QualityWindow

The continuous improvement software

Quality Window SQL Wizard

Admin Guide

December 9, 2025

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Overview

The QW SQL Wizard is a tool included with the Quality Window product that allows you to create applications based on data retrieved directly from external databases. The Wizard guides you through defining a connection, selecting tables and fields, building an SQL query, and generating a QW application to display and analyze the results.

This documentation is written for users who may not have advanced SQL or database administration experience. The Wizard is designed to make the process straightforward, but some tasks may still require help from IT or Busitech Support.

Once saved, the SQL Wizard application behaves like any other QW application. When the user opens it in QW Workstation, the SQL query is executed, the previous data is cleared, and new results are loaded. You may open the generated application in QW Administration to set limits, add rules, create calculated fields, or rename variables.

Windows Data Link and OLE DB Requirements

The SQL Wizard does not include its own database drivers. It uses the standard Windows Data Link components and OLE DB providers that are installed on the workstation or server.

When you create a UDL file or use the “Data Link Properties” dialog in the SQL Wizard, you are configuring an OLE DB provider. This provider is responsible for connecting to the database and returning data to Quality Window. The SQL Wizard then uses that connection string each time the application is opened.

To connect successfully, the following must be true:

- An appropriate OLE DB provider for the target database is installed on the machine running Quality Window.
- The user or service account has permission to access the database.
- The connection information in the Data Link Properties dialog (server name, database name, authentication method, and any required options) is correct.

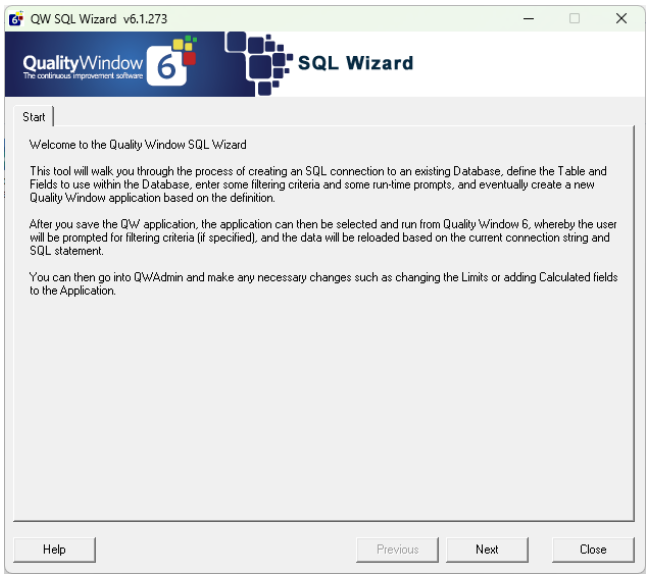
Common examples include:

- Microsoft OLE DB providers for SQL Server, Access, and Excel.
- Vendor-supplied OLE DB providers for other databases such as Oracle or MySQL.

If the required OLE DB provider is not installed or is misconfigured, the SQL Wizard will not be able to list tables or return data, regardless of the database type. In these cases, an IT or database administrator should install or configure the appropriate provider and help verify the connection using a UDL file or the Data Link Properties dialog.

Using the QW SQL Wizard

The first screen introduces the SQL Wizard and explains that it will guide you through connecting to a database, selecting data, and creating a Quality Window application. After reading the description, select Next to begin the setup process.



