QXSOFT

CMM-Manager Installation Guide

Mitutoyo CMMC

v2020

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Acknowledgments

Our Goal

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1 File Locations

CMM-Manager Program Installation

C:\Program Files\QxSoft\CMM-Manager XX

This is where the executable files for **CMM-Manager** are stored. In general, no user configuration files are stored here.

Each version of **CMM-Manager** will have its own unique directory to allow true parallel installation of multiple versions. **CMM-Manager 2020** would be installed in **CMM-Manager 2020**, **CMM-Manager 2020 R2** would be installed in **CMM-Manager 2020 R2** and so forth.

CMM-Manager Configuration and User Files

C:\ProgramData\QxSoft\CMM-Manager XX

This is where the machine setup and configuration files are stored. If setup requires files from a previous configuration to be copied, they are copied here.

As with the Program Installation, each version of **CMM-Manager** will have its own unique user directory.

E.g. driver configuration files location: C:\ProgramData\QxSoft\CMM-Manager XX\Driver

NOTE: By default, Windows marks "ProgramData" as a hidden directory. You may either type the path in the address bar, bypassing the hidden setting, or change the Windows files settings to display Hidden Files and Folders.

Migration

If **CMM-Manager** is installed on a computer with an existing installation, the user will be prompted to migrate files. All configuration settings from the previous installation will be copied. This includes configuration information in the system registry as well as files on the hard drive. The original files are left as-is. Copies are made in the new locations.

2 Overview

This document is intended for use by service people as a guideline to perform the setup task, usually the first time after **CMM-Manager** is installed. Machine setup is necessary to ensure the proper settings of various parameters needed for **CMM-Manager** to communicate with machine drivers and probe head controller, to access information of machine properties, and to configure basic machine parameters.

Normally the “Machine Setup” tool in **CMM-Manager** consists of three tabbed pages, designated to setup (1) machine controller, (2) probe properties and (3) machine properties, respectively. Most of the contents are self-explanatory, and the setup is straightforward unless otherwise specified in the following procedure.

Note The content of the controller page varies with controller type.

3 Installation and Machine Setup Procedure

3.1 Hardware setup - CMMC

Make sure the National Instruments GPIB interface and software is installed on the PC and configured to run with the CMM.

3.2 Install and Start CMM-Manager

1. Run the provided **CMM-Manager** installer on your computer.
2. Run **CMM-Manager** offline (check the offline box in the "Log On to CMM-Manager" dialog box).
3. Invoke “Machine Setup” from the “System | Machine Setup” tab.

   (Note: You will be asked for a machine setup password in order to continue the operation. The machine setup password is *“service”*.)

3.3 Setup CMMC Controller

1. Switch to tabbed page “CMMC Controller”
2. Select the CMMC controller type: CMMC-1, CMMC-1S, CMMC-3, CMMC-3S, CMMC-5, CMMC-6.
3. Click on the [CMMC GPIB settings] button.

   Select the correct GPIB communication parameters such as primary address, secondary address and I/O timeout. If the above parameters are not known, consult the settings of your current software such as Geopak. The usual values for these parameters are: Primary address = 15, Secondary address = None, I/O timeout = 100 ms.

   Click **[OK]** to save the GPIB settings.
4. Select Probe Head Controller connection type:

   - No PHC (Manual Probe Head) (default)

- PHC9/10 (Connected to Host PC by GPIB)
- PHC9/10 (Connected to Host PC by Serial)

5. If PHC9/10 (Connected to Host PC by GPIB) option is selected, click on the PHC GPIB Settings button and select the correct GPIB communication parameters. If the primary and secondary addresses are not known, check the DIL switch settings on the back of the PHC and consult documentation from Renishaw. The usual values for these parameters are: Primary address = 4, Secondary address = None, I/O timeout = 100 ms.

   Click **[OK]** to save the GPIB Settings.

6. If “PHC9/10 (Connected to Host PC by Serial)” option is selected, click on the [PHC Comm. Port Settings] button and select the correct Serial communication parameters. Default values: COM = 1, Baud rate = 9600, Parity = None, Data bits = 8, Stop bit = 1.

   Click **[OK]** to save the Comm. Port Settings.

7. Fill in Max Move Speed in mm/sec. Default value: 250 mm/sec
8. Fill in Max Touch Speed in mm/sec. Default value: 20 mm/sec
9. Fill in Positional Tolerance in mm. Default value: 0.0127 mm
10. Fill in Joystick Backoff distance in mm. Default value: 10 mm
11. Fill in the linear scale factor for X, Y, Z. Default values: 1.0, 1.0, 1.0
12. Click **[Apply]** button to save the changes made to this page.
13. Click **[OK]** to close the Machine Setup page.

3.4 Invoke Machine Setup

Invoke "Machine Setup" from the "System | Machine Setup" tab.

(Note: You will be asked for a machine setup password in order to continue the operation. The machine setup password is "service".)

3.5 Setup Probe Properties

1. Switch to the tabbed page "Probe".
2. Fill in or select proper probe properties and options.
3. Click the **[Apply]** button to save the changes made to this page.

