



# cMT Database Server MySQL Quick Start Guide

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This manual walks you through the steps to set up a MySQL Server and cMT Database Server object, and then uses Microsoft Excel to read historical data from the HMI.

For use with the following:

- cMT Series
- EZwarePlus

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## Overview

This user manual explains step by step how to install and set up a MySQL server on your PC, how to connect Excel to MySQL server, and how to design an EZwarePlus project with a Database Server object to send data to the MySQL server.

The Database Server object is available for cMT Series Smart HMIs in EZwarePlus V5.05.02 and later versions. The Database Server can synchronize sampled data and event logs to a remote MySQL server so that the user can use third-party software, such as Microsoft Office Excel, to manage the data on the server.

## Installing MySQL Server

The SQL server used in the following demonstration is MySQL.

1. Download MySQL Workbench from this link:  
<http://dev.mysql.com/downloads/mysql/>
2. Click the [Download] button for downloading Windows, MySQL Installer MSI.
3. Open the downloaded .msi to start installing MySQL.
4. Select [Custom] as the Setup Type.

### Recommended Download:



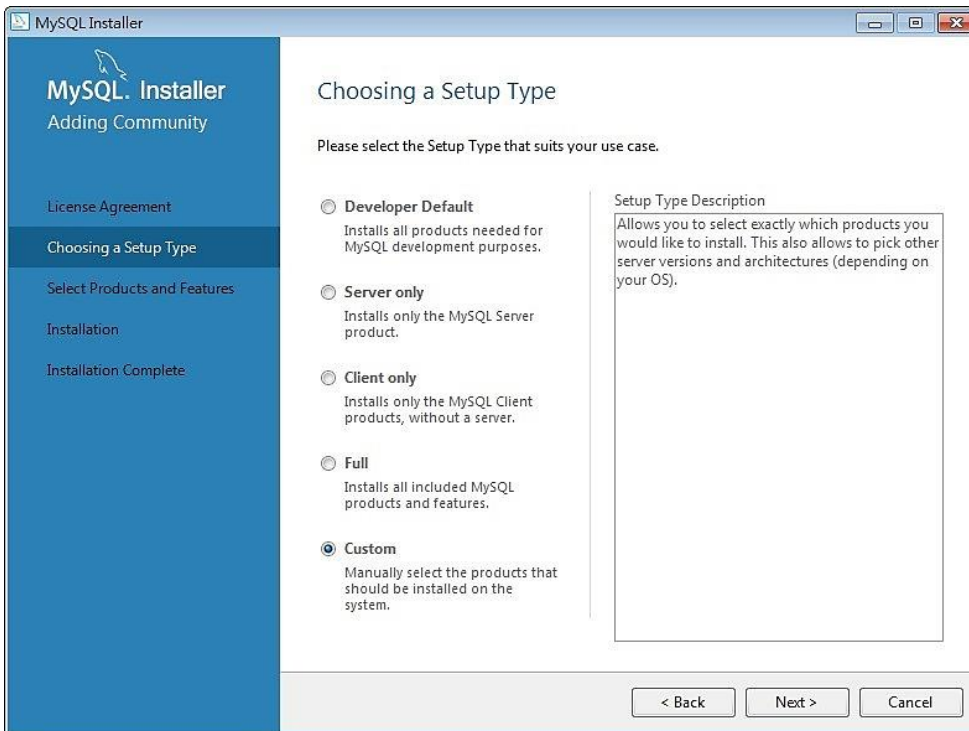
**MySQL Installer 5.7**  
for Windows

**All MySQL Products. For All Windows Platforms.  
In One Package.**

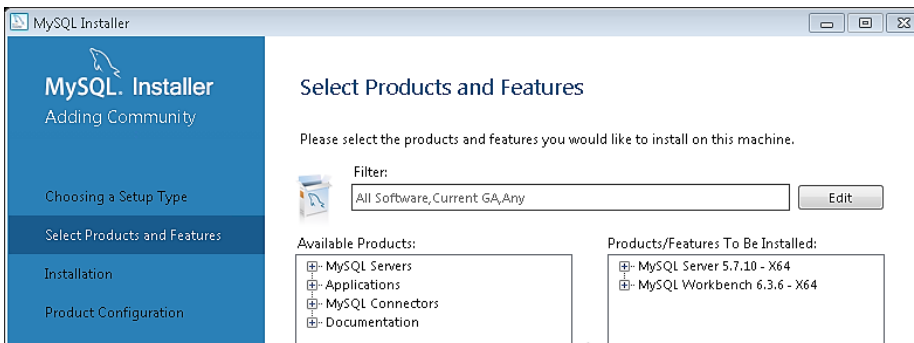
Starting with MySQL 5.6 the MySQL Installer package replaces the server-only MSI packages.

**Windows (x86, 32-bit), MySQL Installer MSI**

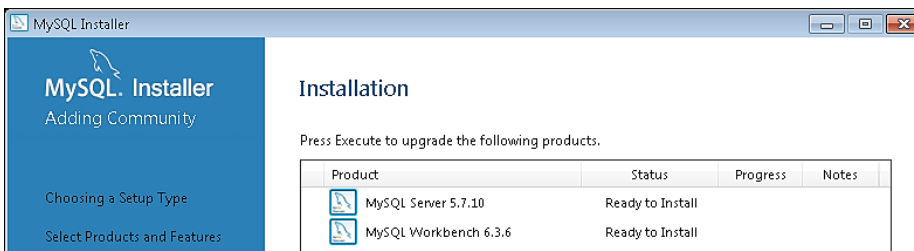
**Download**



5. Select the following two products and click Next:  
 [MySQL Servers] » [MySQL Server] » [MySQL Servers x.x] » [MySQL Servers x.x.x  
 –X64/X86]  
 [Application] » [MySQL Workbench] » [MSQL Workbench -X64/x86]



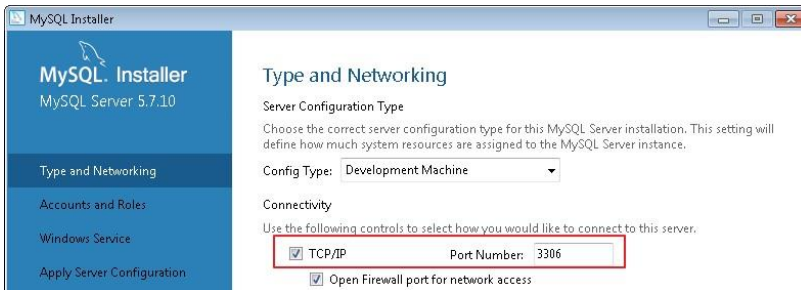
6. Click [Execute] to start installing the selected products.



