

Advanced Application Manual

## *Database Server*

This manual walks through the steps to set up MySQL Server, and then use Excel to read HMI historical data.

V1.03

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## 1. Overview

Database Server is available in EasyBuilder Pro V5.03.01 and later versions. Database Server can synchronize sampled data and event logs to a remote MySQL server, and then the user can use a third-party software, for example, Microsoft Office Excel, to manage the data in the server.

This user manual explains step by step on how to install and set up MySQL server, how to connect Excel to MySQL server, and how to design EasyBuilder project, in order to make reading HMI data using Excel an easy job, even for a beginner.

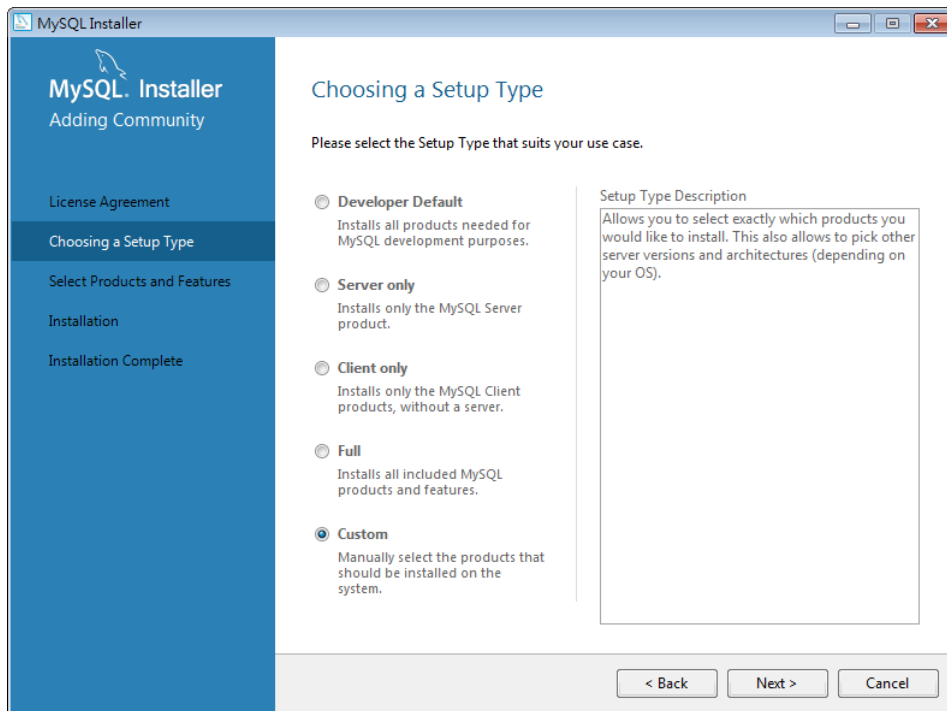
## 2. Installing MySQL Server

The SQL server used in the following demonstration is MySQL.

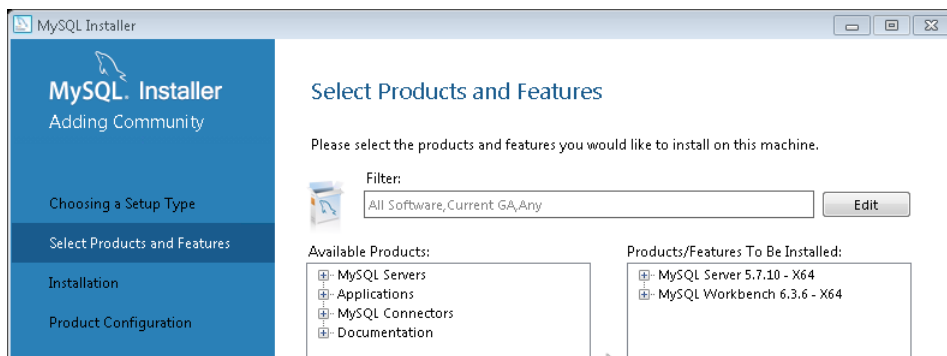
1. Download MySQL Workbench from this link:  
<http://dev.mysql.com/downloads/mysql/>
2. Click the [Download] button for downloading Windows, MySQL Installer MSI.



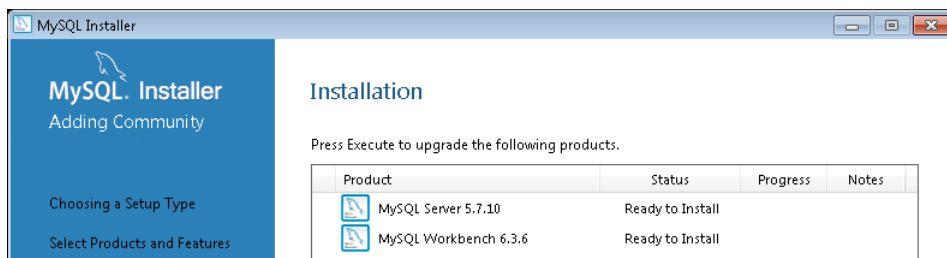
3. Open the downloaded installation file and start installing MySQL.
4. Select [Custom] as the Setup Type.



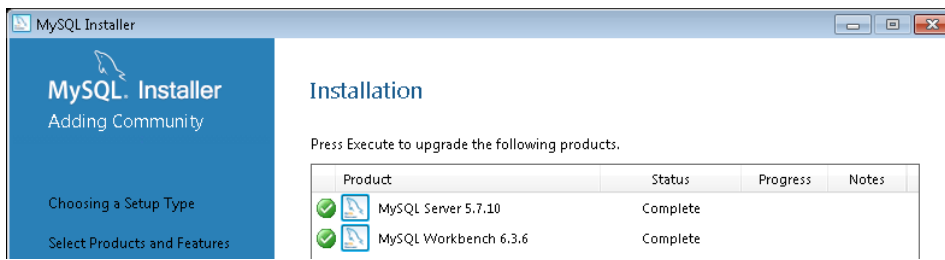
- Select the following two products:
  - [Application] » [MySQL Workbench] » [MSQL Workbench – X64/x86]
  - [MySQL Servers] » [MySQL Server] » [MySQL Servers x.x] » [MySQL Servers x.x.x –X64/X86]



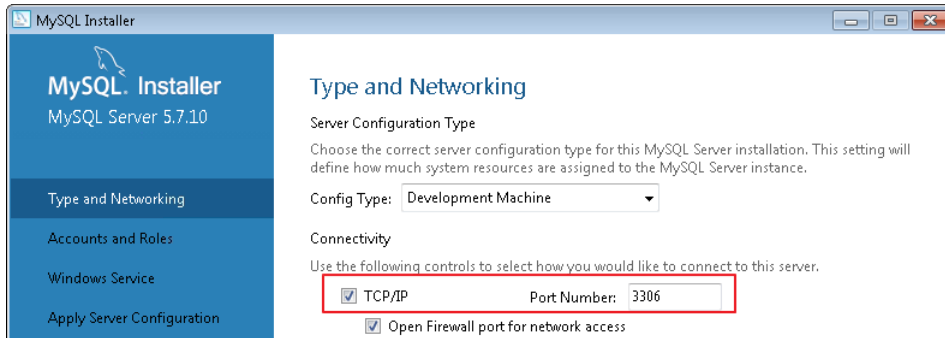
- Click [Execute] to start installing the selected products.