Note: The graphical display of the probe head will be updated in accordance with your selection.

3.5.1 Connect and Home the Machine

1. Make sure the air supply is available. Switch the “POWER” ON button of the CMM. Wait till the Machine START LED on the joystick goes OFF. Now press Machine START button firmly and hold it down till the LED turns green. If the Machine Start LED is not green, do the following checks:

   - Check if air supply has problem. If this is the case, rectify it.
   - Check if the Emergency Stop button, on the joystick unit is active. If this is the case, release the button by turning it clockwise.
   - Switch ON the PHC unit (Probe Head Controller) if available.

   After the problem has been identified and corrected, press **Machine START ON** to continue.

2. Move the Z-axis spindle to a safe location before homing is performed.

3. From **CMM-Manage**r click the **[Connect]** button from "System | Connect" tab to test connecting to the machine. If connection failed, follow the prompted error message for corrective action.

4. **Do not continue to next step until the machine is connected successfully.**

5. When prompted, press the Machine Start button on the JOG box firmly and keep it pressed for 3 seconds until the servo engage signal is heard from the CMM controller.

6. If prompted to do ‘homing’ operation, click **[OK]**.

7. **Before proceeding to the next step, make sure the machine is homed.**

3.6 Setup Machine Properties

1. Switch to the tabbed page "Machine".

2. Fill in or select proper machine properties and options, except the "Working Volume" group items.

3. Fill in the MEA offset. MEA offset is the vector from the CMM manufacturer’s MEA reference point which is normally at the end of the ram to **CMM-Manager**’s MEA reference point which is at the rotation center of the probe head. The offset should be given in machine coordinate system.

4. The "Working Volume" information is to be used by **CMM-Manager** for inspection path planning and collision detection. The working ranges of the three axes need to be specified:

- Use "Tip Manager" (from the "Probe | Tip Manager" tab) to create and select a tip, whose pointing direction is perpendicular to the X-axis. Make sure the tip is **non-calibrated**, and not the reference tip.
- Move the machine to the working limit of minus X-axis. Record current reading, and type in the edit box X(min); or click button [<] to query CMM.
- Move the machine to the working limit of plus X-axis. Record current reading, and type in the edit box X(max); or click button [<] to query CMM.
- Repeat the above steps to set the working limits of Y-axis and Z-axis.

5. Error Map file is used for the volumetric error compensation of the Machine.
   - For applicable controller type, the error map will reside in the controller itself and may need to email it to *support@qxcmm.com* to get it converted to **CMM-Manager** native error map format if necessary
   - (Optional) To enable **CMM-Manager's** native error map, select CMMMGR option and click on the **[…]** button to browse and select the **CMM-Manager** native error map file.
6. Click the **[Apply]** button to save the changes made to this page.

3.7 Exit Machine Setup

Click the **[OK]** or **[Cancel]** button to close "Machine Setup" dialog.

4 General Setup Procedures

4.1 Setup Probe Assembly

1. Invoke "Probe Assembly" dialog from menu "Probe | Probe Assembly".
2. Setup probe assembly to be synchronous to the real probe mounted on the CMM.
3. Click on the **[Update Assembly]** button to save the changes that have been made.

4.2 Adjust Machine Table Position

1. Invoke "Machine Property" dialog from the "System | Machine Property" tab.
2. Switch to the tabbed page "Table".
3. Check the "Show Table" check box to display the table in the graphics view.
4. Use "Tip Manager" (from "Probe | Tip Manager" tab) to select the reference tip.

5. Move the stylus tip as close to the table as possible.

6. Click the **[Update Table Position]** button to update the table position.

4.3 Setup DCC Parameters

Use the "System | Machine Property | DCC" page to setup DCC parameters.

4.4 Setup Calibration Sphere

Use the "System | Machine Property | Cal. Sphere" page to setup calibration sphere.

5 Appendix

5.1 Joystick Features Supported by CMM-Manager - CMMC

Button/Key	Function
GO TO	Add Move
MEAS	Enable joystick measure

5.2 GPIB Communication Errors (Controller or PHC)

This section describes the common GPIB communication errors that could happen and their solution

1. If CMM-Manager shows error message **“Failed to communicate with controller”** or **“GPIB error code: EBUS <GPIB bus error>”** or **“GPIB error code: EDVR <System Error>”** do the following:

   - Verify the primary address and secondary address of the controller or PHC unit from the user manual or by consulting the settings in the previous software.
   - Make sure only one host PC/GPIB board is connected to the GPIB bus.
   - Make sure the cables are connected properly.
   - Make sure the controller or PHC is powered ON.

2. If the CMM-Manager shows error message “**GPIB error code: EABO <I/O Operation aborted (time-out)>”** do the following:

   - Disconnect CMM-Manager.

- Recheck the controller or PHC GPIB settings given in *setup controller* section of this document.

- Change the GPIB setting I/O time out for the controller or PHC unit. Select a value larger than the existing time out value.

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