7. A green check mark is displayed beside each successfully installed item.



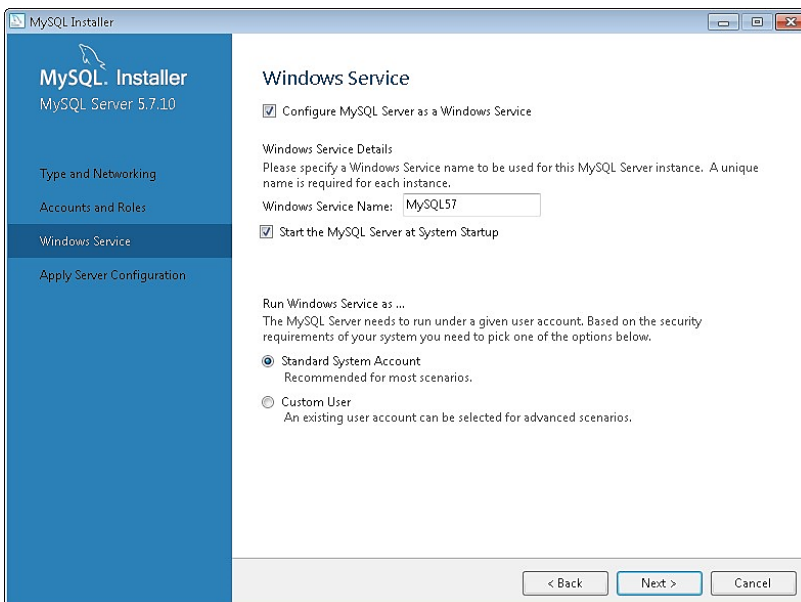
8. Set the TCP/IP Port Number and make note of it.



9. Create your MySQL root password and make note of it. This example will use Maple Systems' default 111111 password.




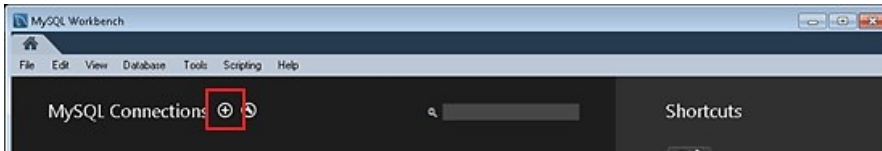
10. The rest of the settings can remain default.



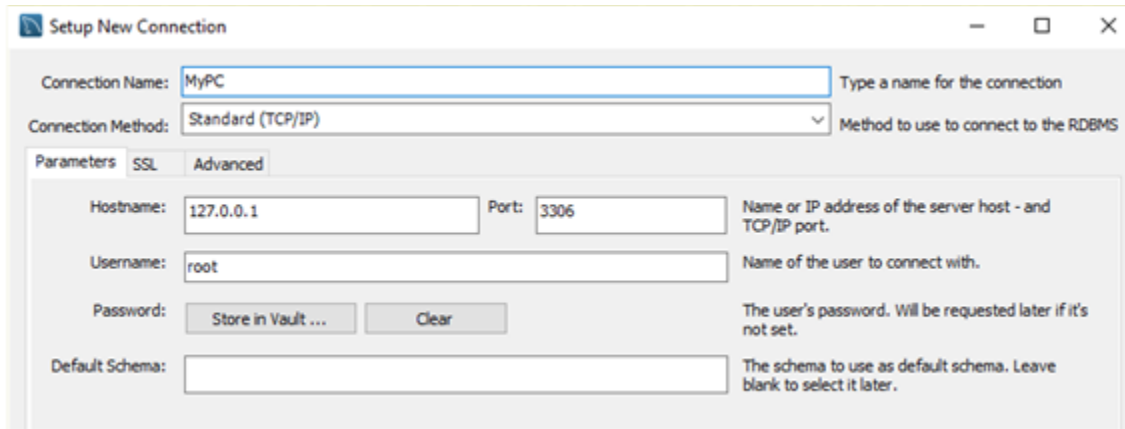
## Building the Database

After installing MySQL, a Schema must be created in MySQL to synchronize the HMI historical data.

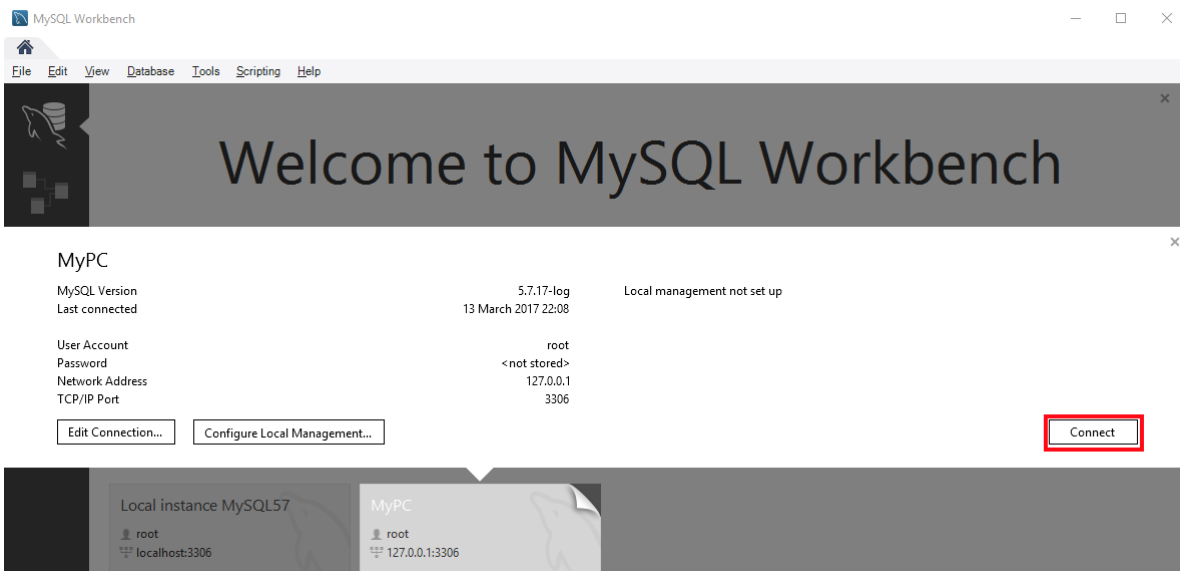
1. Launch MySQL Workbench. Click the  icon to create a Database Server connection.




