CMT Database Server Systems 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: <u>http://dev.mysql.com/downloads/mysql/</u>
- 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:





 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]

NySQL Installer			23
MySQL. Installer	Select Products and Fe	eatures	
	Please select the products and featu	ires you would like to install on this machine.	
	Filter:		
Choosing a Setup Type	All Software, Current GA, An	y Edit	
Select Products and Features	Available Products:	Products/Features To Be Installed:	
Installation	MySQL Servers Applications	MySQL Server 5.7.10 - X64 MySQL Workbanch 6.3.6 X64	
Product Configuration	⊕ MySQL Connectors ⊕ Documentation	Er MysQL Workbertch 6.5.6 - X64	
• • • • • • • • •		~	

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

NySQL Installer					X
MySQL. Installer Adding Community	Installation Press Execute to upgrade the following pr				
	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 each successfully installed item.

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

MySQL. Installer	Type and Networking
myaqe acrier an izo	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.
	TCP/IP Port Number 3306

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

4ySQL Installer			
MySQL. Installer	Accounts and Ro	bles	
MySQL Server 5.7.10	Root Account Password Enter the password for the place.	root account. Please remember to stor	re this password in a secure
Type and Networking	MySQL Root Password:	•••••	
Accounts and Roles	Repeat Password:	•••••	
		Password Strength: Weak	

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.

MySQL Workbench		
File Edit View Database Tools Scripting Help		
MySQL Connections ③	٩	Shortcuts

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

Setup New Conr	ection	>
Connection Name:	MyPC	Type a name for the connection
Connection Method:	Standard (TCP/IP)	Method to use to connect to the RDBM
Parameters SSL	Advanced	
Hostname:	127.0.0.1 Port: 3306	Name or IP address of the server host - and TCP/IP port.
Username:	root	Name of the user to connect with.
Password:	Store in Vault Clear	The user's password. Will be requested later if it's not set.
Default Schema:		The schema to use as default schema. Leave blank to select it later.

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



4. Click the \bigcirc icon to create the Schema.

	MyF	Y OY							
<u>F</u> ile	<u>E</u> dit	<u>V</u> iew	Query	<u>D</u> atabase	<u>S</u> erver	<u>T</u> ools	Scripting	<u>H</u> elp	
SQL	SQL	δ .	9	6	di Q	1			

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

Query 1	maple - S	chema \times		
	Name:	maple		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 you to review the SQL Script. Click [Apply].

Apply SQL Script to Database	×
Review SQL Script	Review the SQL Script to be Applied on the Database
Apply SQL Script	
	Online DDL Algorithm: Default ~ Lock Type: Default ~
	1 CREATE SCHEMA `maple` ; 2
	< >>
	Back Apply Cancel

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



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

Query 1	maple - Sch	ema Administra	tion - Users	and Privil $ imes$			
	MyPC Users an	d Privileges					
User Ac	counts		Details	for account ne	wuser@%		
User		From Host	Login	Account Limits	Administrative Roles	Schema Privileges	
mysq root newu	l.sys ser	localhost localhost %		Login Name	e: maple		You may create multiple accounts with the same name to connect from different hosts.
			A	uthentication Type	e: Standard	~	For the standard password and/or host based authentication, select 'Standard'.
			Limit	to Hosts Matching	g: %		% and _ wildcards may be used
				Password	d: ******		Type a password to reset it.
					Weak password.		
				Confirm Password	d: ******		Enter password again to confirm.
					Expire P	assword	

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

Jser Accounts		Details	for account ma	aple@%				
User	From Host	Login	Account Limits	Administrative Ro	Schema Privileges			
maple	%							
mysql.sys	localhost		Role	De	cription		Global Privileges	1
root	localhost	RERECERED	DBA MaintenanceAt ProcessAdmin UserAdmin SecurityAdmin MonitorAdmin DBManager DBDesigner ReplicationAd BackupAdmin	gr, gr, rig gr, rig min gr, rig min rig min mi	nts the rights to perform all tasks nts rights needed to maintain server its needed to assess, monitor, and kill a nts rights to create users logins and res- its to manage logins and grant and revo imum set of rights needed to monitor s nts full rights on all databases its to create and reverse engineer any d ts needed to setup and manage replica imal rights needed to backup any datab	ny La	ALTER ALTER ROUTINE CREATE ROUTINE CREATE TABLESPACE CREATE TABLESPACE CREATE USER CREATE USER CREATE USER DELETE DELETE EVENT EVEN	

10. Click [Apply] when finished.

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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.cmtp 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.cmtp 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.