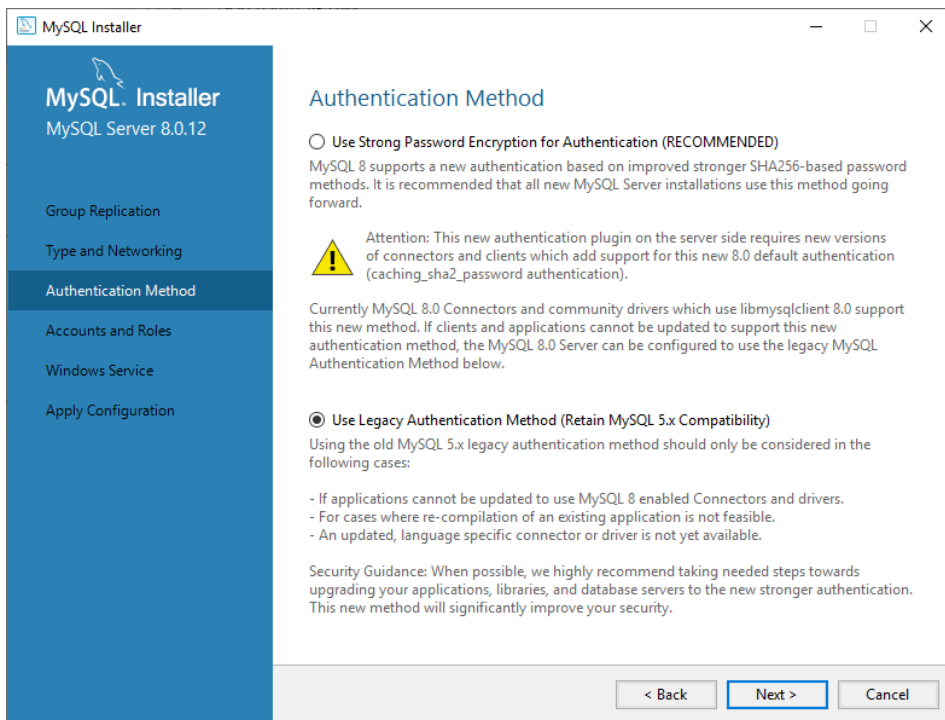
- A green check mark is displayed beside the successfully installed item.



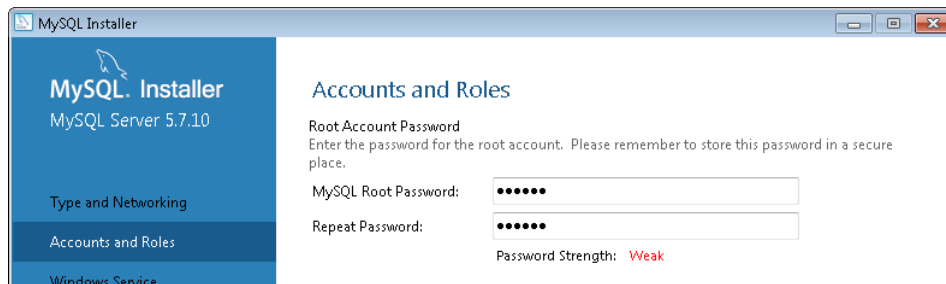
8. Set TCP/IP Port Number, please remember the setting.



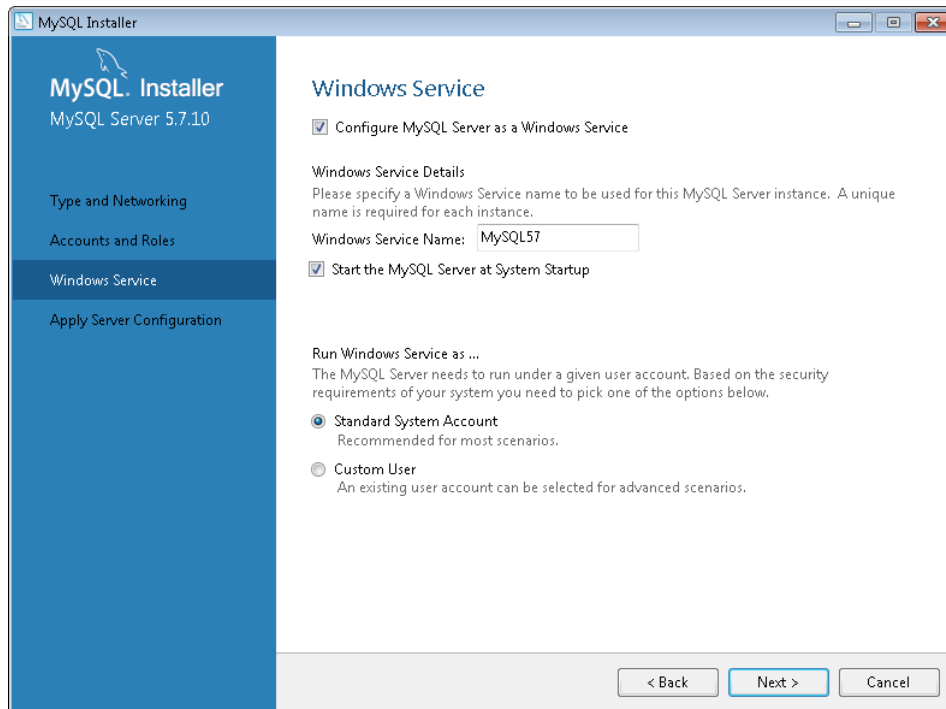
9. The following settings dialog box shows when installing MySQL v8.x. Please select [Use Legacy Authentication Method (Retain MySQL 5 x Compatibility)]. This step can be skipped when installing MySQL v5.x.