First screen of SQL Wizard

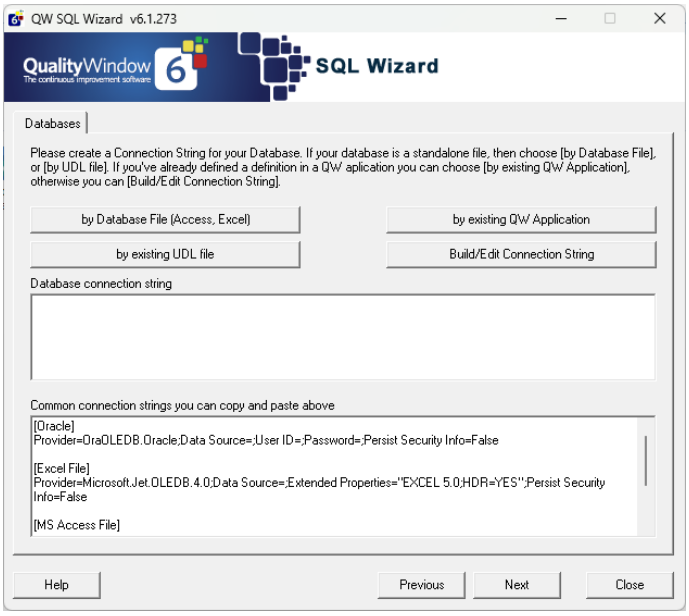
The SQL Wizard consists of five steps:

1. Databases
2. Tables
3. Fields
4. Query
5. Finish

Each step is described in detail below.

1. Databases

The Databases step is where you define how QW will connect to your external data source. There are four methods available.



Database Step

By Database File (Access, Excel)

Use this option when the source data is stored in a Microsoft Access file or an Excel spreadsheet.

Selecting the file automatically generates a connection string. For Excel files, the spreadsheet must be formatted with column names in the first row and data beginning in the second row. The sheet name becomes the table name.

Examples of connection strings:

Excel xls format

```
Provider=Microsoft.Jet.OLEDB.4.0;Data Source=C:\Data\Sample.xls;Extended
Properties="EXCEL 5.0;HDR=YES";Persist Security Info=False
```

Excel xlsx format

```
Provider=Microsoft.ACE.OLEDB.12.0;Data Source=C:\Data\Sample.xlsx;Extended
Properties="EXCEL 12.0 Xml;HDR=YES";Persist Security Info=False
```

Access mdb format

```
Provider=Microsoft.Jet.OLEDB.4.0;Data Source=C:\Data\Production.mdb;Persist
Security Info=False
```

By Existing UDL File

If your IT group or Database Administrators have created a Universal Data Link file containing connection details, select this option to browse to the UDL file and load its settings. See Appendix B for more information on how to create these files.

By Existing QW Application

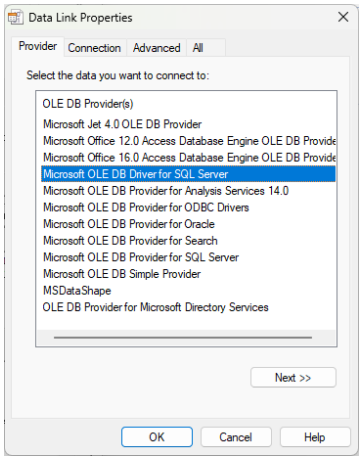
If you have a QW application that was previously created using the SQL Wizard, use this option to extract its connection string and SQL query. This is helpful when creating new applications based on similar data sources.

Build or Edit Connection String

This option allows manual creation or editing of a connection string using Windows Data Link Properties dialog. You may need support from your database administrator to supply server names, credentials, and other required connection parameters.

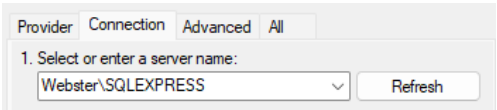
Using the Windows Data Link Dialogue to define a connection

Step 1 – Select a provider
Choose the provider you want to use from the list in the dialog on the provider tab.



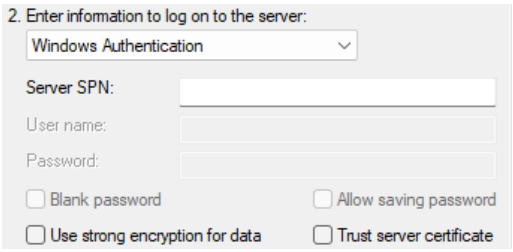
Example provider selection

Step 2 – Select or enter a database server name
Pick the server from the dropdown or type the server name directly.



