

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

Table of Contents

Overview	1
Installing MySQL Server	1
Building Database	4
Designing Project File	8
Synchronizing MySQL Database to Microsoft Office Excel	10
References	15
	Overview Installing MySQL Server Building Database Designing Project File Synchronizing MySQL Database to Microsoft Office Excel References



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/
- 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.





5. 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]



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

MySQL Installer					×
MySQL. Installer Adding Community	Installation				
	Press Execute to upgrade the following pro	ducts.			
	Product	Status	Progress	Notes	
Choosing a Setup Type	MySQL Server 5.7.10	Ready to Install			
Select Products and Features	MySQL Workbench 6.3.6	Ready to Install			

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



NySQL Installer					×
MySQL. Installer Adding Community	Installation Press Execute to upgrade the following prov	ducts.			
	Product	Status	Progress	Notes	
Choosing a Setup Type	🖉 [MySQL Server 5.7.10	Complete			
Select Products and Features	🖉 📐 MySQL Workbench 6.3.6	Complete			

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

MySQL Installer	
MySQL. Installer MySQL Server 5.7.10	Type and Networking Server Configuration Type Choose the correct server configuration type for this MySQL Server installation. This setting will define how much system resources are assigned to the MySQL Server instance.
Type and Networking	Config Type: Development Machine 👻
Accounts and Roles	Connectivity
Windows Service	Use the following controls to select how you would like to connect to this server. Image: TCP/IP Port Number: 3306
Apply Server Configuration	Open Firewall port for network access

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.

MySQL Installer	– 🗆 X				
MySQL. Installer MySQL Server 8.0.12	Authentication Method O Use Strong Password Encryption for Authentication (RECOMMENDED) MySQL 8 supports a new authentication based on improved stronger SHA256-based password methods. It is recommended that all new MySQL Server installations use this method going feavured				
Group Replication	Torward.				
Type and Networking	Attention: I his new authentication plugin on the server side requires new versions of connectors and clients which add support for this new 8.0 default authentication (caching, sha2, password authentication).				
Authentication Method	Currently MvSOL 8.0 Connectors and community drivers which use libmysalclient 8.0 support				
Accounts and Roles	this new method. If clients and applications cannot be updated to support this new authentication method, the MySQL 8.0 Server can be configured to use the legacy MySQL				
Windows Service	Authentication Method below.				
Apply Configuration	 Use Legacy Authentication Method (Retain MySQL 5.x Compatibility) Using the old MySQL 5.x legacy authentication method should only be considered in the following cases: If applications cannot be updated to use MySQL 8 enabled Connectors and drivers. For cases where re-compilation of an existing application is not feasible. An updated, language specific connector or driver is not yet available. Security Guidance: When possible, we highly recommend taking needed steps towards upgrading your applications, libraries, and database servers to the new stronger authentication. This new method will significantly improve your security. 				
	< Back Next > Cancel				

10. Enter MySQL password, please remember the password.

Database Server



NySQL Installer			- • ×
MySQL. Installer MySQL Server 5.7.10	Accounts and Ro Root Account Password Enter the password for the place.	ples root account. Please remember to store this p:	assword in a secure
Type and Networking	MySQL Root Password:	•••••	
Accounts and Roles	Repeat Password:	eeeeee Password Strength: Weak	
Mindows Son ico		rassword strength Treak	

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

🔄 MySQL Installer	
MySQL. Installer MySQL Server 5.7.10	Windows Service
Type and Networking Accounts and Roles	Windows Service Details Please specify a Windows Service name to be used for this MySQL Server instance. A unique name is required for each instance. Windows Service Name: Windows Service Name:
Windows Service	🗑 Start the MySQL Server at System Startup
Apply Server Configuration	
	Run Windows Service as The MySQL Server needs to run under a given user account. Based on the security requirements of your system you need to pick one of the options below.
	 Standard System Account Recommended for most scenarios.
	Custom User An existing user account can be selected for advanced scenarios.
	< Back Next > Cancel

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.

MySQL Workbench				
File Edit View Database Tools Scripting Help				
MySQL Connection: 💿 🔊	٩	Shortcuts		

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

Database Server



🔊 Setup New Conne	ction				
Connection Name:	cMT-iPC				Type a name for the connection
Connection Method:	Standard (TCP/IP)			•	Method to use to connect to the RDBMS
Parameters SSL	Advanced				
Hostname:	127.0.0.1	Port:	3306	Name or IP a TCP/IP port.	address of the server host - and
Username:	root Name of the user to connect with.		user to connect with.		
Password:	Store in Vault Clear			The user's p not set.	assword. Will be requested later if it's
Default Schema:				The schema blank to sele	to use as default schema. Leave .ct it later.