2. Enter [Connection Name], [Hostname], [Port], [Username], and use Port 3306.



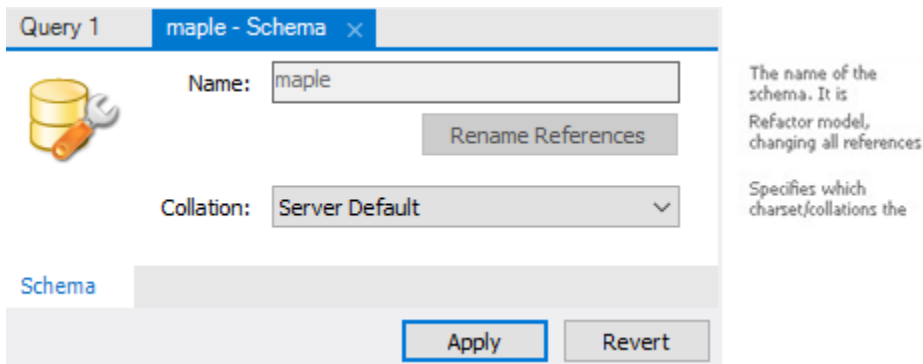
3. When finished, your new connection will be shown on your workbench. Click [Connect] to open the settings window.



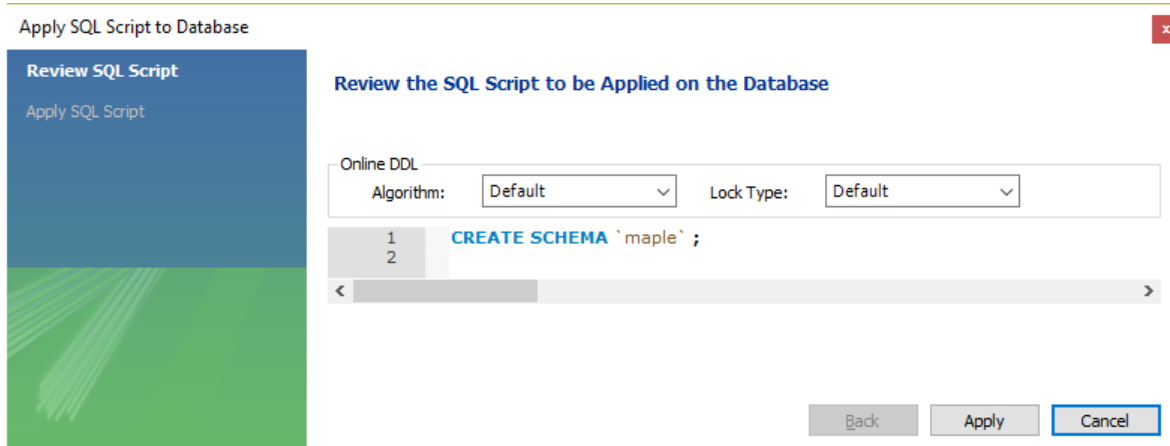
- Click the  icon to create the Schema.



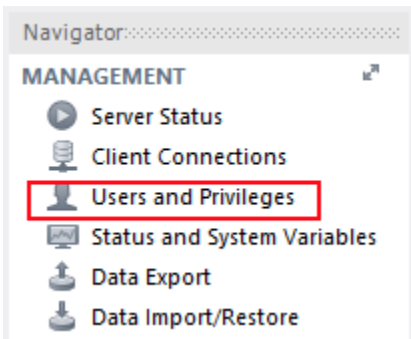
- Enter the name of the Schema and click [Apply].



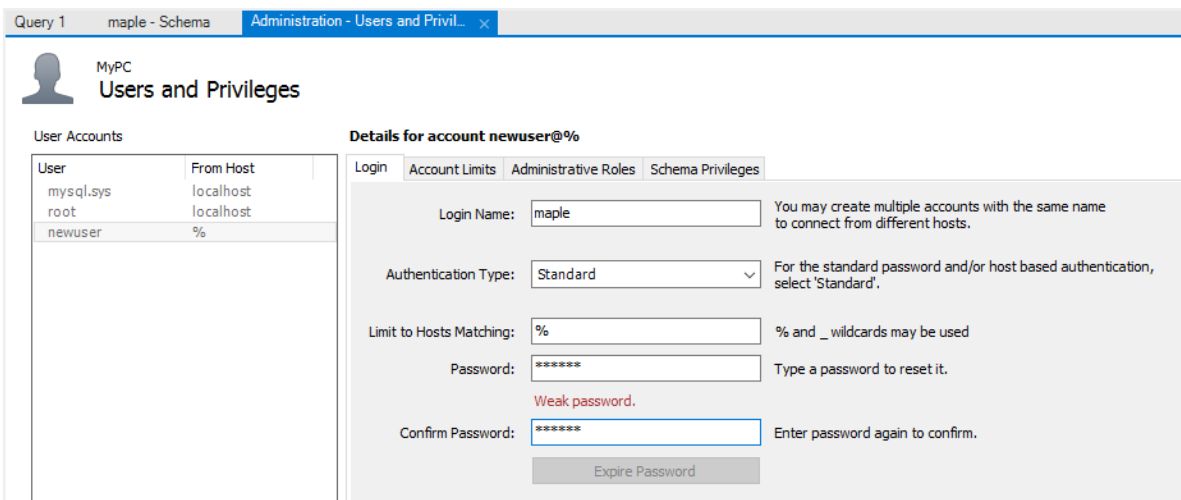
- The program will prompt you to review the SQL Script. Click [Apply].