10. Enter MySQL password, please remember the password.



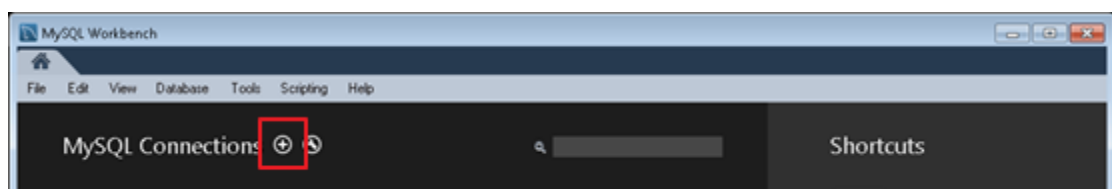
11. The rest of the settings can remain in default.



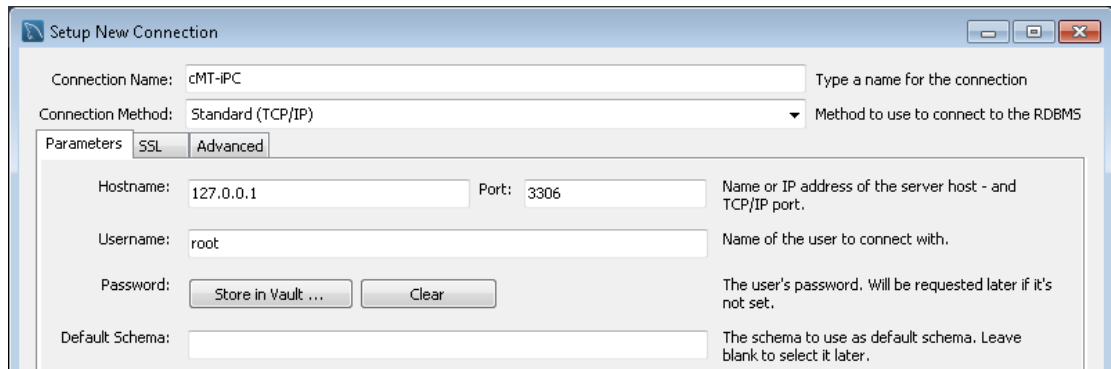
### 3. Building Database

After installing MySQL, a Schema must be created in MySQL for synchronizing HMI historical data to the Schema with the same name.

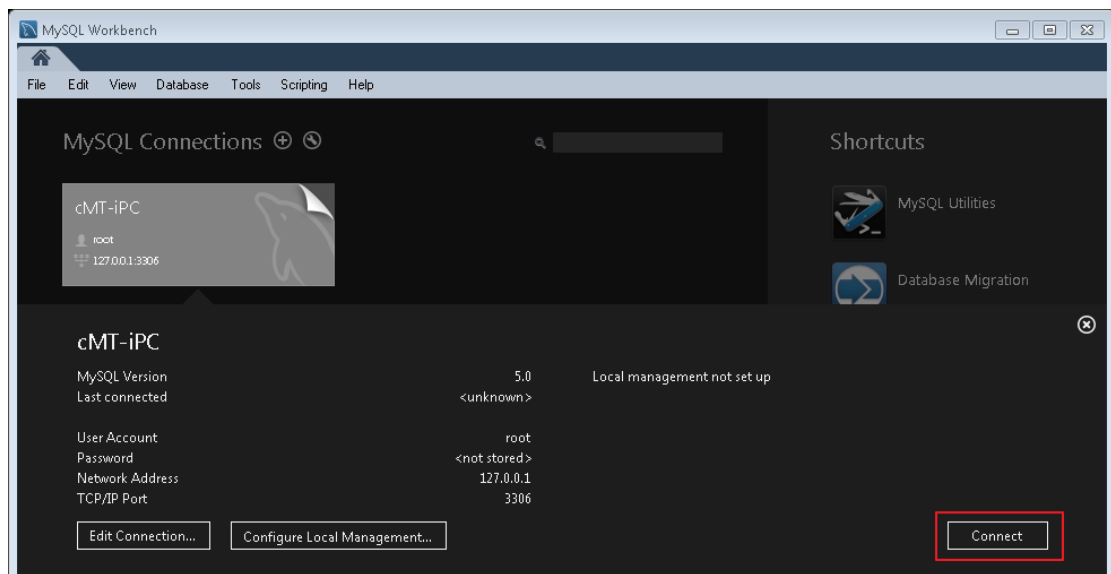
1. Launch MySQL Workbench. Click  icon to build a connection with Database Server.




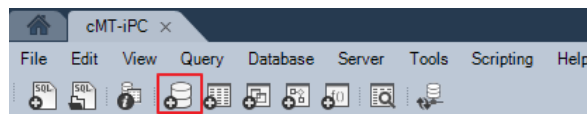
2. Enter [Connection Name], [Hostname], [Port], [Username], and use Port 3306.



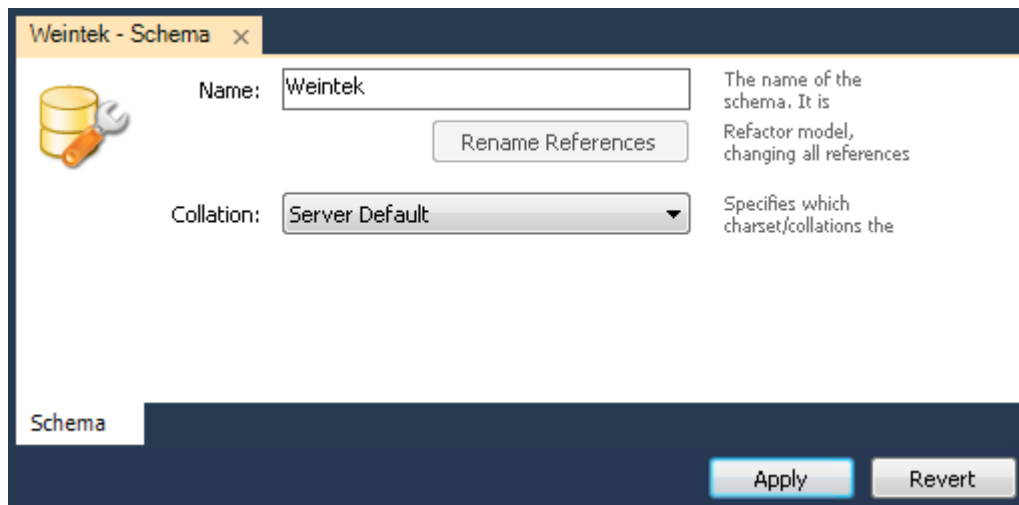
3. When finished, a new connection can be found as shown in the following screenshot. Click [Connect] to open the settings window.