Database	Server						×
General	Status/Control						
	Comment :						
Static							
	IP :	127	0	0	1		
	Port :	3306					
	Usemame :	maple					
	Password :	111111					
	Database name :	maple					
	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.

3. 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.

lata Sampling Object	
Commont	
Comment :	
Sampling mode	Control address
Time-based O Trigger-based	✓ Enable
Sampling time interval : 1 second(s)	✓ PLC: Local HMI ✓ Settings
	Address : LW V 20 16-bit Unsigne
	History file
	Enable Enable status address
Read address	Name : Datalog
PLC : Local HMI V Settin	gs
Address : LW V 0	Sync. to SD card Sync. to USB disk
ata Record	
Data Format Data length : 6 word(s)	
	Sync to database
old address	Inable
Enable Mode : ON	Database : 1 127.0.0.1
PLC : Local HMI v Settin	gs
Address : LB v 0	
	OK Cancel
Control address	
History files	
Sync. to SD card Sync. to USB disk	
Sync to database	
✓ Enable	
Database : 1. 127.0.0.1	~
New Insert Delete Settings	Export Import
New Insert Delete Settings	Export

4. 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.

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5. 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.

lo. Time	Date	16-bit Signed	32-bit Unsigned	32-bit float	String		
9 14:56:1	3 04/05/2017	9	80	450	-	Data	sampling control
3 14:56:1	2 04/05/2017	8	70	400	Н		
7 14:56:1	1 04/05/2017	7	60	350	G	6	lear
6 14:56 :1	0 04/05/2017	6	50	300	F		Jicar
5 14:56:0	9 04/05/2017	5	40	250	E	Clear	
4 14:56:0	8 04/05/2017	4	30	200	D		
3 14:56:0	7 04/05/2017	3	20	150	С		Svnc
2 12:02:3	4 03/05/2017	69	680	3450	0		
I 12:02:3	3 03/05/2017	68	670	3400	N	Sync	hronizes data to the SQL serve
						Paus	Hold se sampling data.

 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.

Windows (x86, 32-bit), MSI Installer	5.3.4	7.0M	Download
(mysql-connector-odbc-5.3.4-win32.msi)	MD5: 55d218e	eOce52eb4ecc841fd1	09a3c4c1 Signature
Windows (x86, 64-bit), MSI Installer	5.3.4	7.2M	Download
(mysql-connector-odbc-5.3.4-winx64.msi)	MD5:00eabf4	41ad133d852e8065b6	c4bbc£72 Signature
Windows (x86, 32-bit), ZIP Archive	5.3.4	7.6M	Download
(mysql-connector-odbc-noinstall-5.3.4-win32.zip)	MD5: f86ba74	46a1b7253470eac443	d5d11541 Signature
Windows (x86, 64-bit), ZIP Archive	5.3.4	7.8M	Download
(mysql-connector-odbc-noinstall-5.3.4-winx64.zip)	MD5: 383ce00	151beaba5f07401b63	f85bc0b4 Signature

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.