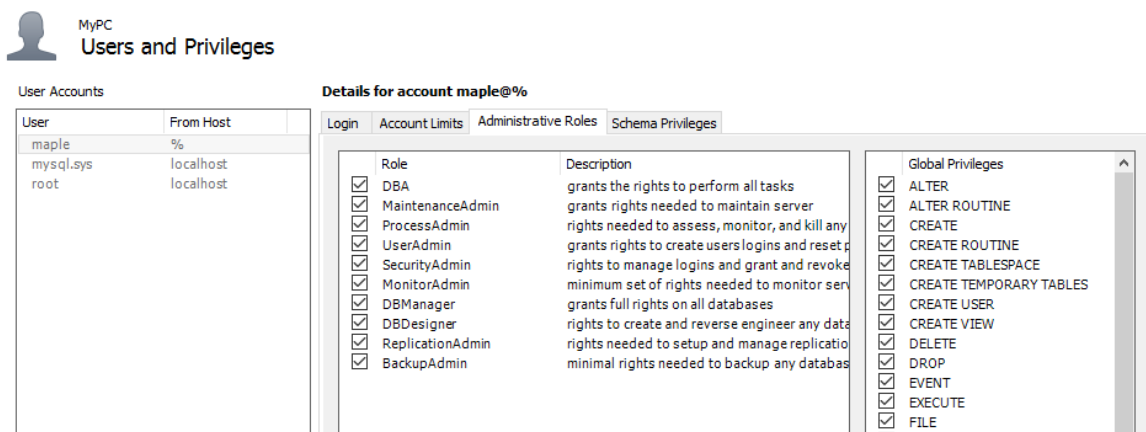
- Under Navigator, select [Users and Privileges].



- Click [Add Account] and enter the user credentials in [Login] tab. Click Apply.



- In the [Administrator Roles] tab select all the roles and privileges.



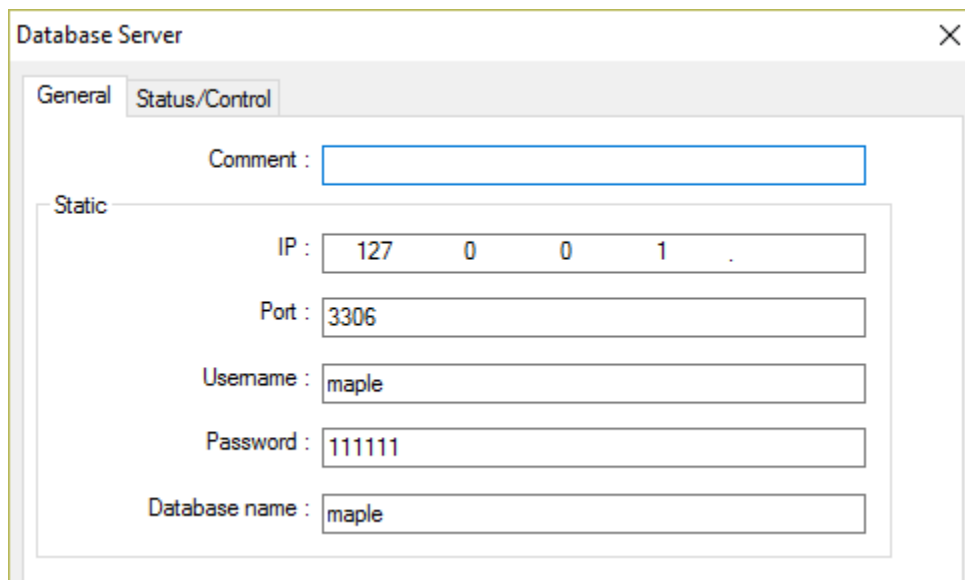
- Click [Apply] when finished.



## Creating an EZwarePlus Project File

This section goes through the Database Server configuration in EZwarePlus. This configuration is already done in the cMT\_Database\_Server.cntp sample project, which we will use to generate data to sync to our MySQL database and display in Excel.

