# PC-DMIS 2016.0 - Hexagon Manufacturing Intelligence

## - Release Notes -

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# Recommended System Requirements

**Attention 32-bit users!** PC-DMIS 2017 R2 will no longer support the 32-bit Windows operating system, regardless of the operating system version number. PC-DMIS 2017 R1 will be the final 32-bit version of PC-DMIS supported by Hexagon Manufacturing Intelligence. If you have not already done so, please update your measurement device operating system and hardware (personal computer), if necessary, to a modern 64-bit system with a more current and stable Windows operating system such as Windows 10, Windows 8.1, or Windows 7.

Customers moving to a modern operating system will benefit from:

- Dramatically enhanced security
- Broad device choice for a mobile workforce
- Higher user productivity
- A lower total cost of ownership through improved management capabilities

## Operating System

PC-DMIS 2016.0 operates under the following:

- 32-bit and 64-bit Windows 10
- 32-bit and 64-bit Windows 8.1 and 8
- 32-bit and 64-bit Windows 7
- 32-bit and 64-bit Vista

No other operating systems are supported.

**IMPORTANT:**

- When using third-party drivers, you should contact your local Hexagon Manufacturing Intelligence representative to ensure operating system compatibility.
- Running PC-DMIS inside a Virtual Machine (VM) is not supported.

**Notes:**

- PC-DMIS Vision machines do not support 32-bit and 64-bit Windows 8.
- The Matrox Framegrabber PC-DMIS Vision hardware component does not support a 64-bit operating system.

**Advantages of 64-bit:**

- Customers with the x64-bit version of CAD packages need the 64-bit version of PC-DMIS in order to use Direct CAD Interfaces (DCI) to connect to the packages.
- The 64-bit version of PC-DMIS can use all of the physical memory that is available on the computer. The 32-bit version of PC-DMIS can only use the first 2 GB. Therefore, customers with large CAD or measurement routines are advised to use the x64-bit version.

## .NET Framework

Microsoft .NET Framework 4.6.1 for Windows

- If you do not have .NET Framework 4.6.1, the PC-DMIS installer will install it for you.

## RAM

- 4 GB of RAM or higher (4 GB is the highest amount of memory capable on a 32-bit OS)

  The size of the CAD data file and the tessellation multiplier value used affect the amount of memory needed. These both affect the amount of tessellated facets needed to display the model. The smaller the tessellation multiplier value used, the more memory needed for the facets. For large CAD models, this could cause an "Out Of Memory" error. If this occurs, the current PC-DMIS session will be left in an unstable state and should be terminated.

  The default tessellation multiplier value is 1.0. Setting a tessellation multiplier of 0.1 will result in a 10 to 20 percent increase in the memory required over the default value of 1.0. Decreasing the tessellation multiplier further to 0.01 will result in an additional 50 to 65 percent increase of memory required.

- 1 GB of video RAM

## CPU

2 GHZ or higher Duo-Core processor

## Graphics

- For desktops: Nvidia Quadro K620 graphics card

- For laptops: Nvidia Quadro K1100M graphics card

- The graphics driver must support OpenGL 3.0 or higher. A warning message appears on PC-DMIS startup if the driver does not support OpenGL 3.0 or if your graphics driver is more than a year old.

## Hard Drive

- 2 GB of free hard drive space plus allocated Virtual Memory of 8 times the largest CAD file used

- SSD drive, HDD 10K, or two disks in RAID 0 mode (high-performance hard disk drive)

## Display

Screen resolution of 1280 x 1024 or higher

## Connectivity

- 2 Ethernet ports. (This may be required for specific installations in consideration of local needs, including but not limited to CMM systems where one port is required for controller communications and another for intranet/Internet communications.)

- 2 USB ports

- DVD drive

- HASP key (a physical USB portlock) or a software license

> **Note:** A HASP key does not act as general-purpose data storage; therefore, you cannot use a HASP key to store (download) arbitrary data from a computer. Similarly, you cannot use a HASP key to put (upload) arbitrary data on a computer. Also, only Hexagon Manufacturing Intelligence applications can read or write to a HASP key; other applications do not have this capability. As a result, you cannot use a HASP key to load and unload data to and from a computer.

## Browser

Internet Explorer version 9 or later

## Anti-Virus Software

Wilcox Associates Inc. used the Sophos Anti-virus tool to test PC-DMIS. The user will need to confirm the performance of any other anti-virus tool.

http://sophos.com/products/enterprise/endpoint/security-and-control/

## Solutions for CMMs Using RS-232 Communications

If you are installing PC-DMIS on a new or existing computer, but you have an older CMM model that uses RS-232 communications, then you will need to install one of these solutions on your computer:

- An external RS-232 serial-to-USB adapter cable plus the serial-to-USB adapter cable driver

- An internal serial adapter card with serial ports

# Installing PC-DMIS

To install the application, follow these steps:

## Step 1: Check System and Hardware Requirements

Before you attempt to install a new PC-DMIS version, ensure that you meet the system and hardware requirements discussed above in "Recommended System Requirements". You must also have a USB portlock or a valid software license for the installation to work. Your IT specialist can help you with this information.

- To get your computer's properties, highlight the **My Computer** icon, right-click on it, and select **Properties**.

- To check the display properties for the graphics card, select **Start | Settings | Control Panel**, and then select **Display and Settings**.

## Step 2: Log on as an Administrator

To install and run your new PC-DMIS version for the first time, you must be logged on as a user with administrator privileges.

## Step 3: Back Up Existing Settings

Back up your settings from your previous version. By default, PC-DMIS attempts to migrate existing settings from previous installs on the same computer, even from really old versions of PC-DMIS where settings were stored in the pcdlrn.ini file.

- If your current version uses the pcdlrn.ini file for its settings, back up your pcdlrn.ini file. This file is in the Windows system directory. Save a copy of the file in a safe place.

- If your current version uses the PC-DMIS Settings Editor, back up your PC-DMIS Settings Editor data. To do this:

    1. Start the Settings Editor.

    2. Click the **Backup** button (or **Export**). The **Backup** dialog box appears:
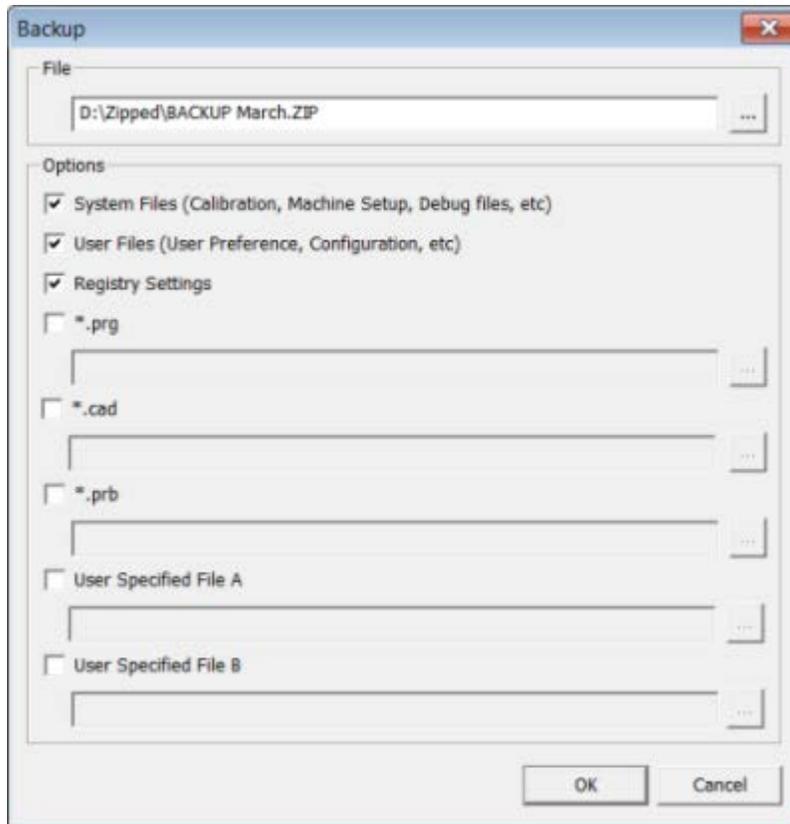
3. In the **File** box, define a safe location to save the backed up files, and give the file a .zip extension.