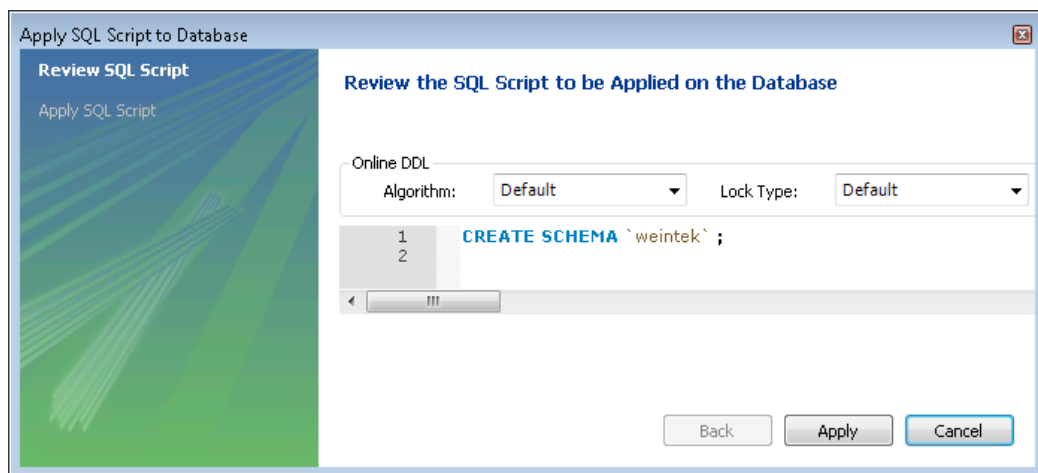
4. Click  icon to create the Schema.



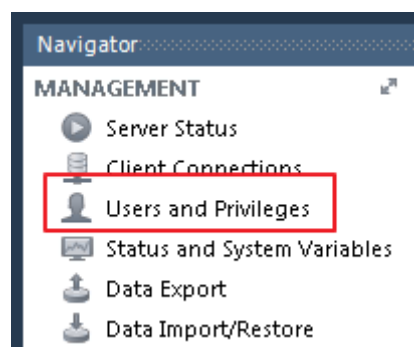
5. Enter the name of the Schema and click [Apply].



6. The program will prompt the user to review the SQL Script, click [Apply].

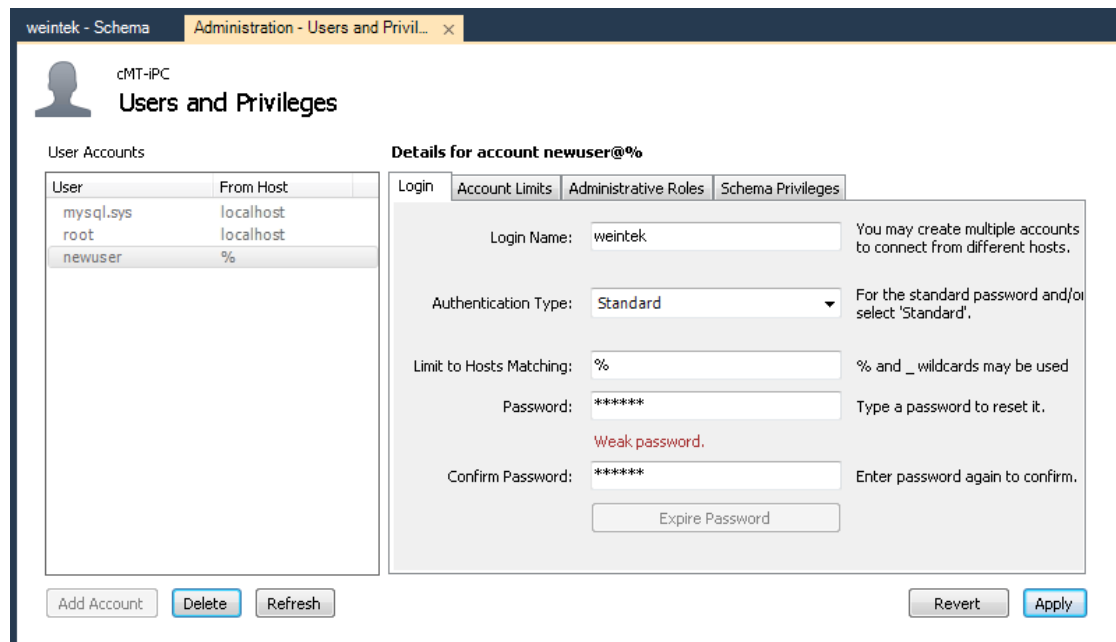


7. Under Navigator, select [Users and Privileges].

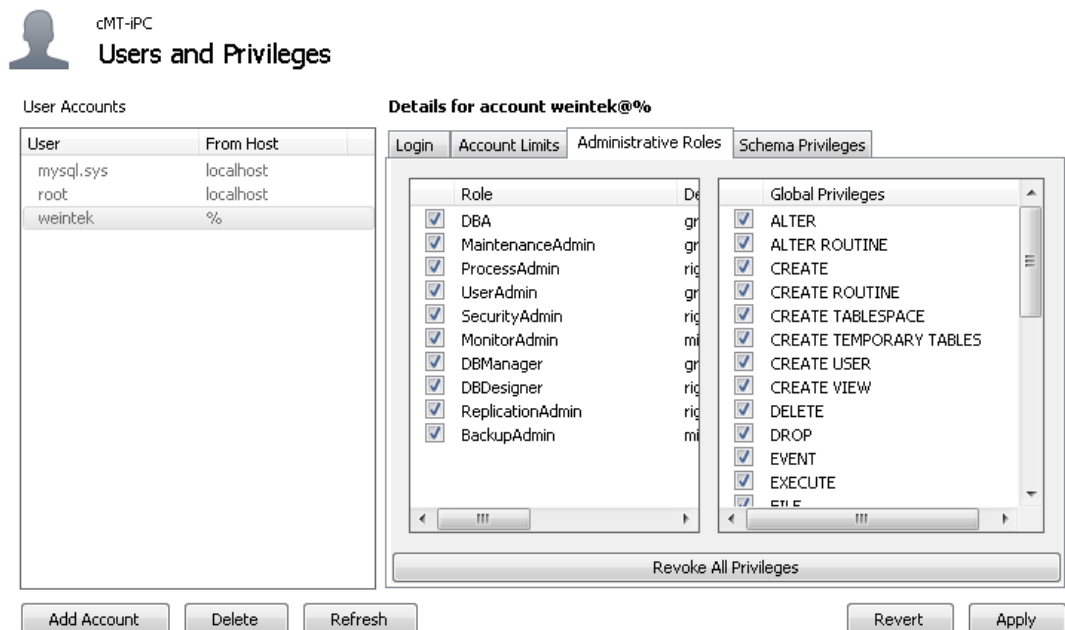




- Click [Add Account] and enter the user credentials in [Login] tab.