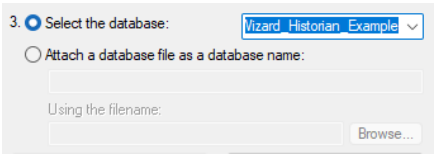
Example server name

Step 3 – Select your authentication mode for the database server
Choose how you want to log in (for example, using your Windows account or a username and password).



Example authentication selection

Step 4 – Select the database
Choose the database you want to connect to from the list. If no databases show in the list, your connection properties may be incorrect.



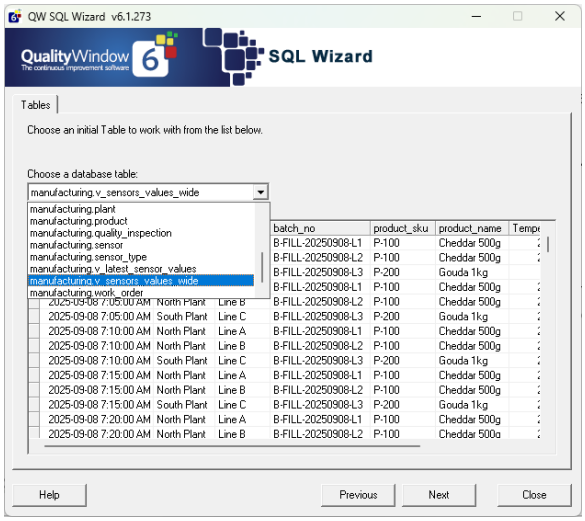
Example Database selection

Step 5 – Test the connection to validate
Click the Test button to confirm the connection settings are correct.

Test Connection Button

Once a valid connection string is selected or created, choose Next.

2. Tables

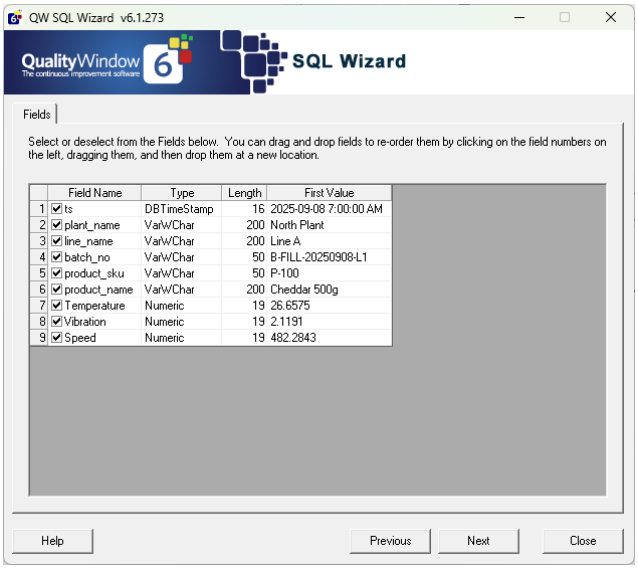


Example Table step

If the connection is successful, the Wizard displays a dropdown list of tables available in the database. After selecting the desired table, the preview grid shows sample rows.

Choose Next to continue.

3. Fields



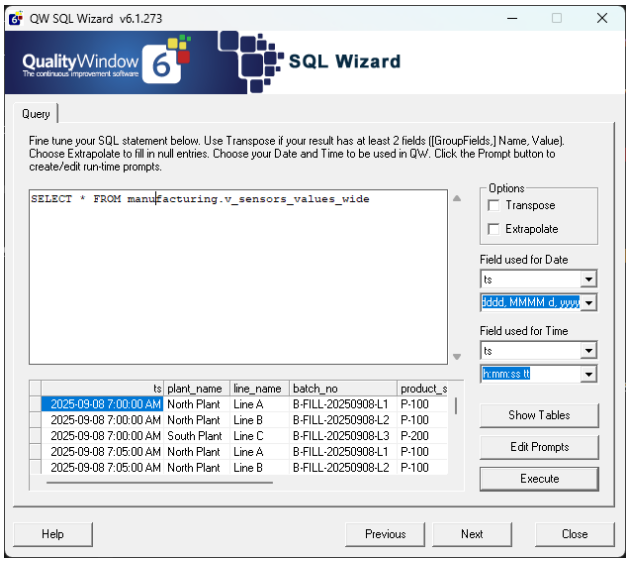
Example Fields Screen

This screen displays all fields within the selected table. You may:

- Select or deselect fields
- Drag fields to reorder them
- Review the preview grid

These fields determine the initial structure of the SQL query. After choosing the fields you want, select Next.