4. Mark the first three check boxes, and click **OK**.

If you are replacing your computer or transferring settings that reside on another computer, you can use the Settings Editor's **Backup** and **Restore** buttons:
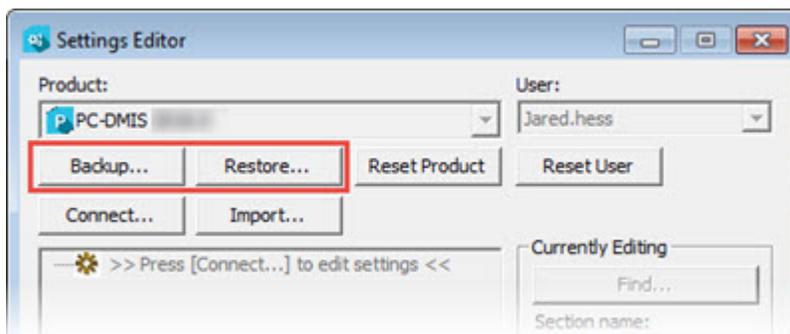


For more information on the backup and restore functionality, refer to the Settings Editor documentation.

### Backing Up Machine Files for an Xcel CMM or a Sharpe Controller

If you are using a Brown and Sharpe Xcel CMM or a CMM that uses a Sharpe controller, and you are going to install PC-DMIS 2016.0 on a new computer, save copies of the following CMM machine files from your previous version to a safe place:

- comp.dat
- downl.oad

The files are located in the PC-DMIS installation (root) directory for all versions of PC-DMIS prior to 2013 MR1, regardless of the operating system.

The location of the PC-DMIS installation (root) directory depends on the operating system and version of PC-DMIS:

- **C:\Program Files (x86)\WAI\PC-DMIS <version>** (if you have a 32-bit version)
- **C:\Program Files\WAI\PC-DMIS <version>** (if you have a 64-bit version)

  Where <version> is the PC-DMIS version.

For versions of PC-DMIS up to and including 3.7 MR3, the location of the installation (root) directory is:

> **C:\PCDMISW**

Starting with PC-DMIS 2013 MR1, the comp.dat file moved to:

> **C:\ProgramData\WAI\PC-DMIS\<version>**

### Backing Up Machine Files for a CMM with a DEA Controller

If you are using a DEA or other CMM with a DEA machine controller, and you are going to install PC-DMIS 2016.0 on a new computer, save copies of the following CMM machine files from your previous version to a safe place (the files vary according to the type of CMM):

- cosdat1.bin
- compens.dat
- Fzyfile.txt
- Rcxfile.txt
- Rmxfile.txt
- Any file with your machine's serial number in its name

The files are located in the PC-DMIS installation (root) directory for all versions of PC-DMIS prior to PC-DMIS 2013 MR1, regardless of the operating system.

The location of the PC-DMIS installation (root) directory depends on the operating system and version of PC-DMIS:

- **C:\Program Files (x86)\WAI\PC-DMIS <version>** (if you have a 32-bit version)
- **C:\Program Files\WAI\PC-DMIS <version>** (if you have a 64-bit version)

  Where <version> is the PC-DMIS version.

For versions of PC-DMIS up to and including 3.7 MR3, the location of the installation (root) directory is:

> **C:\PCDMISW**

Starting with PC-DMIS 2013 MR1, the compens.dat file moved to:

**C:\ProgramData\WAI\PC-DMIS\<version>**

## Step 4: Install PC-DMIS

The following steps run you through a typical installation. Your installation screens may differ if you are running a different version of PC-DMIS or if you are installing a custom build with additional options. In addition, your PC-DMIS license may be configured with different options.

1. Locate the PC-DMIS install file on your installation media; or, if you downloaded it, open the directory containing the downloaded file. The install file looks like this:

   **Pcdmis2016.0_Release_#.#.###.#_x##.exe**

   Where the # symbols represent the specific version numbers and the version type (x64 or x86).

2. Double-click this executable to open the installation program.

3. If a security warning appears, click **Run**.

4. From the initial license screen, read the license agreement, and select **I agree with the License terms and conditions**.

5. In the box at the bottom, you can define the installation folder:

   - By default, PC-DMIS installs to **C:\Program Files\Hexagon\** (for 64-bit) or to **C:\Program Files (x86)\Hexagon\** (for 32-bit).

   - To change the folder, either click on the browse button and choose a folder, or in the box, type a new pathway.

6. Once you accept the license agreement and choose the installation folder, click **Next** to open the licensing screen.

7. From the licensing screen, choose your license type:

   - **LMS (Software) License** - If you have a software license (called an Entitlement ID), select this option. Fill out the boxes beneath this option.

   - **LMS License Server** - If you have a license server to connect to, select this option and then type the server address.

   - **HASP** - If you have a portlock (a physical USB device with the licensed options), ensure that it is connected to your computer, and then select this option.

   For help on how to set up an LMS license, see "LMS License Setup" below.

8. Click **Next** to see the product options and additional software options.

9. Select the product options:

   - To help improve the product and send usage data to Hexagon Manufacturing Intelligence, select the **Join the Hexagon Customer Experience Improvement Program** check box. To opt out of sending usage data, clear the check box.

   - You can also choose to send usage data to Hexagon Manufacturing Intelligence after you install PC-DMIS. For more information, see "Updating the Software".

10. Choose to install additional software:

- **PDF Converter 5.0** - This third-party tool converts PC-DMIS reports to PDF outputs.

11. Once you select your product options and the additional software options, click **Install** to start the installation.

12. During installation, a progress bar shows the overall progress.

13. When the installation finishes, a results screen shows any warnings or errors. It also contains these options:

- **Launch PC-DMIS** - To launch the application now, select this check box. If this is your first time installing this version of PC-DMIS on this computer, you should do this to initialize needed registry entries initialize. For more information, see "Administrator Privileges Explained".

- **Show Release Notes** - To display a .pdf that shows what is new or has changed in this release once you click **Close**, select this check box.

14. Click **Close** to close the installation program.

## LMS License Setup

This topic provides information if you need to:

- Set up your LMS (software) license

- Connect to an LMS license server

- Update your LMS license

- Provide licensing information to the installer from the command line

### LMS (Software) License

If you chose **LMS (Software) License** on the licensing screen, and the installation cannot find a valid license on your system, you need to fill out these options:



1. Fill out the **LMS (Software) License** screen:

    - **Entitlement ID** - If you have an Entitlement ID, select this item, and then type or paste the ID you were issued in the box. If you have supplied this value in a previous installation, the installer pulls in that value from the registry.

    - **URL to FNO Services** - This points to the URL that verifies your license. Ensure that it has this URL:

        **https://licensing.wilcoxassoc.com/flexnet/services**

    - **Proxy Information** - If your computer is on a network where you need a proxy server to reach the Internet, fill this out. Contact your IT specialist to get this information, and then fill in the server host, user name, and password.

2. If you do not have an Entitlement ID and you need to activate your license offline, use the CLM Admin application. From the CLM Admin application, choose **Activate new licenses**, and follow the on-screen instructions.