3. Click [Add] to create a new data source and select "MySQL ODBC 5.3 Unicode Driver".

 \times

				9					
er DSN	System DSN	File DSN	Drivers	Tracing	Connection Pool	ling About			
lser Data	a Sources:								
Name		Platform	Driver					Add	
dBASE	Files	32-bit	Microsoft	Access dE	ASE Driver (*.dbf,	".ndx, ".m			
Excel Fil MS Acc	les ess Database	32-bit 32-bit	Microsoft Microsoft	Excel Driv Access Dr	er (*xls, *xlsx, *xls iver (*mdb_*acco	sm, *xlsb) Hb)		Remove	
MJ ACC		32-01	MICrosoft	HUUCESS DI	iver (.indb, .acco	,	(Configure.	
<						>			
	An ODBC Us User data so	ser data sou iurce is only	visible to	informatio /ou and ci	n about how to co an only be used or	nnect to the h this compu	indicated ter.	data prov	ider. A
	An ODBC User data so	ser data sou ource is only	rce stores visible to <u>y</u>	informatio you and ca	n about how to co an only be used or OK	nnect to the n this compu Cancel	indicated ter. Apply	data provi	ider. A Help
	An ODBC User data so	ser data sou urce is only	visible to y	informatio you and ca	n about how to co an only be used or OK	nnect to the n this compu Cancel	indicated ter.	data prov	ider. A Help
ODBC	An ODBC Us User data so Data Source	ser data sou purce is only Administra	rce stores visible to y ator (32-b	informatio you and ca it)	n about how to co an only be used or OK	nnect to the n this compu Cancel	e indicated ter.	data prov	ider. A Help
ODBC	An ODBC Us User data so Data Source Create Nev	ser data sou purce is only Administra v Data Sou	rce stores visible to y ator (32-b	informatio you and ca	n about how to co an only be used or OK	nnect to the	e indicated ter.	data prov	ider. A Help
ODBC	An ODBC Us User data so Data Source	ser data sou uurce is only Administra v Data Sou	rce stores visible to y ator (32-b	informatio you and ca it)	n about how to co an only be used or OK	innect to the this compu-	Apply	data prov	Help
ODBC ser DSN User Dat Name	An ODBC Us User data so Data Source	ser data sou urce is only Administra v Data Sou	rce stores visible to y ator (32-b rce	informatio you and ca it)	n about how to co an only be used or OK	nnect to the this compu Cancel	e indicated ter. Apply p a data so	data prov	Help
ODBC ser DSN User Dat Name dBASE	An ODEC User data so Data Source Create Nev	Administra	rce stores visible to y stor (32-b rce	informatio you and ca it) elect a driv Name	n about how to co an only be used or OK	nnect to the this compu Cancel	e indicated ter. Apply p a data so	data prov	Help
ODBC ser DSN User Dat Name dBASE Excel F MS Ac	An ODEC Us User data so Data Source Create Nev	Administra	ator (32-b	informatio you and ci it) elect a driv Name Microsoft I	OK Ver for which you w Paradox Driver (*.d	Innect to the this computed with this computed with the computed with the set under th	p a data so	data prov	Help
ODBC ser DSN User Dat Name dBASE Excel F MS Ac	Data Source Create Nev	Administra	ator (32-b	informatio you and ci it) it) Name Microsoft I Microsoft I	About how to co an only be used or OK Ver for which you w Paradox Driver (".d aradox.Treiber (".d aradox.Treiber (".d	vant to set u lb) db) csv)	p a data so	V V V V V V V V V V V V V V V V V V V	Help

	-					
dBA	SE		Name		1.1	
Exc	el F		Microsoft Paradox Driv	/er (*.db)	1	
MS	Acc	0110	Microsoft Paradox-Trei	iber (*.db.)	1	
			Microsoft Text Driver (tot; t.csv)	1	
			Microsoft Text-Treiber	(*.bd; *.csv)	1	
			MySQL ODBC 5.3 AN	SI Driver	E	
			MySQL ODBC 5.3 Uni	code Driver	E	
			SQL Server		1	
1			<		>	
	- 100					
-	1					ler. A
면	Jö					
			. D I.	Dest	Caral	
			< Back	Finish	Cancel	
			01/			
			UK	Cancel	Арріу	Help

4. Set the communication parameters:

MySQL Connector/ODBC Data Source Configuration

ມ <mark>ຣດ</mark> ີ Innector/ODB	c 🔤
Connection Parameters	S
Data Source Name:	SQLConnector
Description:	
• TCP/IP Server:	localhost Port: 3306
O Named Pipe:	
User:	maple
Password:	•••••
Database:	maple V Test
Details >>	OK Cancel Help
	Connection Parameters Data Source Name: Description: TCP/IP Server: Named Pipe: User: Password: Database: Details >>

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



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



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



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

) 🕒 🗟 🐨 us	er 🕨 N	1y Documents 🔸 My Data Sources	• 1	Search My Data S	ources 🔎
Organize 🔻 Ne	ew folde	r			- 🗊 🔞
2	*	Name	[Date modified	Туре
🚖 Favorites		+Connect to New Data Source	ç)/29/2012 2:11 PM	Microsoft Offic
Desktop		🖀 +NewSQLServerConnection	9)/29/2012 2:11 PM	Microsoft Offic

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- 10. In the Data Connection Wizard window, select [ODBCDSN].
- 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

Data Connection Wizard					? 💌
Select Database and Table Select the Database and Table/Cub	e which conta	ains the dat	ta you wan	t.	Ř
Select the database that contains the maple	data you war	nt: ~			
Name hostname_datalog_data hostname_datalog_data_format hostname_datalog_data_section	Description	Modified	Created	Type TABLE TABLE TABLE	
•	III				•
	Cancel	<]	Back	Next >	<u> </u>

- 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].



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

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

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