4. Query



Example Query Screen

The Query step allows you to modify the SQL query that will run each time the QW application loads. The Wizard constructs a basic SQL statement based on your table and field selections. You may adjust or extend this query as needed.

Examples of SQL patterns used in the Wizard:

Select all fields

```
SELECT * FROM [Widgets]
```

Filter results

```
SELECT * FROM [Widgets] WHERE [Plant] = 'Chicago'
```

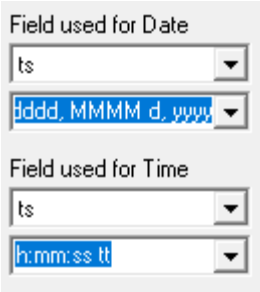
Sort results

```
SELECT * FROM [Widgets] WHERE [Plant] = 'Chicago' ORDER BY [Date], [Time]
```

If you make changes, select Execute to test the query. The preview grid will refresh with results or display an error message if the syntax is incorrect.

You can add in complex queries in this section if you want to get data from multiple tables, it doesn't need to just be a single table.

Date and Time Field Selection



If your data includes Date and Time fields, the SQL Wizard provides two dropdowns to help you identify which fields represent these values. Next to each dropdown is a format selector. These formats tell the SQL Wizard how the Date or Time is represented in your data so it can interpret the values correctly. For example, dates may be stored as YYYY-MM-DD, MM/DD/YYYY, or another format depending on the database. Time fields may include seconds or use AM and PM.

Selecting the correct field and matching format ensures that Quality Window can recognize the values as true dates and times. This allows proper sorting, charting, and alignment of records. If no Date or Time fields are selected, the Wizard will assign its own generated dates and times when the application loads, which may not reflect the actual timestamps in the source data.

Transpose Option

Transpose Option

Some databases store measurements in a "long" format where each row contains a timestamp plus a single tag name and value. For example, you might have fields like Date, Time, Tagname, and Value, and several rows for the same Date and Time:

Date	Time	Tagname	Value
2025-01-01	01:00:00	pH	7.64
2025-01-01	01:00:00	Viscosity	13.79
2025-01-01	01:00:00	Temperature	15.61
2025-01-01	02:00:00	pH	7.99
2025-01-01	02:00:00	Viscosity	13.59
2025-01-01	02:00:00	Temperature	15.87
2025-01-01	03:00:00	pH	7.88
2025-01-01	03:00:00	Viscosity	13.66
2025-01-01	03:00:00	Temperature	15.77

Quality Window works best with a "wide" format, where each sample is one row and each tag is its own field. The Transpose option converts the long format into this wide format. Using the same example, the transposed result would look like:

Date	Time	pH	Viscosity	Temperature
2025-01-01	01:00:00	7.64	13.79	15.61
2025-01-01	02:00:00	7.99	13.59	15.87
2025:01-01	03:00:00	7.88	13.66	15.77

In this new layout, each unique Tagname (pH, Viscosity, Temperature) becomes a separate field in the application, and each Date and Time combination becomes a single record. This makes it much easier to view, chart, and analyze the data inside Quality Window.

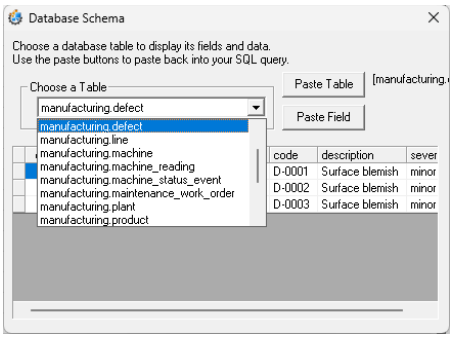
For Transpose to work correctly, the records returned by your SQL query must already be sorted by the grouping fields and the tag field. In the example above, the ORDER BY clause should sort by Date, Time, and Tagname so the Wizard can group values correctly when it performs the transpose.