> **Note:** For information on how to use CLM Admin, please consult the PC-DMIS CLM Licensing Software documentation (pcdmisclm.chm). You can find this in the PC-DMIS language subdirectory.

3. Click **Next** to proceed. The install software connects to the Internet and activates your license. It then installs the FLEXnet Licensing Service required to use LMS licenses.

**LMS License Server**



If you use a license server, select this item, and then type your license server name in the **License Server(s)** box. The format of this line of text is <portnumber>@<servername>, where <portnumber> is the TCP port number for the license server and <servername> is the name of the server.

The default TCP port number is 27000. If you don't identify a specific port, the license server uses the default.

For example, these mean the same thing:

@server1

27000@server1

> **Important:** When using this option, make sure you place the "@" symbol in front of the server address. If the "@" symbol is left off, the install attempts to look locally for the license. This may result in an error.

You can also specify multiple license servers. You can separate them with semicolons. For example, suppose that you have three license servers called licenseserver1, licenseserver2, and licenseserver3, and all of them use the default TCP port. You can specify all of them in a single line of text, like this:

@licenseserver1;@licenseserver2;@licenseserver3

**Update your LMS License**

Once you finish with the license setup and you install PC-DMIS, PC-DMIS checks for license updates when it starts and after every eight hours of running. If a license update is available, this notification message appears:

> **PC-DMIS**
> Updates are available for your PC-DMIS license. Applying them now will require PC-DMIS to restart. Would you like to apply the updates now?

Click **Yes** to apply the update. If you click **No**, PC-DMIS displays the message every eight hours of running or the next time PC-DMIS runs.

- If an option or a feature is added, you are given the choice to apply the changes. A pop-up message displays in the system tray if you apply the changes.

- If an option or feature is removed, a message that requests you to restart PC-DMIS appears. A pop-up message also appears in the system tray to inform you of this.

- If an option or feature is obsolete, it is automatically removed.

> **Note:** After you apply an update, restart PC-DMIS to ensure that PC-DMIS functions properly.

**Providing LMS Licensing Information to the Installer from the Command Line**

You can send LMS licensing information to the installer through command line parameters. For more information, see "Providing LMS Licensing Information to the Installer from the Command Line" in Appendix A.

### Administrator Privileges Explained

PC-DMIS versions earlier than version 2012 require that you run PC-DMIS as an administrator because some system settings (such as the last probe used, wrist angles, and other items) were shared among all users on that computer. This required that these settings were placed in the LOCAL_MACHINE section of the Windows registry instead of in the CURRENT_USER section (for user-specific settings). Making changes to settings in the LOCAL_MACHINE section requires administrator privileges.

In PC-DMIS version 2012 and later, the settings mechanism used by PC-DMIS changed to only require administrator access the very first time it runs at the end of the installation. From that point forward, standard user access is sufficient.

The PC-DMIS installer has a flag built into the setup executable (setup.exe) that requires the setup process to run with administrator privileges. If the current user has lesser privileges, the setup displays a prompt to provide a user name and password of an account with administrator privileges.

Once the installation finishes, the first time you run PC-DMIS, you must launch it with administrator privileges. If you mark the **Launch PC-DMIS after the install finishes** check box when installation finishes, PC-DMIS does this automatically by passing the original privilege level of the installer onto PC-DMIS.

Note, however, that if you do not mark this check box, you will need to explicitly right-click on the shortcut and select **Run as administrator** as described in Step 6.

For more information on the file system and registry rights that PC-DMIS requires, see "Required User Access Rights" in Appendix B.

### Step 5: Copy Files after Installation

If these files are available, copy them from your old PC-DMIS installation directory to the directory where you installed the newer version:

- Sysparam.dat
- Downl.oad
- Fzyfile.txt
- Rcxfile.txt
- Rmxfile.txt

Starting with PC-DMIS 2010 MR2, PC-DMIS automatically copies common system files to the program data files directory when you install a newer version of PC-DMIS.

The comp.dat, compgrid.at, comp.enc, and compens.dat volcomp files used with volcomp methods 13 (ASI) and 14 (BNS) must be in the program data files directory. When you install a newer version of PC-DMIS, these files automatically copy to the program data files directory for the new version. For the default path location of this directory, see "Understanding File Locations" in Appendix B.

For additional information on volumetric compensation files and setup, see the Machine Interface Installation Manual (MIIM).

## Copying Machine Files for an Xcel CMM or a Sharpe Controller

If you are using a Brown and Sharpe Xcel CMM or a CMM that uses a Sharpe controller, and you installed PC-DMIS 2016.0 on a new computer, copy the backed-up CMM machine files to the following location on the new computer:

- **C:\Program Files (x86)\Hexagon\PC-DMIS <version>** (if you have a 32-bit version)

- **C:\Program Files\Hexagon\PC-DMIS <version>** (if you have a 64-bit version)

   Where <version> is the PC-DMIS version.

For more information about these files, see "Backing Up Machine Files for an Xcel CMM or a Sharpe Controller".

## Copying Machine Files for a DEA CMM with a DEA Controller

If you are using a DEA CMM with a DEA machine controller, and you installed PC-DMIS 2016.0 on a new computer, copy the backed-up CMM machine files to the following location on the new computer:

- **C:\Program Files (x86)\Hexagon\PC-DMIS <version>** (if you have a 32-bit version)

- **C:\Program Files\Hexagon\PC-DMIS <version>** (if you have a 64-bit version)

   Where <version> is the PC-DMIS version.

For more information about these files, see "Backing Up Machine Files for a DEA CMM with a DEA Controller".

## Step 6: Launch PC-DMIS for the First Time

1. When running this version of PC-DMIS for the first time, choose **Start**, **All Programs**, and then **PC-DMIS 2016.0**.

2. From the list of shortcuts, right-click on either the **Online** or **Offline** icon, and then select the **Run as administrator** option (required only if the **Launch PC-DMIS after the install finishes** check box wasn't checked at the end of the installation).
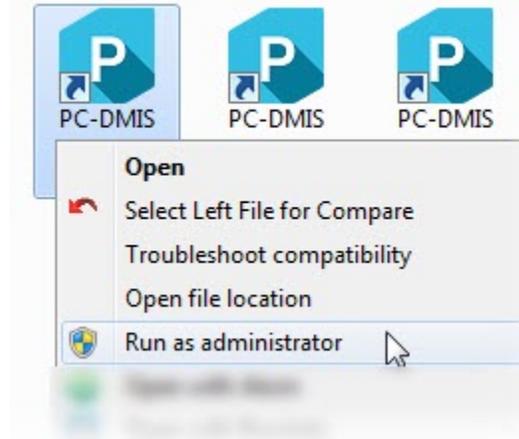
3. This allows the program to write the needed machine-specific settings.

- If your previous version used the pcdlrn.ini file, PC-DMIS asks if the settings in your PCDLRN.INI file should be used as your registry settings. Click **Yes** at the prompt. Otherwise, PC-DMIS loads in the factory defaults.

- If your previous version used the Settings Editor, do the following to use your previous PC-DMIS settings:

    a. Close PC-DMIS.

    b. Launch the PC-DMIS Settings Editor from the Start menu.

    c. Once it opens, click **Import**, and open the PCDRegFile.dat file you backed up in the "Step 3: Back Up Existing Settings" section of this document. PC-DMIS imports your settings.

    d. Close the PC-DMIS Settings Editor.

