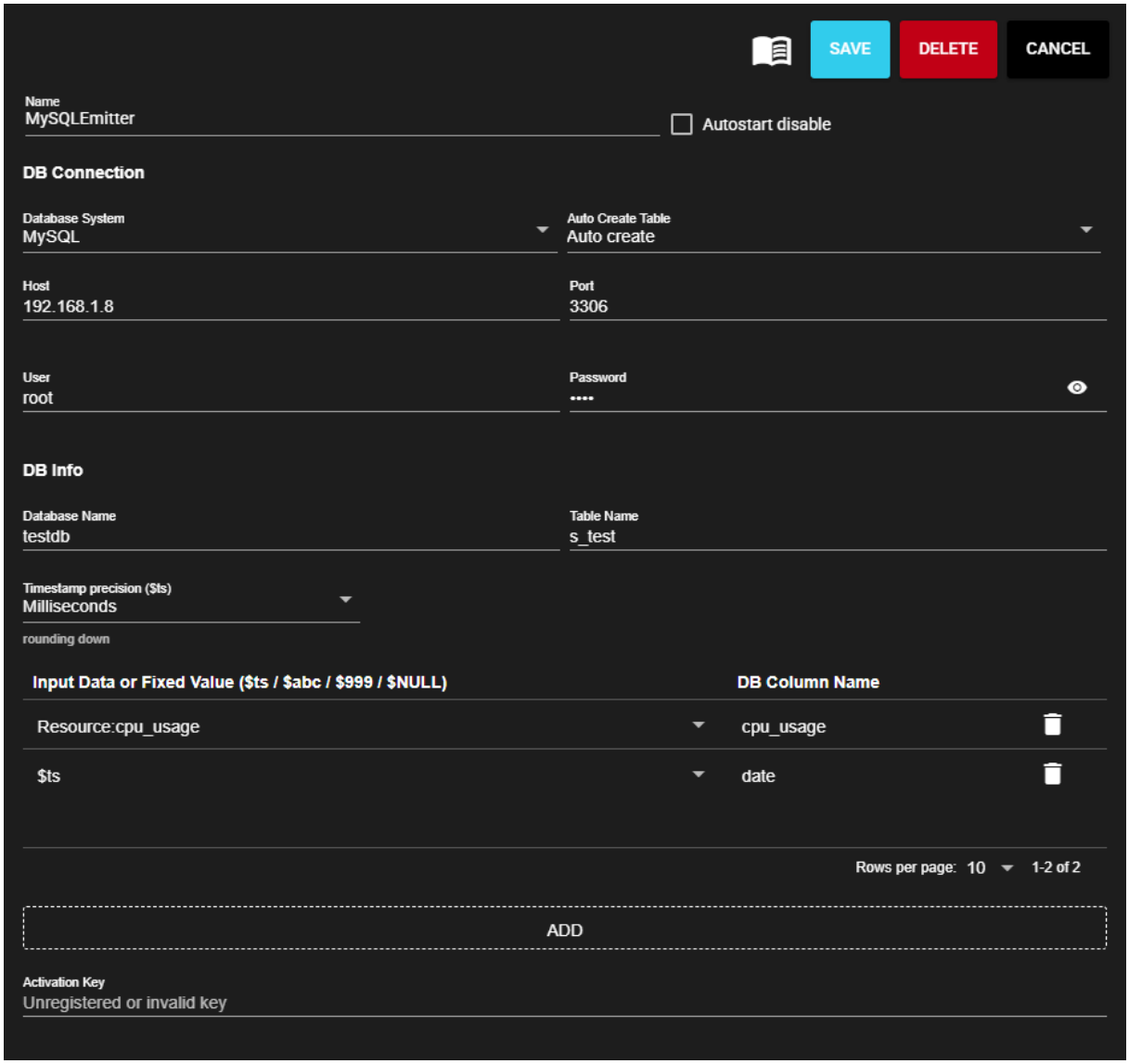
The resource collector is set to retrieve CPU usage at 1-second intervals.