Extrapolate Option

This option fills forward the last known non-null value to replace consecutive null entries. It provides a continuous dataset for charting when the original data contains gaps.

TABLES Button

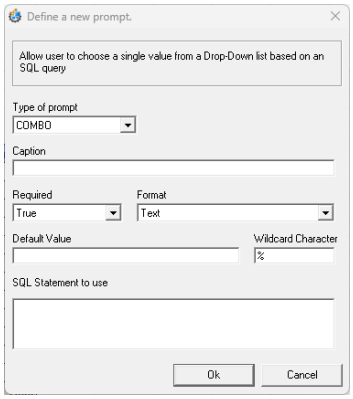
The TABLES button opens a window listing all tables and fields available in the database. This helps prevent typing errors when inserting field names into the SQL query. You may paste the selected table or field name directly into the query.



Example Tables Dialog

PROMPT Button

Prompts allow you to request user input each time the application loads. This is useful for selecting a Plant, a Product, a Batch, or other filtering values.



Example Prompt Dialog

Types of prompts include:

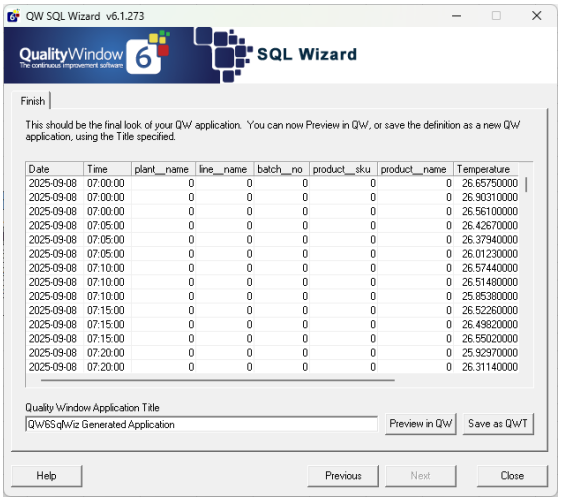
- MULTI - allows selecting multiple items
- COMBO - which provides a single selection dropdown
- LIKE - which performs a pattern match

Prompts are inserted into the SQL query at the cursor location. The Wizard automatically generates the appropriate prompt tag.

After testing the query by clocking the Execute button and confirming the results, select Next.

5. Finish

The Finish screen provides options to preview or save the application.



Example finish Screen

Preview in QW

Executes the SQL query and opens a temporary QW application with the resulting data. When QW is closed, the temporary file is removed.

Save as QWT

Creates a permanent QW application file based on the query. You will be prompted to enter a filename and choose a folder.

After saving the application, you can open it in QW Workstation to load fresh data or in QW Admin to configure limits, rules, calculated fields, Views, and variable names.

Using QW Admin to Enhance SQL Wizard Applications

SQL Wizard applications can be maintained and extended using QW Admin. Common tasks include:

Setting Limits and Rules
You may define specification limits, control limits, warning limits, and trend rules for each numeric variable.

Adding Calculated Fields
You can add calculations that build on the imported data.

Renaming Variables
Field names may be changed for clarity, but the XREF property must remain unchanged because it links the QW variable to the original database field.

Modifying Field Lengths
Variable lengths are set based on the first dataset returned. You may need to increase these lengths to accommodate future data.

All of these capabilities follow the standard behaviors described in your QW Admin training materials.

When the Application is Opened in QW Workstation

When users open the saved QW application:

1. The SQL query is executed
2. Prompts appear if defined
3. Old data is deleted
4. New data is imported
5. The full QW analysis toolkit becomes available

This includes charts, relationship analysis, Quick Reports, Views, filtering, and more.