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

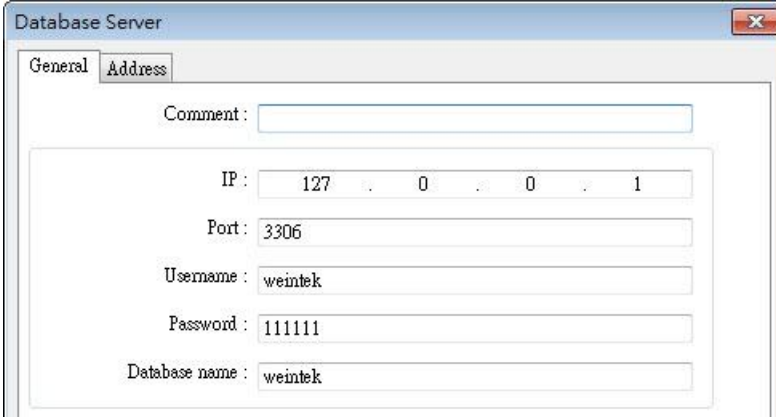


- Click [Apply] when finish setting.

## 4. Designing Project File

This chapter goes through the configuration in EasyBuilder Pro.

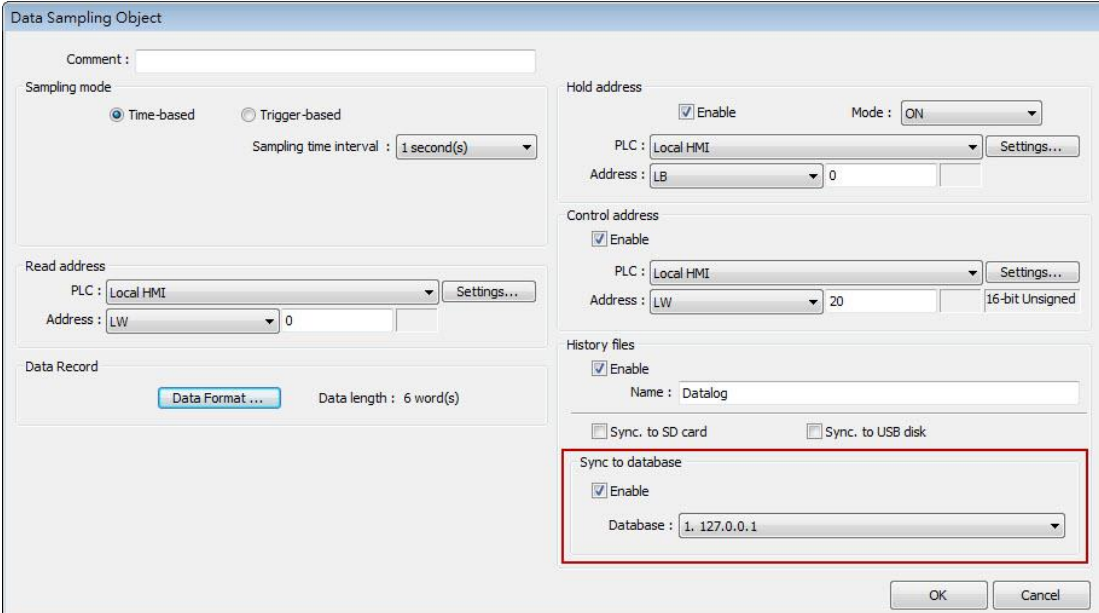
1. In EasyBuilder Pro main menu click [Objects] » [Database Server].
2. In General tab set the Database Server parameters.



The screenshot shows the 'Database Server' dialog box with the 'General' tab selected. The fields are as follows:

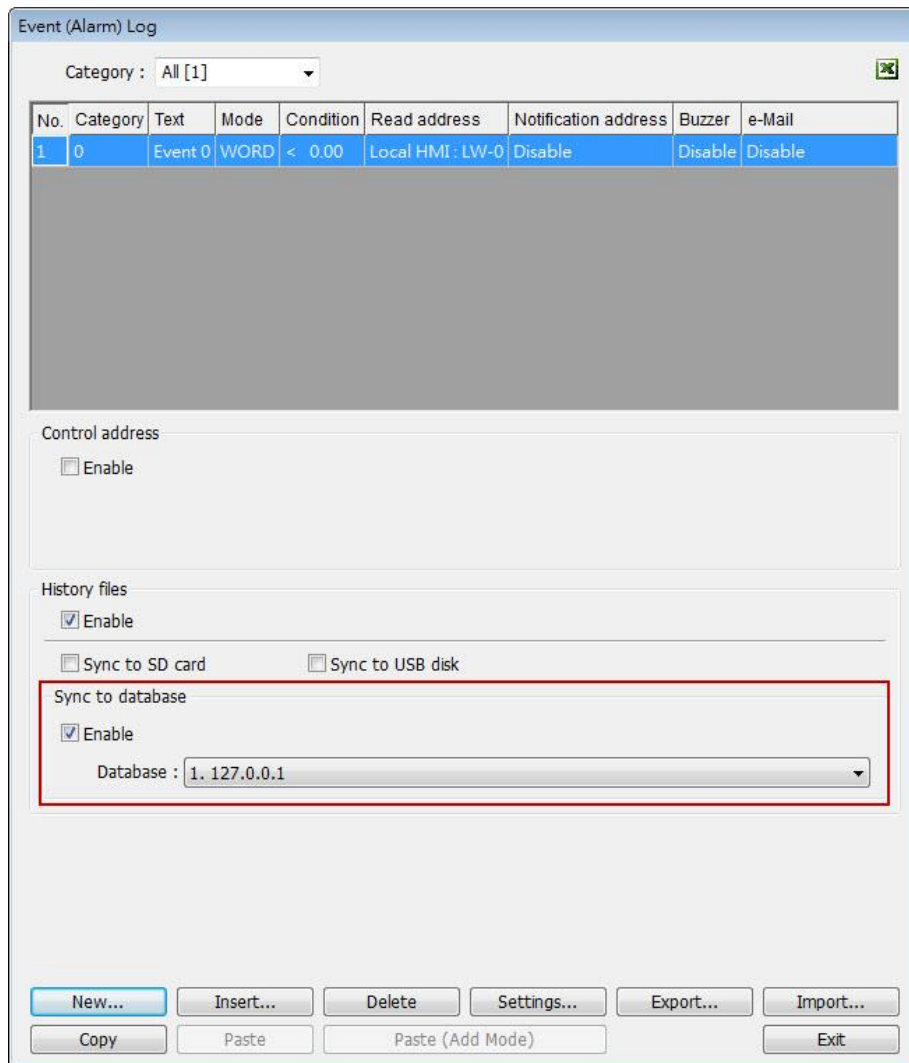
- Comment: (empty text box)
- IP: 127 . 0 . 0 . 1
- Port: 3306
- Username: weintek
- Password: 111111
- Database name: weintek

3. In Address tab set Status Address and Control Address. The status addresses can display the connection status with SQL server on HMI, and the control addresses can be used to change connection parameters dynamically on HMI.
4. Select [Sync to database] for both Data Sampling object and Event Log object, to synchronize the historical data to the Database Server.