For subsequent startups, you can launch PC-DMIS normally by double-clicking the usual **Offline** or **Online** shortcut.
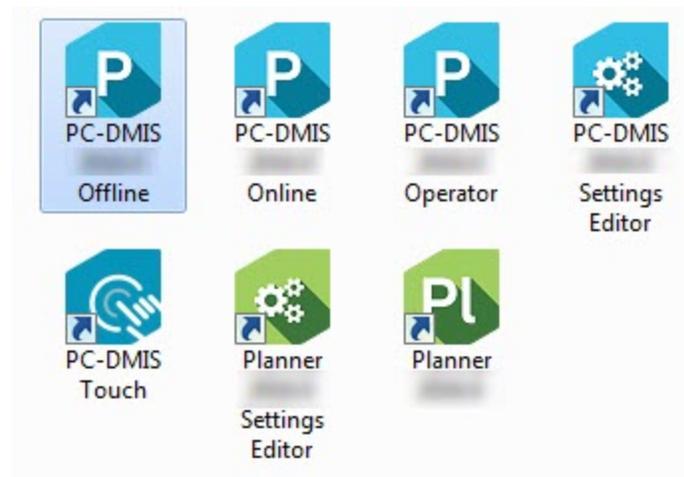
Once PC-DMIS starts, the **Software License** screen displays the current license agreement. Read the agreement carefully and then at the bottom, click **Accept Agreement** to proceed:
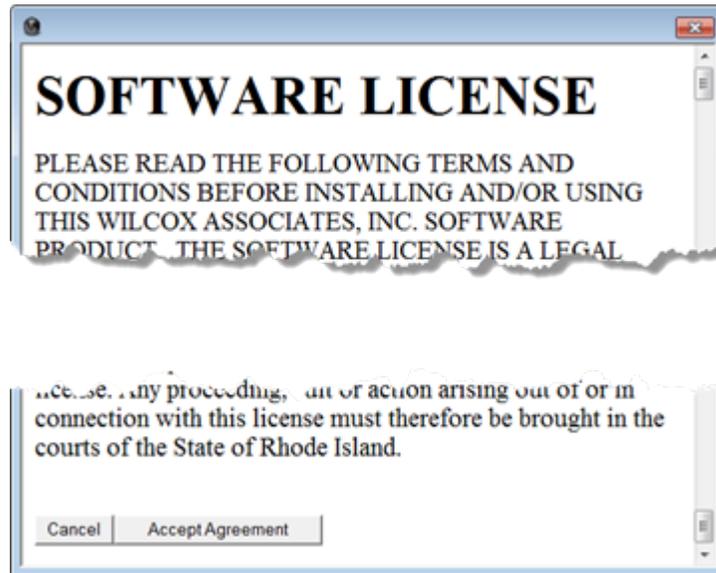


Once PC-DMIS runs, an icon displays in your System Tray. If your portlock or license is programmed correctly, the icon displays a green check mark as shown below. A message says that the PC-DMIS license is valid:



If your portlock is not connected or is not programmed correctly, or if you are using an LMS license and your software has not been properly licensed, the icon appears with a red exclamation point overlay. A pop-up message appears and says that the PC-DMIS license is disconnected:



When the license is disconnected, PC-DMIS functions normally, but after five minutes it automatically closes. Be sure to save your data immediately before this occurs.

### Note About CMMs Using RS-232 Communications

By default, PC-DMIS communicates through the COM1 communications port. You need to change this port number to the number that Windows automatically created if a serial-to-USB adapter cable or serial adapter card was installed for communicating with an older RS-232 CMM.

To change the COM port number:

1. In Windows Device Manager, note the number that Windows assigned to the communications port on your computer. For help, refer to Windows Help.

2. Open PC-DMIS in online mode, and then open a measurement routine.

3. Select **Edit | Preferences | Machine Interface Setup**.

4. In the **Comm** port box, enter the port number from Windows Device Manager.

## Updating the Software

By default, PC-DMIS automatically checks for software updates if you are connected to the Internet. If it detects that an update is available, the **HEXAGON UPDATES** application opens to inform you of the update. You can then download and install these updates as desired.

You can also manually check for updates. To do this, click **Help | Check for Updates** and then select the desired options in the **HEXAGON UPDATES** updater application.

The **HEXAGON UPDATES** updater application contains the **Settings** dialog box. You can use the **I would like to participate** option in the dialog box to choose whether or not to join the Hexagon Experience Improvement Program and send usage data to Hexagon Manufacturing Intelligence. Hexagon Manufacturing Intelligence uses this data to improve the user experience.

For more information on the updater application, see "Updating the Software" in the PC-DMIS Core documentation.

# Repairing or Removing an Installation

You can also repair or remove an installation as needed once you install it. To do this, double-click on the **Pcdmis2016.0_Release_#.#.###.#_x##.exe** file as if you were beginning the installation process. The setup displays a screen with these options:

Repair or uninstall application

Select the operation you want to perform.
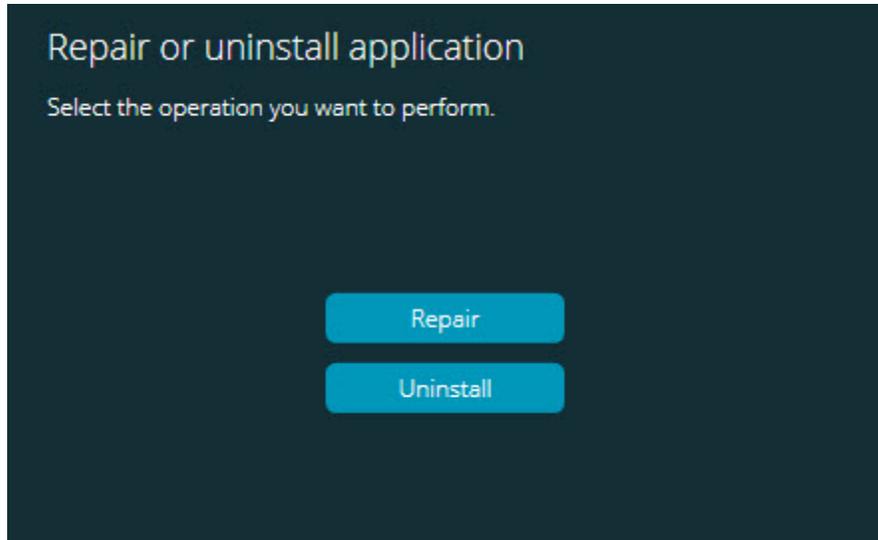
Repair

Uninstall

- **Repair** - This option reinstalls all of the product files as they were originally installed. This option may help resolve issues where an installation didn't properly install all of the files.

- **Uninstall** - This option removes the application from where you installed it. You can also use the Programs and Features control panel item in Control Panel to uninstall the application.

## Running PC-DMIS in Another Language

The initial installation setup file for PC-DMIS contains the user-interface files for all of the supported languages. When you install PC-DMIS, it installs the language files based on your operating system's language.

To run PC-DMIS in a language other than the operating system's language, select **File | Language**, and then click the desired language.

PC-DMIS restarts and displays the application in the desired language. To get the help content available in a non-English language, see the information below.


## Installing Non-English Help Files from Language Packs

The English help files are the only help files included in the main installation package. They are installed regardless of the installation language. However, non-English help files are not included in the main installation file.

This means that if you install a non-English language or if you switch to a non-English language, in order to see any help content at all, you *must* also install a language pack for that language. Otherwise, if you try to access the help file, PC-DMIS displays an error message indicating that it cannot find the help file.

A language pack contains all of the help content for that language.

To install a language pack, do the following:

1. Locate the desired language pack (and .exe file) on your installation media or download it from the Internet here:

   **ftp://ftp.wilcoxassoc.com/PC-DMIS-Versions/Release/2016.0/Release/Lang**

2. Run the .exe file and follow the setup instructions. You do not need to have administrator access to do this step.

This procedure installs the help content into the appropriate two-letter language subdirectory where you have PC-DMIS installed. You can then switch to that language in the software and access the help content.