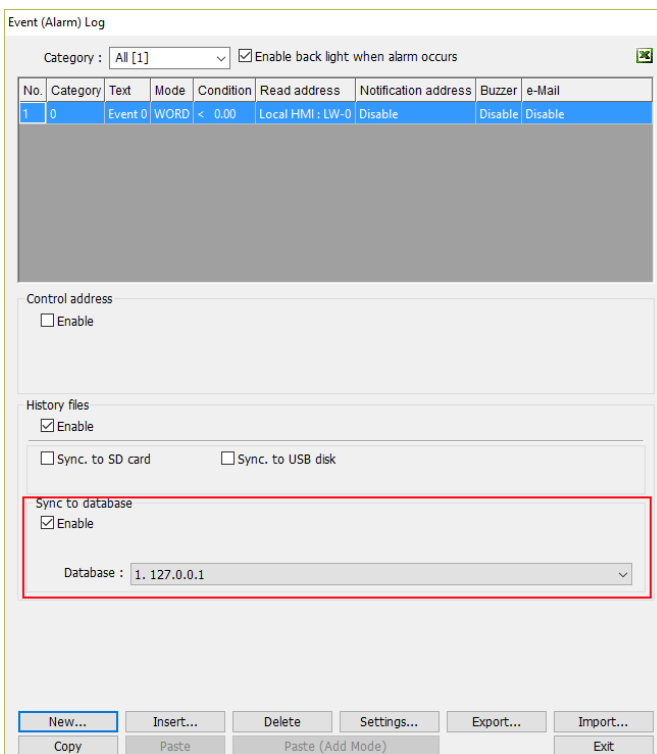
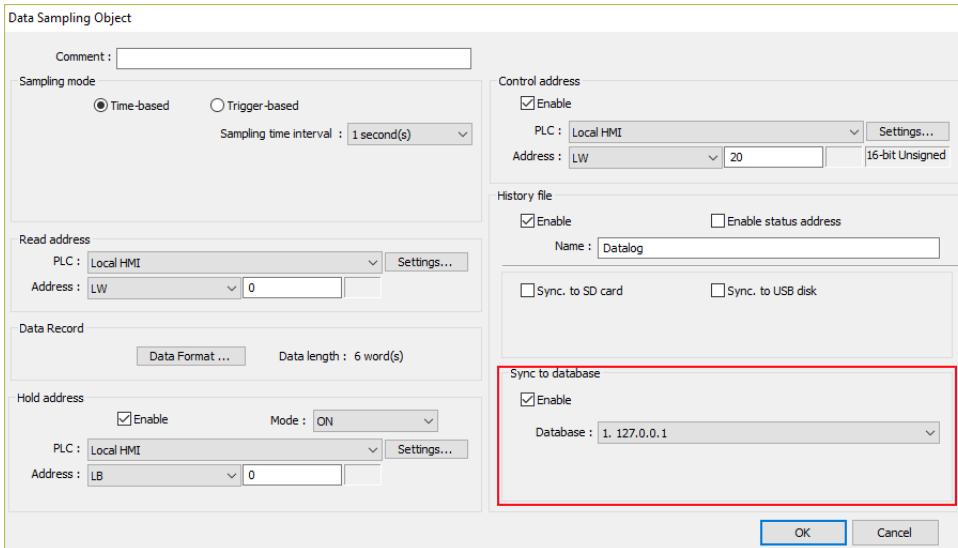
1. Open the cMT\_Database\_Server.cntp project file in EZwarePlus. In the main menu, click [Objects] » [Database Server].
2. The General tab lists the Database Server parameters. In this example, we will be using on-line/off-line simulation mode on our PC, so we set the Database Server IP to 127.0.0.1. In real world situations, you will use the IP address of the remote PC running your MySQL database.



The screenshot shows a window titled "Database Server" with a close button (X) in the top right corner. It has two tabs: "General" and "Status/Control". The "General" tab is selected. Inside the "General" tab, there is a "Comment" field. Below it is a "Static" section containing several fields: "IP" (127.0.0.1), "Port" (3306), "Username" (maple), "Password" (111111), and "Database name" (maple).

In the Status/Control tab, you can set the Status and Control Addresses. The status addresses can display the connection status with SQL server on the HMI, and the control addresses can be used to change connection parameters dynamically on the HMI.

- The [Sync to database] for both the Data Sampling object and the Event Log object is used to synchronize the historical data to the Database Server.



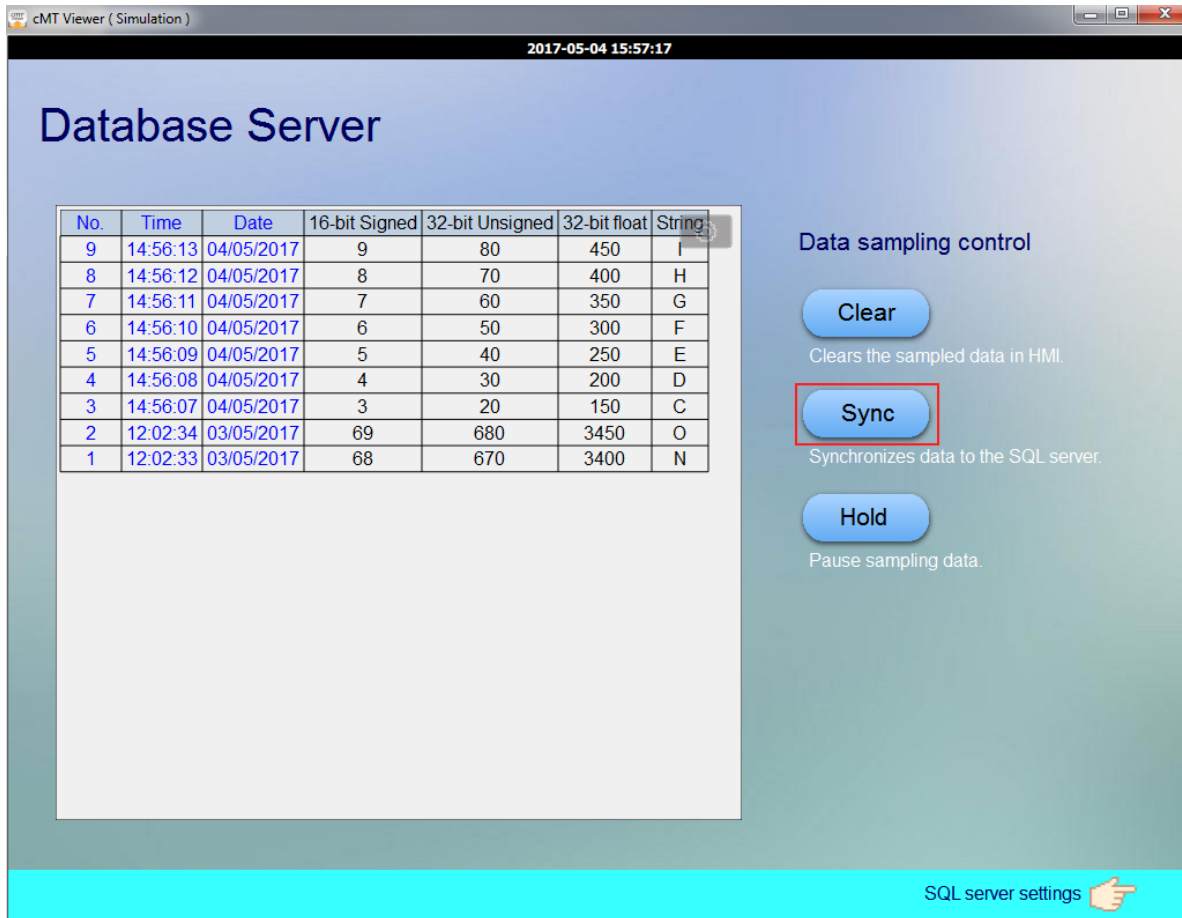
- If a Control Address is enabled in the Data Sampling and Event Logs, the following values will produce the referenced commands.