The screenshot shows the 'Data Sampling Object' configuration dialog box. The 'Sync to database' section is highlighted with a red box. The configuration is as follows:

- Comment: (empty text box)
- Sampling mode:
  - Time-based
  - Trigger-based
  - Sampling time interval: 1 second(s)
- Read address:
  - PLC: Local HMI
  - Address: LW 0
- Data Record:
  - Data length: 6 word(s)
- Hold address:
  - Enable
  - Mode: ON
  - PLC: Local HMI
  - Address: LB 0
- Control address:
  - Enable
  - PLC: Local HMI
  - Address: LW 20 (16-bit Unsigned)
- History files:
  - Enable
  - Name: Datalog
  - Sync. to SD card
  - Sync. to USB disk
- Sync to database (highlighted):
  - Enable
  - Database: 1. 127.0.0.1



Note: The data will be synchronized to MySQL server only when the number of data sampling / event log records reaches 10000. To start synchronization manually, please select [Enable] check box in the Control Address group box in the settings window of Data Sampling / Event Log object, and then give command by entering the corresponding value in the designated address.

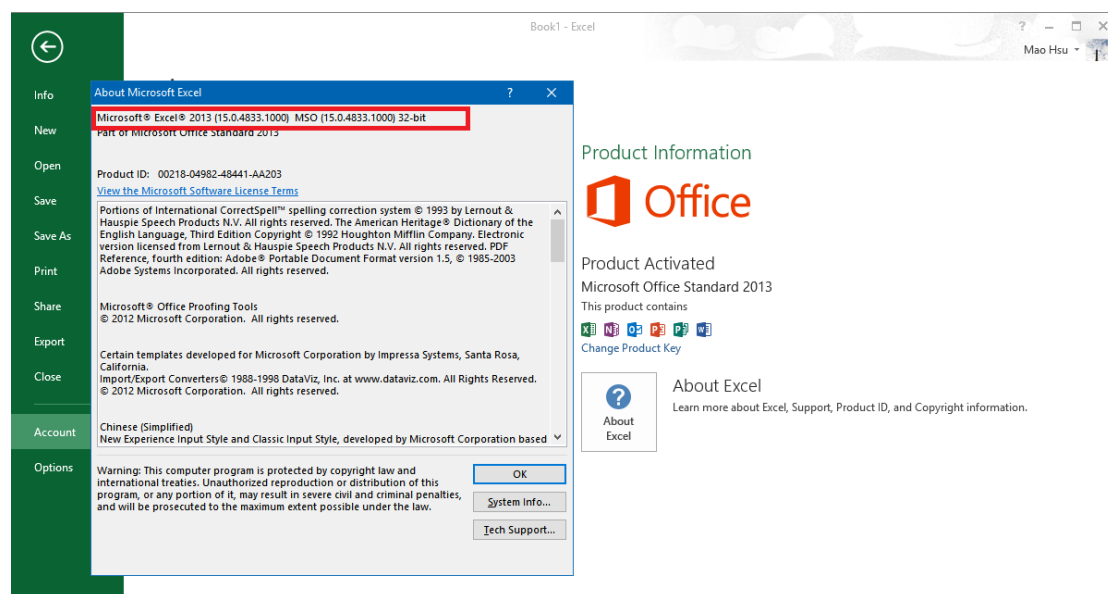
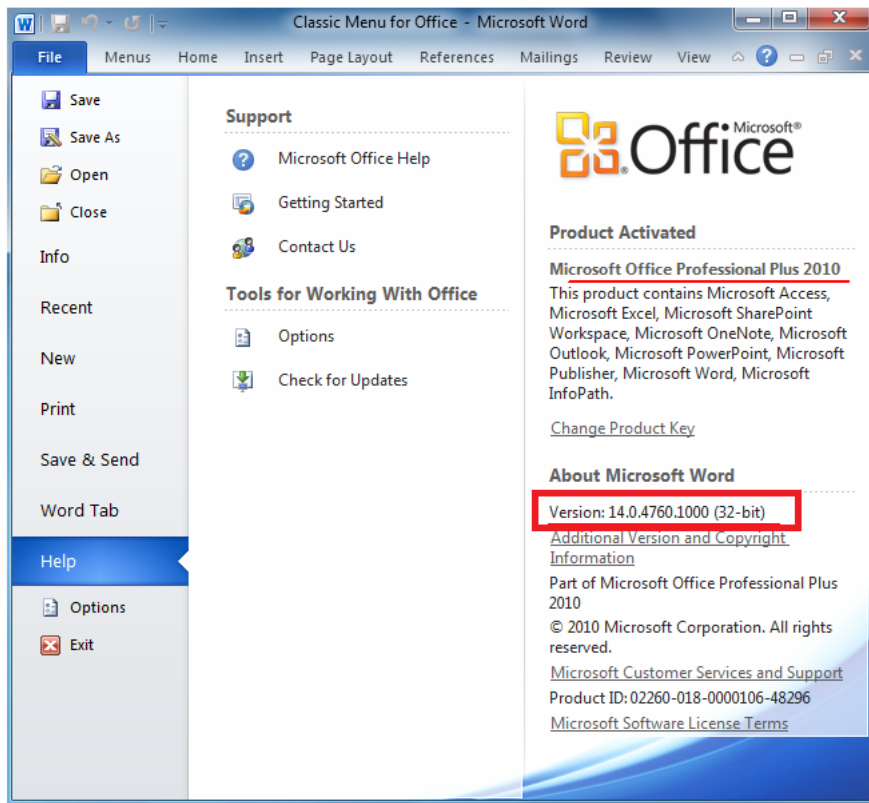
Value	Command
1	Clear data in cMT-SVR.
2	Synchronize data to the external device.
3	Synchronize data to the external device and then clear data in cMT-SVR.