## Troubleshooting

This topic provides information for you to troubleshoot installation, startup, and software update problems.

### PC-DMIS Startup is Slow

**Problem:** You use a computer with at least the recommended system requirements as detailed in the "Recommended System Requirements" topic, and it takes longer than 30 seconds to launch PC-DMIS.

**Description:** This happens if you try to run PC-DMIS on a Windows 7 computer, but you didn't mark **Run as administrator** on the installation wizard. This results in a problem loading the HASP driver. Note that this problem only occurs when you install with a HASP license type as discussed in "Step 4: Install PC-DMIS".

**Solution:** Uninstall PC-DMIS, and then reinstall it by right-clicking on the installation file and choosing **Run as administrator**.

### Updating the Software Results in a "(407) Proxy Authentication Required" Message

**Problem:** You use the **Help | Check for Updates** menu option to update the software, and when the Web Updater opens, it shows: "The remote server returned an error: (407) Proxy Authentication Required."

**Description:** A firewall on your computer may be blocking the updater from connecting to the server.

**Solution:** Check your firewall's settings and ensure that the following address is not blocked: http://www.wilcoxassoc.com/WebUpdater

### Setting Up the Network to Send Crash Reports

**Problem:** PC-DMIS cannot automatically send crash reports to Hexagon Manufacturing Intelligence even when the **/nocrashdump** software configuration switch is not being used. (This switch disables crash reports in PC-DMIS.)

**Description:** A firewall on your computer may be blocking the updater from connecting to the server. If PC-DMIS crashes, it uses a PHP script over HTTP to send the crash report. If this fails, it then tries to send the report to crashreport@wilcoxassoc.com. It tries using the standard SMTP email protocol. If that fails, it tries to send the email through MAPI.

**Solution:** The crash report system needs to be able to get out to the server, http://www.wilcoxassoc.com/, using port 80.

## Installing on Top of an Existing Version Results in Unexpected Behavior

**Problem:** You installed on top of an existing version of PC-DMIS, and now the software does not behave normally. Potential symptoms include:

- After you start up the software, you get a "Procedure Entry Point" error.

- When you select **Help | About**, it does not show the new build number.

- Reported bug fixes do not seem to be fixed, and PCDLRN.EXE does not have a newer date and time than the original release.

**Description:** Something did not install properly on top of the existing version.

**Solution:** Use Control Panel to completely uninstall the existing version, and then reinstall the version you're trying to install.


## Running the Legacy DPUPDATE.EXE Does Not Work

**Problem:** The legacy DPUPDATE.EXE does not run.

**Description:** If PC-DMIS is run without administrator privileges, DPUPDATE.EXE does not work.

**Solution:** Run PC-DMIS with administrator privileges.

## Information about this Release

We at Hexagon Manufacturing Intelligence are proud to bring you this new version of PC-DMIS 2016.0. This platform brings together new aspects of PC-DMIS for the development of a complete manufacturing process control solution. Available in this release are variations of PC-DMIS designed to assist with every aspect of the fabrication and quality control process. The newly created packages include the established PC-DMIS Laser, PC-DMIS NC, PC-DMIS Pro, PC-DMIS CAD, and PC-DMIS CAD++ platforms.

The testing of this version has been significant. We'd like to take a moment to discuss this process and also make you aware of the various components of testing.

Testing is comprised of two parts. These can be described as functional testing and integration testing. The vast majority of testing effort goes on in the functional area. This is the testing that determines that specific functions that are core to the software, regardless of what type of machine is used, are working correctly. The integration testing is essentially a testing of the interface with a particular type of machine.

In the ideal scenario, Hexagon Manufacturing Intelligence would have access to at least one of every piece of hardware that is operating in the field running PC-DMIS. However, in practical terms, this is impossible. This integration test plan is then performed on as many types of machines as we have available.

Should you experience problems with your system after you install PC-DMIS 2016.0, it could possibly be an integration problem. If it is a problem of this nature, it will probably be evident immediately upon first use of the possibly untested configuration. See "Contact Hexagon Manufacturing Intelligence" on how to report any integration problems. Should such a problem materialize on a commercial release, you will be given the highest priority for correcting these problems.

For existing users of PC-DMIS who currently have earlier versions of PC-DMIS installed, it is advised that PC-DMIS 2016.0 be installed into a new directory. In this way, you can be assured of continuous use of the existing version should problems arise with this newer version.

# New Product Information

Following are the Service Pack releases of the software:

- [2016.0 SP10](#)
- [2016.0 SP9](#)
- [2016.0 SP8](#)
- [2016.0 SP7](#)
- [2016.0 SP6](#)
- [2016.0 SP5](#)
- [2016.0 SP4](#)
- [2016.0 SP3](#)
- [2016.0 SP2](#)
- [2016.0 SP1](#)

## 2016.0 Release

The 64-bit version of PC-DMIS is only supported on Windows 10, Windows 8.1, Windows 8, Windows 7, and Windows Vista. It is not supported on Windows XP.

For a listing of the enhancements for the 2016.0 Release, refer to "[Release Notes](#)". For detailed information and videos tutorials regarding the enhancements, log on to [hexagonmi.com/products/software](#).

### About the PC-DMIS 64-Bit Version

The following items are only supported in the 32-bit (x86) version of the software; they are not available in the 64-bit version.

- CAD (3D ACIS data embedded inside of DXF Files)
- Translators (Avail, Datalog, MeasureMax, MMIV, and Tutor)
- NC product line
- Vision (MEI, QVI, ROI, TESAI++, and TESAVISIO). Note that the FDC, Leitz, and Metronics controllers are available in the 64-bit version.
- CMM (B & S Backtalk, Embedded Board, Manmiti, Manmora, Metrocom, Mitutoyo GPIB, GeoCom, GOM, LK, Numerex, Omniman, and anything using the parallel port driver)
- Portable (FaroArmUSB and Axila)

ManualCMM and Tech80 have reduced functionalities.

### Running the PC-DMIS Universal Jogbox Utility

If you are using the PC-DMIS Universal Jogbox Utility (PCD_UJB_Util.exe *32), ensure that you do the following:

- Start the utility as XP-SP2 compatible:

  1. Right-click on the **PC-DMIS Universal Jogbox Utility** icon on your desktop, and then select **Properties**.

  2. Select the **Compatibility** tab.

  3. Select the **Run this program in compatibility mode for** check box, and then select **Windows XP (Service Pack 2)** in the list.

  4. Select **Apply** and then **OK**.

- After the utility has been installed, do not run it as an administrator.

- Run the utility with the logon account properties that are set for the current user.

## Release Notes - 2016.0 SP10

- PCD-101281 - Fixed an issue where the Mesh object could not be exported after it was manually aligned (without a CAD model).

- PCD-108067 - Fixed an issue where the Adaptive Path scan was generated in the opposite direction.

- PCD-111107 - Fixed an issue with auto contact features where the feature and the label in the Graphic Display window did not update when the coordinates in the Auto Feature dialog box were changed.

- PCD-111338 - Fixed an issue where auto circles were always created with the Least Squares bestfit math type.

- PCD-116709 - Fixed an incorrect move in the auto line execution.

- PCD-116909 - Fixed an issue in which FBM incorrectly marked a feature when the Status window was open. The Status window tried to resolve the expression of the feature on which the cursor was placed. In doing so, it marked the feature that was not required by FBM.

- PCD-118373 - Fixed an issue where END_ROUTINE was incorrectly used instead of END_PROGRAM when exporting to a Basic file.