Value of 1: This will clear the sampled data in the HMI.

Value of 2: This will synchronize the historical data to the SQL server.

Value of 3: This will synchronize the historical data to the SQL server and clear the sampled data in the HMI.

- These are the relevant settings to direct data to your MySQL database. Now we will run the project in online simulation mode to generate data for the MySQL database to be displayed in Excel in the next section.



The screenshot shows the 'cMT Viewer (Simulation)' window with a title bar indicating the date and time '2017-05-04 15:57:17'. The main content area is titled 'Database Server' and features a table of sampled data. To the right of the table is a 'Data sampling control' panel with three buttons: 'Clear', 'Sync', and 'Hold'. The 'Sync' button is highlighted with a red rectangle. Below the 'Sync' button is a link for 'SQL server settings' with a hand cursor icon.


No.	Time	Date	16-bit Signed	32-bit Unsigned	32-bit float	String
9	14:56:13	04/05/2017	9	80	450	I
8	14:56:12	04/05/2017	8	70	400	H
7	14:56:11	04/05/2017	7	60	350	G
6	14:56:10	04/05/2017	6	50	300	F
5	14:56:09	04/05/2017	5	40	250	E
4	14:56:08	04/05/2017	4	30	200	D
3	14:56:07	04/05/2017	3	20	150	C
2	12:02:34	03/05/2017	69	680	3450	O
1	12:02:33	03/05/2017	68	670	3400	N

**Data sampling control**

**Clear**  
Clears the sampled data in HMI.

**Sync**  
Synchronizes data to the SQL server.

**Hold**  
Pause sampling data.

SQL server settings 

- Allow the project to generate some data, and then click the [Sync] button to synchronize the data to the MySQL database. If the sync has succeeded, three tables will have been generated in the database with the following name format: <HMI Name>\_<DATALOG NAME>\_data.

## Synchronizing the MySQL Database to Microsoft Office Excel

Connecting Microsoft Office Excel to MySQL requires the ODBC Connector (Open Database Connectivity). This section explains how to set the communication parameters in ODBC Connector and Excel.

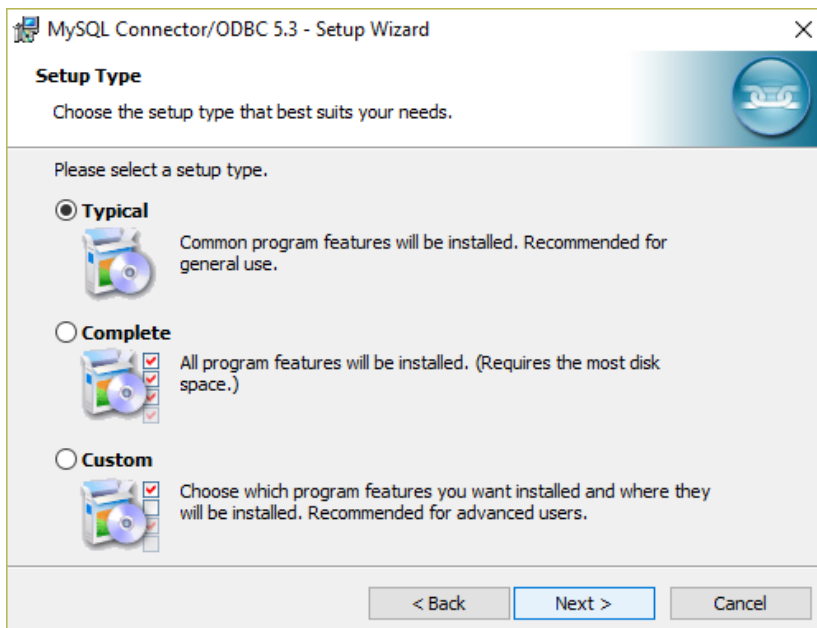
1. Visit the MySQL website and download the ODBC Connector:

<https://dev.mysql.com/downloads/connector/odbc/>

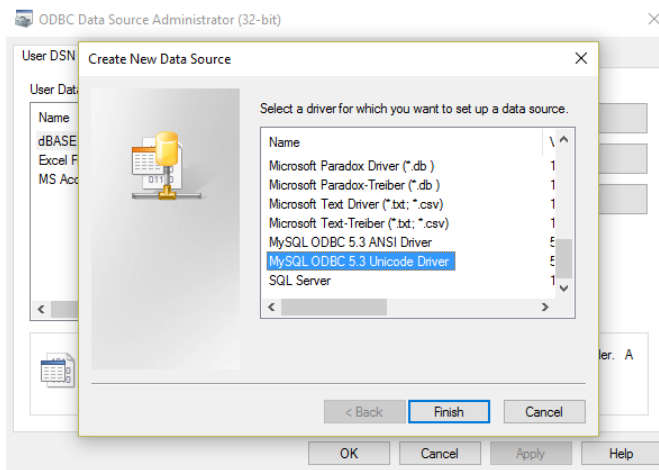
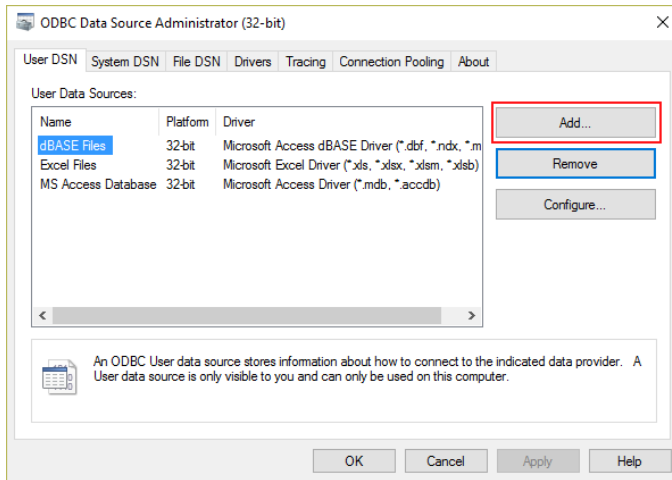
Excel is a 32-bit based software, so we will need the Windows (x86, 32-bit) version.