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

MySQL Workbench			
File Edit View Database Tools Scripti	ng Help		
MySQL Connections ⊕ €			Shortcuts
cMT-iPC			MySQL Utilities
127.00.1:3306			Database Migration
cMT-iPC			\otimes
MySQL Version	5.0	Local management not set up	ı.
Last connected	<unknown></unknown>		
User Account	root		
Password Network Address	<not stored=""> 127.0.0.1</not>		
TCP/IP Port	3306		
Edit Connection Configure L	ocal Management		Connect
1 Click Hisop to	rooto the Cohema		
	lieate the Schema.		
	MT-IPC ×		
File Ed	t View Query Database	Server Tools Scripting	Help

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



Weintek - So	chema \times	
	Name:	Weintek The name of the schema. It is Rename References Refactor model, changing all references
	Collation:	Server Default Specifies which charset/collations the
Schema		
		Apply Revert

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

Apply SQL Script to Database					×
Review SQL Script	Review the SQI	L Script to be Ap	plied or	n the Databas	se
Apply SQL Script	-				
	- Online DDI				
	Algorithm: Default Lock Type: Default CREATE SCHEMA `weintek`; CREATE SCHEMA `weintek`;				
	•				
				Back	Apply Cancel

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





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

intek - Schema	Administration - Users	and Privil	×			
User Accounts	and Privileges	Details	; for account ne	wuser@%		
User	From Host	Login	Account Limits	Administrative Roles	Schema Privileges	
mysql.sys root newuser	localhost localhost %	_	Login Nam	e: weintek		You may create multiple accounts to connect from different hosts.
		A	uthentication Typ	e: Standard	•	For the standard password and/ select 'Standard'.
		Limit	to Hosts Matchin	g: %		% and _ wildcards may be used
			Passwor	d: *****		Type a password to reset it.
				Weak password.		
			Confirm Passwor	d: *****		Enter password again to confirm
				Expire I	Password	
Add Account	Delete Refresh					Revert

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

Jser Accounts		Details	for account we	intek@%	
Jser	From Host	Login	Account Limits	Administrative Roles	Schema Privileges
voot weintek	localhost %		Role DBA MaintenanceAd ProcessAdmin UserAdmin SecurityAdmin MonitorAdmin DBManager DBDesigner ReplicationAdm BackupAdmin	De gr min gr riq gr riq mi gr riq n riq mi b	Global Privileges ALTER ALTER ROUTINE CREATE ROUTINE CREATE ROUTINE CREATE TABLESPACE CREATE TABLESPACE CREATE USER CREATE USER CREATE VIEW DELETE DROP EVENT EXECUTE En e III En e III En e III En e III EN E

10. 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.

General Address	
Comment :	
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.

Data Sampling Object	
Comment : Sampling mode	Hold address
Sampling time interval : 1 second(s)	PLC : Local HMI Address : LB 0
	Control address
Read address PLC : [Local HMI ▼ Settings]	PLC : Local HMI
Address : Luw 👻 0	Address : LW 20 10-bit Unsigned
Data Record Data Format Data length : 6 word(s)	History files Image: Constraint of the second se
	Sync to database C Enable Database : 1. 127.0.0.1
	OK Cancel



ol addres Enable	Text Event 0	Mode	Condition < 0.00	Read address Local HMI : LW-0	Notification address Disable	Buzzer Disable	e-Mail Disable
ol addres Enable	Event 0	WORD	< 0.00	Local HMI : LW-0	Disable	Disable	Disable
ol addres Enable	s						
CI							
y files Enable							
Sync to §	5D card		Syn	c to USB disk			
c to data Enable Databa	base se : 1. :	127.0.0.	1				•
		Incort		Doloto	attings During	nort	Import
	iync to s to data nable Databa	w	iync to SD card to database inable Database : 1. 127.0.0.	iync to SD card Syn to database inable Database : 1. 127.0.0.1	iync to SD card Sync to USB disk to database inable Database : 1. 127.0.0.1	ivinc to SD card Sync to USB disk to database inable Database : 1. 127.0.0.1 Delete Settings Ex. opy Paste Paste (Add Mode)	ivinc to SD card Sync to USB disk to database inable Database : 1. 127.0.0.1 w Insert Delete Settings Export opy Paste Paste (Add Mode)

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.