Support

For assistance with connection strings, SQL configuration, or Wizard functions, contact Busitech Support at support@busitech.com

Appendix A: Troubleshooting

Connection and Table Access Issues

If no tables appear after selecting the database, the following issues are possible based on documented behavior.

- The connection string may not be valid.
- The user may not have permission to access the database.
- The file path may be incorrect or inaccessible.
- Excel files may not have column names in the first row, which are required by the Wizard.

If the Wizard connects to the database but shows no data when previewing a table, confirm that the selected table contains rows and that the database is accessible.

Query Preview Issues

If the preview grid returns no data after executing the SQL query, check the following.\

- A WHERE clause may be filtering out all rows.
- The selected fields may not exist if field names were manually edited in the SQL.
- The table may not contain data matching the selected criteria.
- Date and time filtering may be too restrictive.

If the Wizard reports an SQL syntax error after pressing Execute, verify the following.

- Field names require commas between them.
- Quotation marks must be properly paired.
- Field or table names with spaces should be placed within square brackets.
- The SQL statement uses the correct operators for the prompt type, especially for LIKE.

Transpose Issues

If transposed data does not appear correctly, check the following.

- The data returned by the SQL query must be sorted by the fields that define each group, such as the fields that represent the timestamp or other grouping keys.
- The SQL query should include an ORDER BY clause that matches those grouping fields so the Wizard can identify records that belong together.
- The input data must follow a consistent long format structure, where one field identifies the category or measurement name and another field contains the corresponding value for each group.

Extrapolate Issues

If Extrapolate does not appear to work, confirm these conditions.

- Extrapolate only affects fields that contain null values.

- The forward-fill behavior only continues until a new value is encountered.

Prompt Issues

If a prompt does not appear when the application loads in Quality Window, check the following.

- The prompt tag must be placed inside the SQL query at a point where a value is expected.
- The prompt syntax must be complete and unmodified.
- LIKE prompts require the SQL query to use the LIKE operator.

If a prompt appears but displays an empty list of choices, confirm these items.

- The SQL statement used to populate the prompt may return zero rows.
- The database connection may not have access rights to the table used by the prompt query.

Results or Chart Issues After Import

If charts in Quality Window appear incorrect or unusual, the following items may need adjustment.

- Date and Time fields may not have been selected correctly in the Wizard.
- Transpose may be required but was not enabled.
- Limits and rules may not yet be configured in QW Admin.
- Variable lengths may be too short for the full data values.
- Variable names may have been modified without preserving the XREF property.

Editing Issues in QW Admin

If the application reports errors when edited in QW Admin, the following common causes are documented.

- Field lengths may be too short for new data.
- Limits may not be configured after creating the application.
- Variables may have been moved or renamed incorrectly, especially if the XREF property is changed.
- Calculated variables may require recalculation if underlying field names were updated.

Appendix B: How to Create a UDL File

Here are the steps to Create a UDL File

1. On your Windows desktop or in any folder, right-click and select New, then select Text Document.
2. Rename the file so that the extension ends with .udl.
   For example: DatabaseConnection.udl
   If Windows hides file extensions, you may need to enable “Show file name extensions” in File Explorer.
3. Double-click the .udl file.
4. The Data Link Properties window will open.
5. On the Provider tab, select the correct OLE DB provider for your database.
   Examples include SQL Server, Oracle, or the Microsoft Jet/ACE provider for Access.
6. On the Connection tab, enter the server name, database name, credentials, or other details required for your environment.
7. Select Test Connection to confirm that it works.
8. Select OK to save and close the file.

Example ULD File Content

```
[oledb]

; Everything after this line is an OLE DB initstring

Provider=MSOLEDBSQL.1;Integrated Security=SSPI;Persist Security Info=False;User
ID="";Initial Catalog=QW_SQLWizard_Historian_Example;Data
Source=WEBSTER\SQLEXPRESS;Initial File Name="";Server SPN="";Authentication="";Access
Token=""
```