<b>Windows (x86, 32-bit), MSI Installer</b> (mysql-connector-odbc-5.3.4-win32.msi)	5.3.4	7.0M	<a href="#">Download</a>
<b>Windows (x86, 64-bit), MSI Installer</b> (mysql-connector-odbc-5.3.4-win64.msi)	5.3.4	7.2M	<a href="#">Download</a>
<b>Windows (x86, 32-bit), ZIP Archive</b> (mysql-connector-odbc-noinstall-5.3.4-win32.zip)	5.3.4	7.6M	<a href="#">Download</a>
<b>Windows (x86, 64-bit), ZIP Archive</b> (mysql-connector-odbc-noinstall-5.3.4-win64.zip)	5.3.4	7.8M	<a href="#">Download</a>

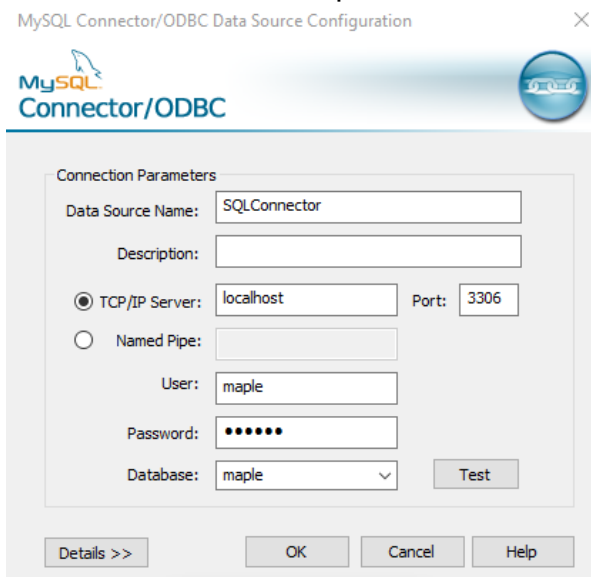
2. Install the downloaded connector and open Data Sources (ODBC). If you are running Windows 64bit, go to C:\Windows\SysWOW64\odbcad32.exe to run the ODBC connector once installed.



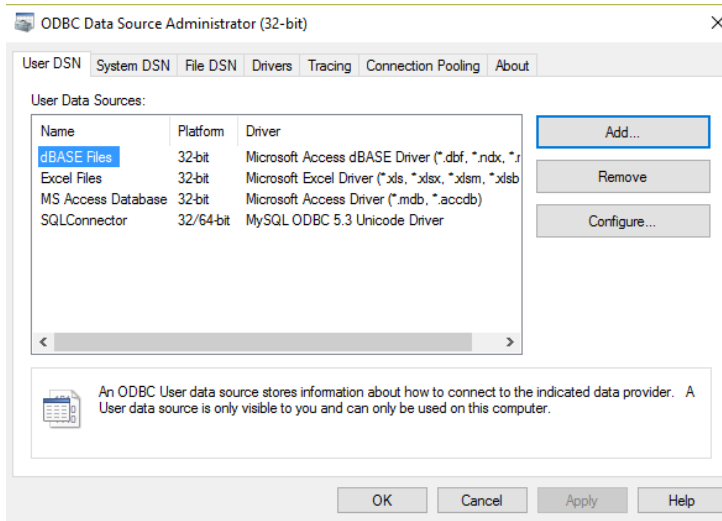
- Click [Add] to create a new data source and select “MySQL ODBC 5.3 Unicode Driver”.



- Set the communication parameters:



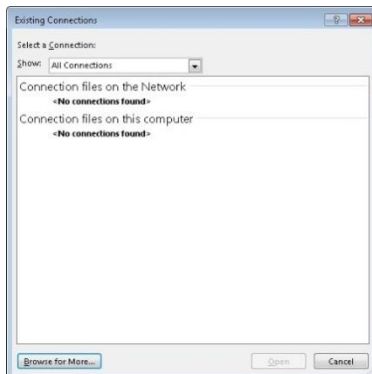
- Click [OK]. Your new data source has been created.



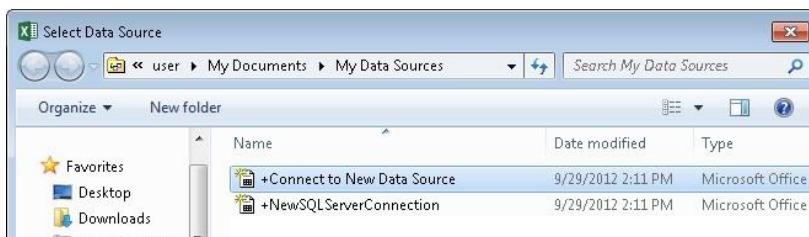
- Open Excel, go to the [Data] tab and select [Connections].



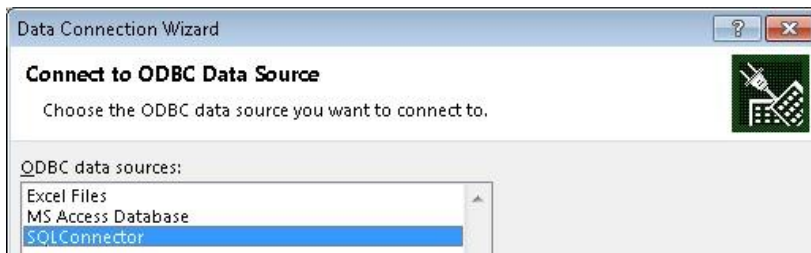
- Click [Add] to build a new connection.
- Click [Browse for More...].