**Please see EasyBuilder Pro User Manual Chapter 7 Event Log and Chapter 8 Data Sampling for more details on the synchronization rules of historical data.**

## 5. Synchronizing MySQL Database to Microsoft Office Excel

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

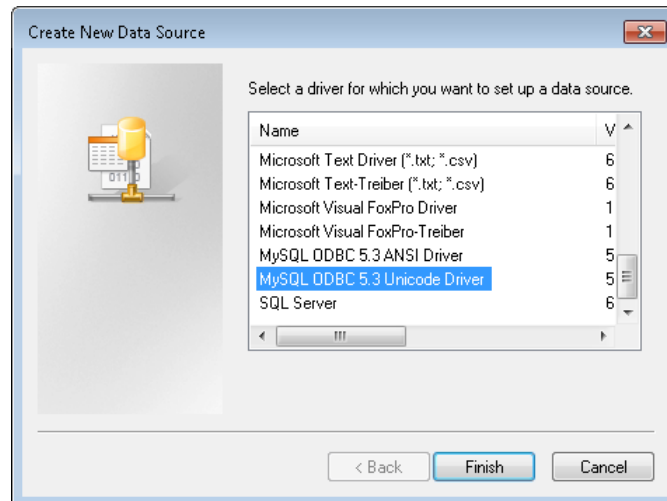
1. Please check whether the Office software you are using is 32 or 64-bit version.



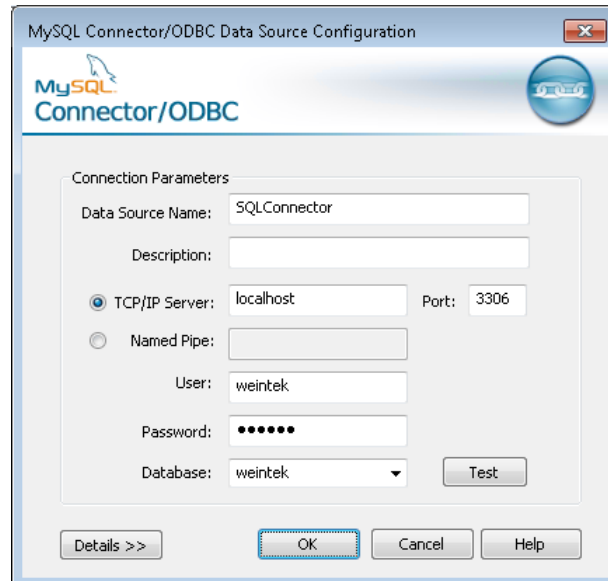
2. Visit MySQL website and download the correct ODBC Connector:

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

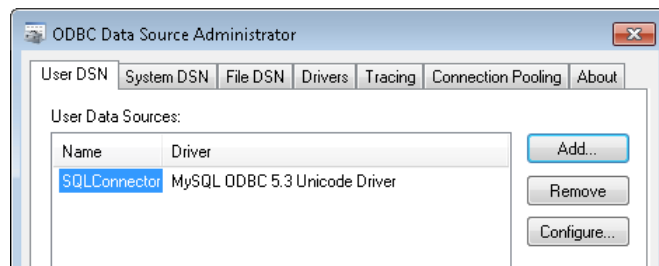
3. Install the downloaded connector and open Data Sources (ODBC). If Windows 64bit is used, go to C:\Windows\SysWOW64\odbcad32.exe to run ODBC.
4. Click [Add] to create a new data source and select “MySQL ODBC 5.3 Unicode Driver”.



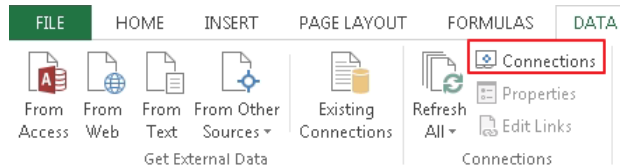
5. Set communication parameters.



6. A new data source can be found.

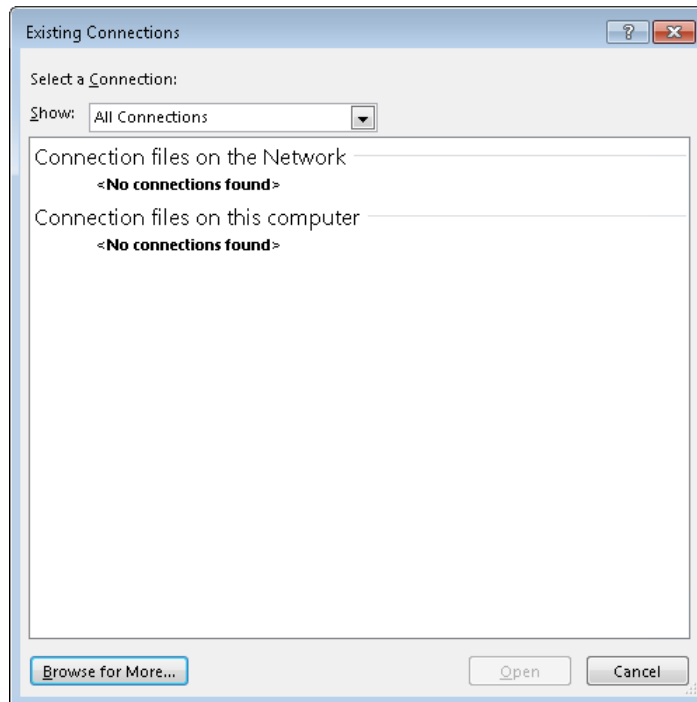


7. Open Excel, go to [Data] tab and select [Connections].

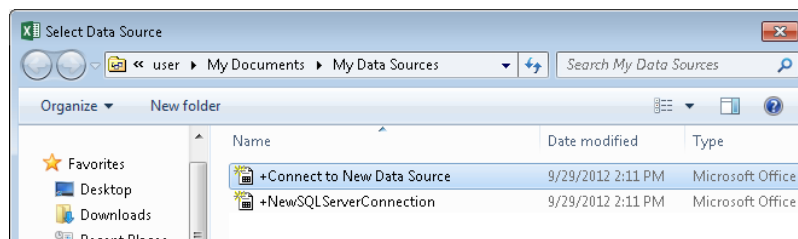


8. Click [Add] to build a new connection.

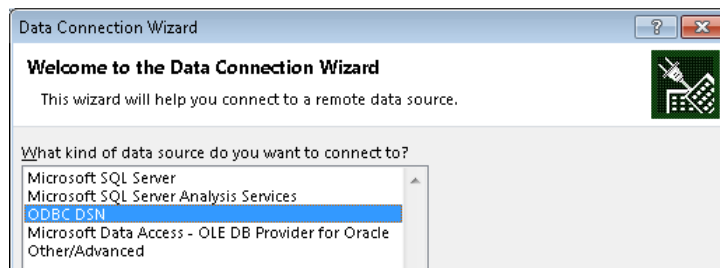
9. Click [Browse for more].