2.2.3.RDB Emitter

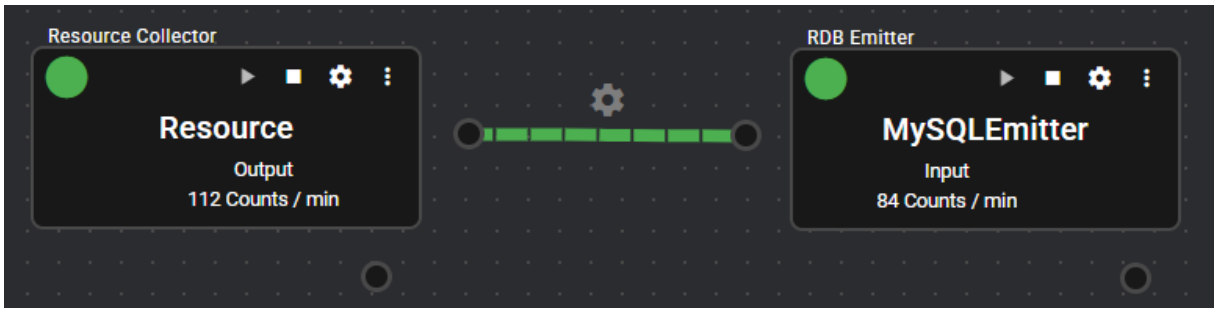
RDB Emitter inserts cpu_usage retrieved by the resource collector into the cpu_usage column in the s_test MySQL table.

At the same time, it inserts the timestamp value into the date column.



2.2.4.Component Execution

You can confirm that data has been successfully registered by starting all components and checking the MySQL table.



Database query results

```
mysql> select * FROM s_test;
+-----+-----------+----------------------------+
| id  | cpu_usage | date                       |
+-----+-----------+----------------------------+
|   1 |         5 | 2025-09-18 10:58:18.696000 |
|   2 |         7 | 2025-09-18 10:58:19.707000 |
|   3 |         3 | 2025-09-18 10:58:20.700000 |
|   4 |         9 | 2025-09-18 10:58:21.708000 |
|   5 |         1 | 2025-09-18 10:58:22.704000 |
|   6 |         7 | 2025-09-18 10:58:23.700000 |
|   7 |         4 | 2025-09-18 10:58:24.698000 |
|   8 |         8 | 2025-09-18 10:58:25.696000 |
|   9 |         4 | 2025-09-18 10:58:26.702000 |
|  10 |         8 | 2025-09-18 10:58:27.694000 |
|  11 |         1 | 2025-09-18 10:58:28.706000 |
|  12 |         8 | 2025-09-18 10:58:29.702000 |
```

[Exhibit] whl Files for RDB Components DX1

- whl File Names for Dependent Modules

The packaged components depend on the following Python modules.

Module name	Version	whl file name
SQLAlchemy * Always used	2.0.49	sqlalchemy-2.0.49-cp311-cp311-manylinux2014_aarch64.manylinux_2_17_aarch64.manylinux_2_28_aarch64.whl
psycopg[binary] * Used when connecting to PostgreSQL	3.3.3	psycopg-3.3.3-py3-none-any.whl
PyMySQL * Used when connecting to MySQL	1.1.2	pymysql-1.1.2-py3-none-any.whl
oracledb * Used when connecting to Oracle	3.4.2	oracledb-3.4.2-cp311-cp311-manylinux2014_aarch64.manylinux_2_17_aarch64.manylinux_2_28_aarch64.whl

* When you search whl files in *Python Package Index (PyPI)* website, only for psycopg[binary], use “psycopg” as a search key for project names.

The components indirectly depend on the following Python modules. (Indirect dependent modules)

Module name	Version	whl file name
greenlet	3.3.2	greenlet-3.3.2-cp311-cp311-manylinux_2_24_aarch64.manylinux_2_28_aarch64.whl
psycopg-binary	3.3.3	psycopg_binary-3.3.3-cp311-cp311-manylinux_2_27_aarch64.manylinux_2_28_aarch64.whl
typing-extensions	4.15	typing_extensions-4.15.0-py3-none-any.whl

The whl file names shown above are for DX1. They may not be usable on other platforms.

- Installation of Dependent Modules Using whl Files

In an offline environment, install direct and indirect dependent modules using whl files. Using the whl files obtained in advance, install dependent modules and their indirect dependent modules according to *6.2.3.5.8 Adding External Libraries* in the *DX-series SpeeDBee Synapse User's Manual (Cat. No. V243)*.

* You can download whl files from the *Python Package Index (PyPI)* website.
  https://pypi.org/

OMRON Corporation **Industrial Automation Company**

Kyoto, JAPAN **Contact : www.ia.omron.com**

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Tutorial Video

https://www.fa.omron.co.jp/dx1/video-manual/en/

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