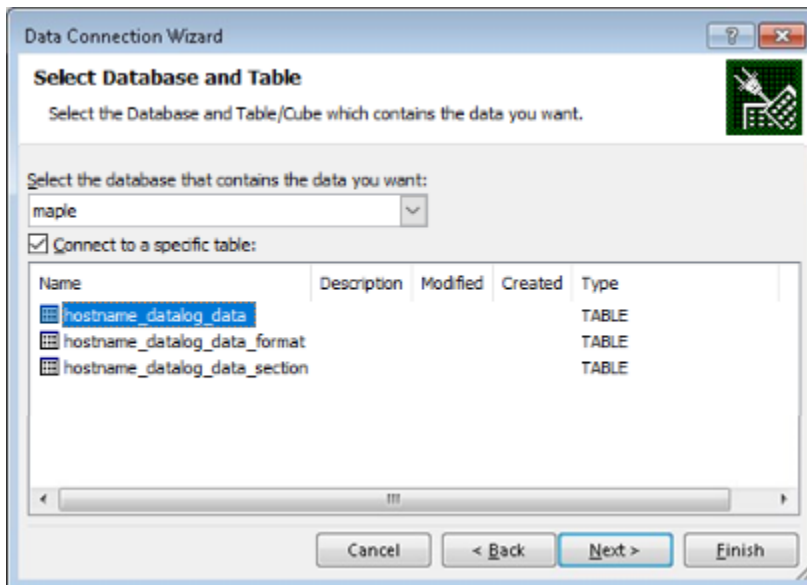
- Go to C:\Users\user\Documents\My Data Sources, and select [Connect to New Data Source].



10. In the Data Connection Wizard window, select [ODBC DSN].
11. Select the previously created data source.



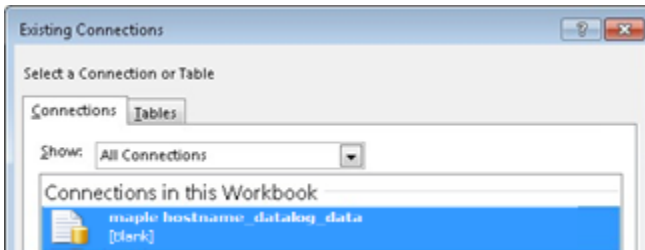
12. Select the items to be connected:  
 Data Sampling: <HMI NAME>\_<DATALOG NAME>\_data  
 Event Log: <HMI NAME>\_event



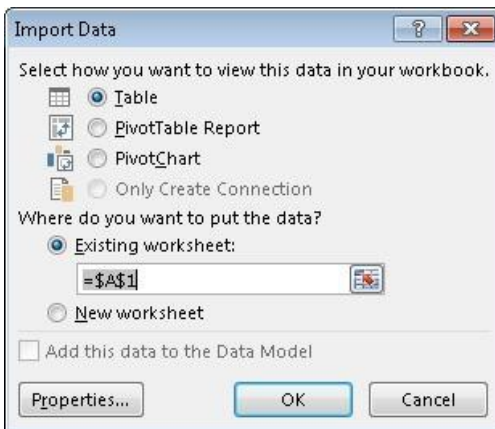
13. Click the [Finish] button.
14. Go to the [Data] tab and select [Existing Connections].



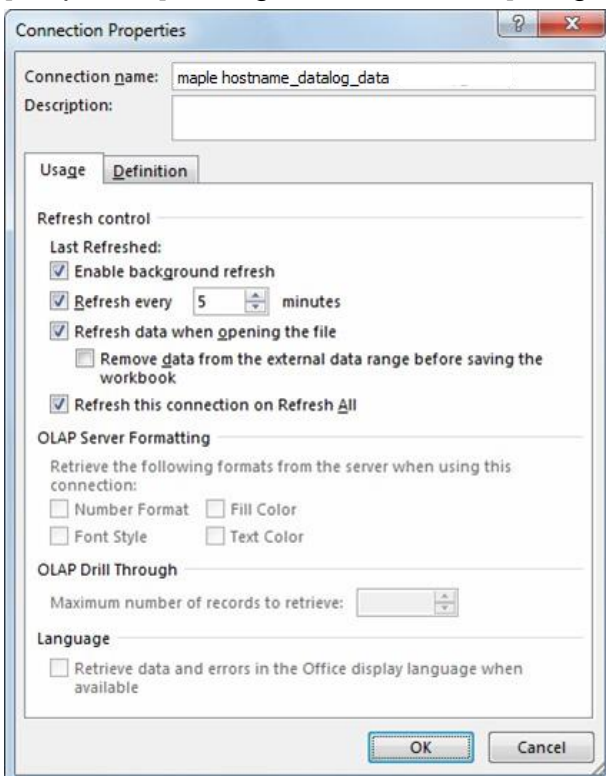
15. Select the previously built connection.



16. Select the beginning data location.



17. Go to the [Data] tab and select [Connections]. Select the connection and open its [Properties] settings window. In the [Usage] tab, select [Refresh every \* minutes].





18. Now the Excel worksheet will display historical data from the cMT series HMI when it is synchronized to MySQL,.

	A	B	C	D	E
1	data_index ▼	time@timestamp ▼	data_format_0 ▼	data_format_1 ▼	data_format_2 ▼
2	5384	1453915082	-0.906303167	0.714389682	-0.330768824
3	5385	1453915082	-0.953719914	0.807743073	-0.449516267
4	5386	1453915083	-0.976301134	0.863846481	-0.526046038
5	5387	1453915083	-0.99619323	0.937895536	-0.635889471
6	5388	1453915083	-1	0.980105877	-0.705340028
7	5389	1453915084	-0.991442561	1.032004952	-0.802969456

## References

- MySQL requires MET Framework4.0, and the download link is:  
<https://www.microsoft.com/zh-tw/download/details.aspx?id=17718>
  
- MySQL requires Visual C++ Redistributable Packages for Visual Studio 2013, and the download link is:  
<https://www.microsoft.com/en-US/download/details.aspx?id=40784>
  
- Click [here](#) for download link of cMT Database Server Demo Project or visit our support center at <https://www.maplesystems.com/cgi-bin/download/sample.asp>

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