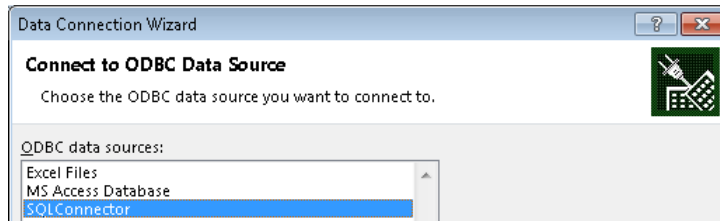
10. Go to C:\Users\user\Documents\My Data Sources, and select [Connect to New Data Source].



11. In Data Connection Wizard window select [ODBC DSN].



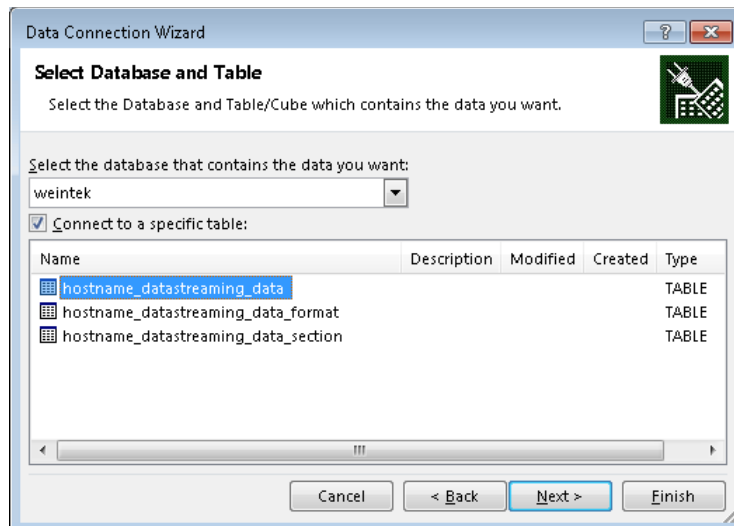
12. Select the data source created previously.



13. Select the items to be connected.

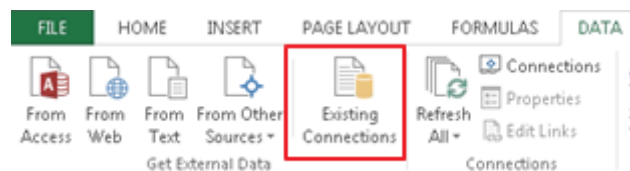
Data Sampling: <HMI NAME>\_<DATALOG NAME>\_data

Event Log: <HMI NAME>\_event

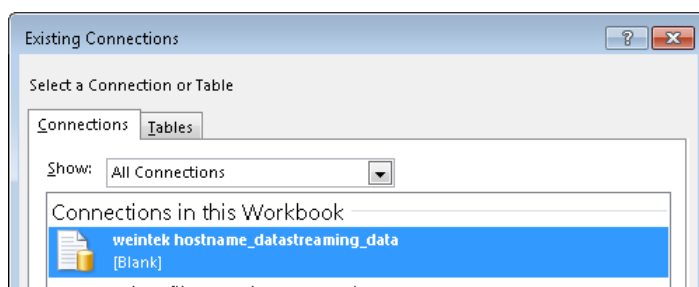


14. Click [Finish] button.

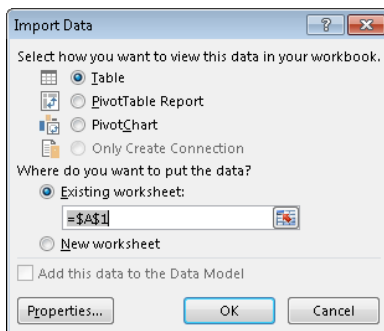
15. Go to [Data] tab and select [Existing Connections].



16. Select the connection built previously.



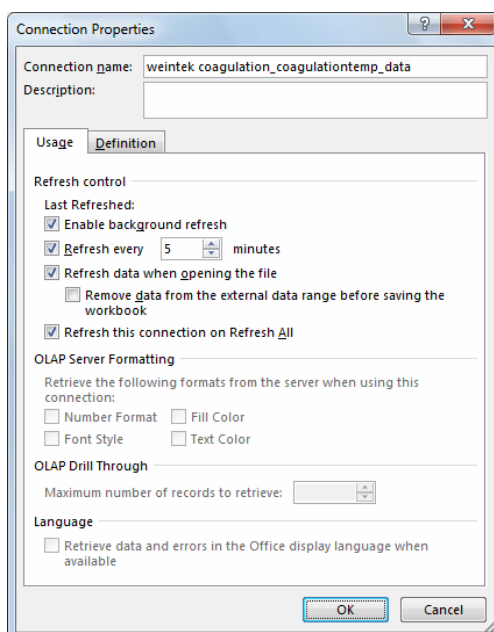
17. Select the place to put the data.



18. When historical data is synchronized to MySQL, the Excel worksheet should display the data.

	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

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





## 6. References

1. MySQL requires MET Framework4.0, and the download link is:  
<https://www.microsoft.com/zh-tw/download/details.aspx?id=17718>
2. 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>
3. The download link of Database Server Demo Project:  
[Database Server demo project](#)
4. The download link of EasyBuilder Pro User Manual Chapter 7 Event Log:  
[http://dl.weintek.com/public/EBPro/UserManual/eng/UserManual\\_separate\\_chapter/Chapter\\_07\\_Event\\_Log.pdf](http://dl.weintek.com/public/EBPro/UserManual/eng/UserManual_separate_chapter/Chapter_07_Event_Log.pdf)
5. The download link of EasyBuilder Pro User Manual Chapter 8 Data Sampling:  
[http://dl.weintek.com/public/EBPro/UserManual/eng/UserManual\\_separate\\_chapter/Chapter\\_08\\_Data\\_Sampling.pdf](http://dl.weintek.com/public/EBPro/UserManual/eng/UserManual_separate_chapter/Chapter_08_Data_Sampling.pdf)
6. The FAQ document about finding ODBC MySQL Database in Excel (32/64-bit):  
[http://dl.weintek.com/public/MT8000/eng/FAQ/FAQ\\_94\\_Finding\\_ODBC\\_MySQL\\_Database\\_in\\_Excel\\_32or64-bit\\_en.pdf](http://dl.weintek.com/public/MT8000/eng/FAQ/FAQ_94_Finding_ODBC_MySQL_Database_in_Excel_32or64-bit_en.pdf)