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/

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

Create New Data Source	Select a driver for which you want to set up a d	💌
	Name Microsoft Text Driver (".txt; ".csv) Microsoft Text-Treiber (".txt; ".csv) Microsoft Visual FoxPro-Treiber Miscosoft Visual FoxPro-Treiber MySQL ODBC 5.3 ANSI Driver MySQL DDBC 5.3 Unicode Driver SQL Server	V 6 6 1 1 5 5 6 V •
	< Back Finish	Cancel

5. Set communication parameters.

MySQL Connector/ODBC [Data Source Configuratio	n	×
MysqL			
Connector/ODB	С		
Connection Parameters	5		
Data Source Name:	SQLConnector		
Description:			
TCP/IP Server:	localhost	Port:	3306
Named Pipe:]	
User:	weintek		
Password:	•••••		
Database:	weintek 👻	Т	est
Details >>	ок	ancel	Help

6. A new data source can be found.





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

FILE	нс	ME	INSERT	PAGE LAYOUT	FO	RMULAS	DAT	A
From Access	From Web	From Text Get Ex	From Other Sources + ternal Data	Existing Connections	Refresh All •	Connections	ctions ties 1ks	A Z Z

- 8. Click [Add] to build a new connection.
- 9. Click [Browser for more].

Existing Connections	? 💌
Select a <u>C</u> onnection:	
Show: All Connections	
Connection files on the Network «No connections found»	
Connection files on this computer <no connections="" found=""></no>	
Browse for More	Cancel

 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.

Data Connection Wizard	? 🔀
Connect to ODBC Data Source Choose the ODBC data source you want to connect	to.
ODBC data sources: Excel Files MS Access Database SQLConnector	*

13. Select the items to be connected.

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

Event Log: <HMI NAME>_event

Data Connection Wizard				? 💌
Select Database and Table Select the Database and Table/Cube which cor	ntains the data y	ou want.		Ř
Select the database that contains the data you we weintek	ant:			
Name	Description	Modified	Created	Туре
hostname_datastreaming_data hostname_datastreaming_data_format hostname_datastreaming_data_section				TABLE TABLE TABLE
<				•
Cancel	< <u>B</u> ack	<u>N</u> ext ≻		Einish

- 14. Click [Finish] button.
- 15. Go to [Data] tab and select [Existing Connections].



16. Select the connection built previously.



Existing Connections	? <mark>×</mark>		
Select a Connection or Table			
onnections Tables			
Show: All Connections			
Connections in this Workbook			
weintek hostname_datastreaming_data [Blank]			
Comparties files on the Nickey of			

17. Select the place to put the data.



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

	А	В	С	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
б	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].

Connection Properties					
Connection name: weintek coagulation_coagulationtemp_data					
Descr <u>i</u> ption:					
Usage Definition					
Refresh control					
Last Refreshed:					
Enable background refresh					
Refresh every 5 🚔 minutes					
Refresh data when opening the file					
Remove data from the external data range before saving the workbook					
Refresh this connection on Refresh <u>A</u> ll					
OLAP Server Formatting					
Retrieve the following formats from the server when using this connection:					
Number Format Fill Color					
Font Style Text Color					
OLAP Drill Through					
Maximum number of records to retrieve:					
Language					
Retrieve data and errors in the Office display language when available					
OK Cancel					



6. References

- MySQL requires MET Framework4.0, and the download link is: <u>https://www.microsoft.com/zh-tw/download/details.aspx?id=17718</u>
- 2. MySQL requires Visual C++ Restributable Packages for Visual Studio 2013, and the download link is: <u>https://www.microsoft.com/en-US/download/details.aspx?id=40784</u>
- 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: <u>http://dl.weintek.com/public/EBPro/UserManual/eng/UserManual_separa</u> te chapter/Chapter 07 Event Log.pdf
- 5. The download link of EasyBuilder Pro User Manual Chapter 8 Data Sampling: <u>http://dl.weintek.com/public/EBPro/UserManual/eng/UserManual_separa</u> <u>te_chapter/Chapter_08_Data_Sampling.pdf</u>
- 6. The FAQ document about finding ODBC MySQL Database in Excel (32/64-bit): <u>http://dl.weintek.com/public/MT8000/eng/FAQ/FAQ 94 Finding ODBC</u> MySQL Database in Excel 32or64-bit en.pdf