- PCD-120772 - Fixed an issue to match a change by Microsoft regarding graphic information.

- PCD-122014 - Fixed an issue where, for vector points, the actual values reset to the nominal values when the measurement routine was saved and reopened.

- PCD-123354 - Fixed an issue where the warmup state of the CMS laser probe was not managed correctly in all scenarios.

- PCD-125515 - Fixed an issue where the FDC interface may have returned incorrect AB angles for hit data.

- PCD-125979 - Fixed an issue where laser surface points were not exposed in the **Point Nominal Deviation** dialog box.

- PCD-126205 - Fixed an issue where laser features were not drawn in the Graphic Display window when they were pasted into the Edit window.

- PCDNC-1071 - Okuma Post Outs are no longer specific to a single machine ID. A PC-DMIS measurement routine will work in any Okuma machine that has a variable set to identify the machine ID in the results file.

- PCDNC-2797 - Fixed an intermittent crash that occurred when a machine definition was edited.

## Release Notes - 2016.0 SP9

- PCD-28370 - Fixed an issue where PC-DMIS incorrectly stored a modified value for the **Distance delta** or **Time delta** option on the **Probing** tab in the **Parameter Settings** dialog box for a portable arm interface.

- PCD-104801 - Fixed an issue where the Laser Auto Feature - Flush and Gap extraction was not always managed correctly at certain depths.

- PCD-109587 - Fixed an issue with the I++ client where the wrist rotation generated wrong moves when the clearance plane was activated.

- PCD-114837 - Fixed an issue where some B-spline surfaces that represented a cone were incorrectly identified as a cylinder.

- PCD-117234 - Fixed a runtime error executing AUTOCALIBRATE with TEMPCOMP in a dual-arm measurement routine.

- PCD-118225 - On machines where the geometrical compensation was done in wcompens_2.dll, if the mechanical offsets were defined incorrectly, the laser probe could have moved to a wrong position after a scan was executed.

- PCD-124653 - Fixed an issue where some printers caused PC-DMIS to not print textual data at the bottom of a report page. PC-DMIS now queries a printer multiple times for a font size so that the data fits on the report.

## Release Notes - 2016.0 SP8

- PCD-35924 - Fixed an application error that occurred when the STARTUP viewset was selected on the **Settings** toolbar after an external measurement routine was attached.

- PCD-41613 - Fixed an issue where a probe rotation was missing in the tool change cycle in case a LASER probe was loaded and the active probe was not defined in the toolchanger.

- PCD-78694 - Fixed an issue where PC-DMIS stopped working when a set of laser scan commands was deleted in a dual-arm measurement routine.

- PCD-95474 - Fixed an issue where changing from an external alignment to an internal alignment broke the alignment command.

- PCD-100317 - Added correction for DMIS Repost (PC-DMIS DMIS exported file being imported again).

- PCD-104576 - Restored the draw of the feature's label after selection when the **Auto Feature** dialog box is open.

- PCD-104927 - Fixed an issue where PC-DMIS did not consider the CAD-provided IDs as requested when you selected points on the CAD from the **Auto Feature** dialog box.

- PCD-107881 - Fixed an application error that occurred when PC-DMIS executed a subroutine command with an empty argument.

- PCD-108615 - Fixed an issue where PC-DMIS did not draw the labels of some auto features in the Graphic Display window.

- PCD-109127 - Fixed an issue where generic lines appeared at incorrect locations in the Graphic Display window.

- PCD-109327 - Fixed an application error that occurred during a copy-and-paste operation between two measurement routines.

- PCD-109993 - For the LK driver interface, fixed the tip offset calculation for revolving heads.

- PCD-111435 - Fixed an issue when Laser Auto Features were created using the QuickFeature method, and the measurement routine contained a COP, the COP setting was set initially to "Disabled", and the feature would not extract.

- PCD-112122 - Fixed an issue where PC-DMIS did not automatically create a COP when you used a portable interface with a laser probe and the QuickFeature method to create a laser Auto Feature. PC-DMIS now creates a COP and links the laser Auto Feature to that COP.

- PCD-112429 - Fixed an issue where all features in the list in the **Delete Feature(s)** dialog box were selected when the box-select method was used in the Graphic Display window to select only a few features.

- PCD-112531 - Fixed an issue where PC-DMIS stopped working when you docked the Edit window.

- PCD-112590 - Fixed an issue where PC-DMIS stopped working when you undid a deletion of a VIEWSET command when it was after an Auto Feature.

- PCD-113290 - Xact Position dimensions are now included in the Out of Tolerance reports if the feature size(s) are out of tolerance.

- PCD-113534 - Fixed an issue that prevented editing angle tolerances from the Edit window when in Deg/Min/Sec mode.

- PCD-115540 - Fixed an issue where random clicks around the application with the **Iterative Alignment** dialog box open caused PC-DMIS to stop working.

- PCD-115626 - Fixed an application error that occurred when looped commands were deleted.

- PCD-115778 - During the execution of a measurement routine in DCC mode, it is possible to switch the controller to Manual mode and use the jogbox to measure the feature hits. If incorrect hits were taken in this mode, it was not possible to delete the hits from the **Execution** dialog box or from the jogbox.

- PCD-116664 - Fixed an issue where CWS surface points were converted into feature-extracted points from a COP when a measurement routine that was created in a version prior to 2016 was opened.

- PCD-117204 - To avoid conflicts, you can execute a measurement routine only through the **Mini Routine** dialog box when the dialog box is open. To execute a measurement routine through any other method (for example, through **File | Execute** menu option), you must close the **Mini Routine** dialog box.

- PCD-117348 - Fixed an issue where PC-DMIS did not correctly export some points in the .PSL file format when contact points were measured in two or more scan features and then linked to a COP.

- PCD-118194 - Fixed an issue with limit tolerance dimension colors when the Tolerance Zone Multiplier was not set to 100%.

- PCD-118379 - Fixed a design limitation in the remeasure cycle for auto circle features with specific parameters (depth = 0, no sample hits).

- PCD-119888 - Fixed an I++ issue where speeds were incorrectly converted when the measurement routine was in inches.

- PCD-121506 - For the FCF position of a plane, changed the math from using the least squares corner points to using the maximum deviation of the hits, per ISO 1101.

# Release Notes - 2016.0 SP7

- PCD-88628 - Added the Quick Start button to the QuickMeasure toolbar for the Tracker LeicaLMF interface.

- PCD-95046 - Resolved an issue that could have caused some commands to revert to default settings when edited.

- PCD-96234 - Fixed the following issues:

    - If you double-clicked on the name of a measurement routine in Windows Explorer, PC-DMIS started but the measurement routine did not open.

    - If you used a command prompt window (cmd.exe) or batch file (.bat or .cmd) to start PC-DMIS, and passed the measurement routine's filename as a command line parameter to open it, PC-DMIS started but the measurement routine did not open.

- PCD-99011 - The ISO10360-8 sphere measurement routine for Arm2 scanned with the wrong tip after mapping; fixed an issue where the probe used the mapping from the wrong arm.

- PCD-99248 - Fixed an issue with the 2D Profile auto feature that may have caused an application error with certain outlier removal settings.

- PCD-99766 - Fixed an issue where a CAD file may have increased in size when the file was imported as a reference and then saved as a different name.

- PCD-100688 - Fixed an animation issue in CMM Laser scan offline simulation. The laser sensor is now shown moving over the scan path in the Graphic Display window.

- PCD-101244 - Fixed an issue where dimensions did not appear at the bottom of each page in the Report window.

- PCD-105106 - Fixed an issue when calculating the Laser Flush and Gap auto feature at a given depth. It was possible, depending on the given depth and the mutual position of the master side and slave side, that relevant points were missed during execution. This caused the flush and gap to not be extracted.

- PCD-106852 - Fixed an issue that caused PC-DMIS to stop working when you generated Microsoft Excel output.

- PCD-107564 - Fixed an issue with the incorrect license being applied to the Amyuni driver while ensuring that the previous PDF printer device is removed and replaced.

- PCD-108966 - Fixed an issue with the pointcloud Surface Colormap operation. Previously, if you selected the No data color check box in the Pointcloud Operator dialog box, the resulting color was always gray regardless of the color you selected. The color that you select is now correctly applied to areas of the CAD where there is no corresponding pointcloud data.

- PCD-109392 - Fixed an issue where PC-DMIS stopped working when it displayed a warning message about a single tip calibrated without a feature selected.

- PCD-109978 - Fixed an issue where PC-DMIS stopped working during a edit operation after you closed the Find dialog box or Replace dialog box.

- PCD-112334 - Fixed an issue where subroutines did not correctly pass variables back to the parent measurement routine.

- PCD-112538 - Fixed an application error when the Ctrl+Left mouse button was used in the Edit window.

- PCD-116032 - Fixed an issue where the LINESEGMENTENDINDEX() expression incorrectly returned a result of zero.

- PCD-116657 - Fixed an issue where the gain setting for laser scans did not change correctly.

- PCDNC-2109 - Fixed an issue where the read var command did not work in the NCSiemens online interface.

- PCDNC-2162 - Fixed an issue where the controller remained in cycle in the NCSiemens online interface after the measurement routine was executed.

# Release Notes - 2016.0 SP6

- PCD-99492 - Fixed an issue where users could not insert moves by clicking on a path line.

- PCD-99974 - Fixed an issue that, under certain circumstances, may have prevented external alignments from appearing in the alignments recall drop-down list.

- PCD-103398 - Fixed an issue where, if a COP was hidden, the hidden state was not retained and the COP was again made visible after you executed a pointcloud operator command.

- PCD-104272 - Fixed an issue with the reporting function NUMOUTTOL() that in some cases would incorrectly count unequally disposed profile tolerances.

- PCD-104792 - Fixed a mismatch in the hit numbers when hits were erased in the **Execution** dialog box during an execution offline.

- PCD-106264 - When tool changers (such as the LSPX1 type of probe) are connected to the B5 Leitz controller, they will use two speeds:
    - "Fast speed", the move speed in the measurement routine, will move the probe from the mounting point to the point in front of the garage and back.
    - "Slow speed" is the docking speed in the tool changer dialog box. It will move from the front of the garage to inside the port to drop the probes.

- PCD-108311 - Fixed an issue where the Gage Scan calibration strategy with the Hardware Compensation type may have stopped working during execution and failed to complete.

- PCD-108633 - Fixed an issue where the nominal values of features reset to 0 during the deserialization of the measurement routine.

- PCD-108858 - Fixed memory management issues that may have occurred when using toolkit commands or strategies.

- PCD-109056 - Fixed an issue where the mechanical offsets defined in the Leitz interface settings were not being used on Cygnus machines.

- PCD-109706 - Fixed an issue where the SHANK probe tips used with an analog scanning probe ignored the Trax selection when calibrating.

- PCD-109978 - Fixed an issue where PC-DMIS stopped working during an edit operation after the **Find/Replace** dialog box was closed.

- PCD-111033 - Fixed an issue where excessive Windows handles were used for large CAD models, which may have caused PC-DMIS to stop working.

- PCD-111274 - Removed the check for the input of the low density radius as this is not used for blade section.

- PCD-112580 - Fixed an issue where probing forces specified by a user with an OPTIONPROBE command in the measurement routine were not always used correctly during VFT (Vibration Free Transmission) style of probe calibration.

## Release Notes - 2016.0 SP5

- PCD-87722 - Removed the unwanted message "The probe data file has been changed outside of this Measurement Routine and is newer than the data in this Routine" on the Arm 2 probe when the same probe occurred multiple times in the current measurement routine.

- PCD-96204 - When a probe changer (such as the LSPX1) is connected to the FDC controller, it will use two speeds:

  - Fast speed - PC-DMIS will use the move speed that is specified in the measurement routine to move the probe from the mounting point to the point in front of the port and back.

  - Slow speed - PC-DMIS will use the value for the **Docking speed** option on the **Type** tab in the probe changer's **Probe Changer** dialog box to move the probe from the front of the port to the inside port to drop the probes.

- PCD-99893 - Fixed the following issues:

  - A random PC-DMIS runtime error occurred when PC-DMIS executed a laser CMS scan in parallel on Arm 1 and Arm 2 in a dual-arm measurement routine.

  - A random PC-DMIS runtime error occurred, and PC-DMIS stopped working, when the TEMPCOMP command had the "Read Temperatures from Controller" method instead of the correct "Controller Compensates Axes Only" method for a Leitz controller in a dual-arm configuration.

  - Added error messages that indicate possible TCP/IP errors on the "data port" between Arm 1 and Arm 2 computers (used to send laser scan data to Arm 1).

- PCD-100180 - Fixed an issue that may have occurred when you initialized an FDC machine with a rotary table that had software error compensation of the table. The error may have occurred if you clicked OK to home the machine without first doing the machine start.

- PCD-100802 - Corrected an issue where PC-DMIS would crash if a Pointcloud Boolean Operator command was edited and then closed.

- PCD-101061 - Fixed an issue where PC-DMIS stopped working on startup with a CMM-V.

- PCD-102033 - Fixed an issue where some of the parameter sets that were available on the controller may have been unrecognized and treated as if they did not exist.

- PCD-102340 - Fixed an issue where the DMIS TEXT/OPER statement did not import correctly.

- PCD-102429 - Fixed an issue where the ONERROR/Laser/SKIP command stopped the execution of a measurement routine when a Laser Auto Feature associated with a dimension failed during calculation.

- PCD-103366 - Fixed an issue where cylindricity, runout, straightness, and circularity did not show all hit vector arrows.

- PCD-103501 - Fixed an issue where an adaptive scan path shifted from its original location when you re-opened a measurement routine.

- PCD-103517 - Resolved an application error that occurred when you chose to undo the deletion of a set of COPs and scans.

- PCD-103555 - Fixed an issue where PC-DMIS crashed when it deleted a non-empty COP that a SCAN command referenced.

- PCD-103974 - Fixed an issue with Auto Cylinders where PC-DMIS displayed the MAX / MIN diameter incorrectly.

- PCD-104902 - Fixed an issue where the generated laser Linear Open scan was executed straight instead of following the generated path.

- PCD-104982 - Fixed an issue where the PC-DMIS I++ Client did not send the correct coordinate system for dual-arm systems.

- PCD-105422 - Fixed a docking issue with a CW43L Probe Changer that appeared on dual-arm machines and led to a collision on the ARM2 machine when probes were unloaded.

- PCD-105487 - Fixed an issue where the value in the **Setup Options** dialog box (F5) - **Part/Machine** tab was not correctly being shown in the units of the measurement routine when using inch routines.

- PCD-105855 - Added a fix for cases where recent controller firmware would dampen the probe when the machine was in the soft limit slow zone.

  You can disable the F4 operator panel, which usually triggers a measure of the current feature, to prevent inadvertent actuation. For more information, refer to the Machine Interface Installation Manual (MIIM).

- PCD-106066 - Resolved an issue where an I++ ScanOnCircle execution did not send commands to Leitz dll.

- PCD-106224 - Fixed an issue where the points shown on the Path Definition tabs for the Adaptive Free Form Plane Scan and TTP Free Form Plane strategies were in the CAD coordinate system. All of the points on the Path Definition tabs are now shown in the part coordinate system.

- PCD-106415 - Fixed an issue with contact scanning probe calibration on VFT-capable FDC machines where the sign of the resulting ScanRDV was inverted.

- PCD-107071 - Fixed an issue where machines with error-mapped rotary tables could have had an accuracy issue when measurement routines used inches as the units.

- PCD-108148 - Added the `SkipNumberOfStripes` registry entry for laser scanners. The value for this entry specifies the number of scanned lines to skip between each scanned line that appears in the Graphic Display window while executing a laser scan. The values are:

  - 0 (zero, the default) - All scanned lines appear in the Graphic Display window while executing a scan.

  - Negative integer - No scanned lines appear in the Graphic Display window while executing a scan. The visibility of the scanned lines is turned off during execution. You may prefer this option if you want to improve the execution performance of large measurement routines. Example: -1

  - Positive integer - Specifies the number of scanned lines to skip between each scanned line in the Graphic Display window. Examples: If you set the value to "1", one scanned line appears and one scanned line is skipped. If you set the value to "10", one scanned line appears and 10 scanned lines are skipped.

- PCD-108765 - Fixed an issue where changing tools in a dual arm I++ configuration with a wrist probe failed on the slave computer side.

- PCDNC-939 - Fixed an issue where lathe calibration did not update the probe offset.

- PCDNC-1025 - Fixed the drop-down in the Calibrate Active Tip command to include non-spherical features.

- PCDNC-1491 - Fixed an issue where NCFanuc and NCSiemens dlls stopped working when loaded as Interfac for NCi.

- PCDNC-1640 - Fixed an issue where the generated measurement routine was incorrect for CNC lathe machines.

## Release Notes - 2016.0 SP4

- PCD-100847 - Fixed an issue where the pointcloud was overlaid on top of the actively-displayed surface colormap when a different surface colormap was deleted.

- PCD-100973 - Fixed an issue where it was not possible to edit features in a loop.

- PCD-104276 - Fixed an issue where a focus failed even though there was a good contrasting image.

- PCD-105673 - Updated the digital signature to use SHA256 and SHA1 to fix an issue with files that were available via the WebUpdater. The issue caused PC-DMIS 2016.0 SP3 to fail during installation.

## Release Notes - 2016.0 SP3

- PCD-95295 - Fixed an issue where wizards did not launch due to a Microsoft .NET Framework exception error in the 64-bit version of PC-DMIS.

- PCD-101912 - Fixed an issue when using the Curve method for CAD section cuts. Previously, when you moved the mouse pointer over a CAD curve, the CAD curve was not highlighted in yellow and you could not select it after you created a Scan command.

- PCD-102333 - Fixed an issue when you used the **Quick Start** menu option (**View | Other Windows | Quick Start**) to measure a circle after you created a Quick Start plane-line-line alignment. If the projection plane was set to the plane used in the alignment instead of the workplane, the probe compensation was incorrect because the circle was measured as being inside. This occurred due to the physical setup of the part relative to the machine axes. If the part was set up 90 degrees relative to the arm, then the circle was compensated incorrectly.

- PCD-103358 - Fixed the Plane auto feature with Quick Feature functionality to generate the correct path for scanning strategies.

- PCD-104319 - Fixed an issue where the auto feature SNAP function did not work properly and performed as if SNAP were disabled.

## Release Notes - 2016.0 SP2

- PCD-81931 - Fixed an issue where PC-DMIS Laser removed the **Feature Extraction** tab from the Probe Toolbox when you selected the **Move To** button in the **Auto Feature** dialog box.

- PCD-89255 - Fixed an issue where the scanned point cloud for a laser Auto Feature was not visible when the operator edited (pressed F9) after executing only that feature by direct (feature) execution.

- PCD-93875 - Fixed an issue where untranslated text appeared in the Best Fit Math Type list in the Advanced measurement options area in the Auto Features dialog box for the Japanese and Korean language packs.

- PCD-97918 - Fixed an issue where the custom report for a composite profile reported the dimensional information from the upper segment when you selected the lower segment.

- PCD-98466 - Fixed an issue where some parameters were not properly passed to an Auto Feature if it was created as a quick feature with a laser probe, resulting in incorrect label placement.

- PCD-98584 - Fixed an issue where PC-DMIS displayed the message "Your probe does not appear to contain a TESASTAR_MP component. You must use a TESASTAR_MP probe for this calibration." during tool changer calibration for probes that contained these components:

    - HP-TM-LF

    - HP-TM-SF

    - HP-TM-MF

    - HP-TM-EF

- PCD-98623 - Fixed the TR_OUTOL error notification after qualifying the laser HP-L-sensor with optimized path and stationary qualification mode.

- PCD-98888 - Fixed an incorrect retract move after the calibration of a laser probe. This occurred after the first execution of a stationary calibration (not a scan).

- PCD-99080 - Fixed an issue where auto cylinders had an incorrect length value of "0" (zero) when you created them in Quick Feature mode.

- PCD-99218 - Fixed an issue where PC-DMIS did not update the Edit window for DMIS Export if you renamed the ID of an external alignment file during a Save As operation in DMIS mode.

- PCD-99364 - Fixed an issue where PC-DMIS displayed an "out of resources" message and stopped working when you scrolled the Report window for a custom report up and down.

- PCD-100377 - Fixed an issue where PC-DMIS may have generated incorrect avoidance moves and sample hits when you saved a circle, ellipse, cylinder, or cone Auto Feature to a previous version of PC-DMIS.

- PCD-101487 - Fixed an issue where PC-DMIS did not correctly apply the actual thickness to auto vector and auto surface points when it measured them in Manual mode.

- PCD-102082 - Corrected an issue for Pointcloud Surface Colormaps, where if the Dimension Color Scale was used with only one zone (green) and out of tolerance color set to red, the colors were blended. Colors now appear distinctly, as defined by the scale.

- PCD-102205 - Corrected an issue where deviation Annotations could not be created on a Pointcloud Cross Section which was created using a selected CAD surface.

- PCD-102673 - Fixed an option where the tips were incorrectly translated when importing DMIS files if the VW convention was used.

- PCD-103486 - Fixed a tessellation issue for closed surfaces that have only a single island boundary.

- PCD-103976 - For tool changers such as the X1, X3, and X5 with S2 and S4 types of probe heads, the value for the **Docking speed** option in the **Probe Changer** dialog box will set the move speed from the mount point onwards. This is specified in percentage of maximum speed.

## Release Notes - 2016.0 SP1

- PCD-53571 - Fixed an issue where the A angle field was incorrectly reported as 0 for an Angle Point auto feature.

- PCD-57508 - Fixed an issue where PC-DMIS showed a large deviation if you selected a surface point on one scan line and a surface point in the same location on the other scan line on overlaid sections. This resulted in points that may also have had an extra deviation as much as 0.1 mm.

- PCD-75687 - Fixed an issue that prevented the proper Tracker update of the reflector type.

- PCD-80124 - Fixed an issue where a control point of a circular scan was rotated 180 deg., causing scans to retract incorrectly for internal features or lead to a collision on external features.

- PCD-94016 - Improved (reduced) the time that PC-DMIS requires to extract a Laser Auto Surface Point from a COP.

- PCD-96872 - Fixed an issue where the rotary table offsets were doubled in some circumstances when errors were encountered while homing the machine.

- PCD-97668 - Fixed an issue that occurred when the operator clicked the **Skip** icon in the **Execution** dialog box to skip the measurement of a feature, but the feature's dimension from the previous execution populated the report when the **Use Text Mode Dimension Reporting** check box in the **Report** dialog box was selected.

- PCD-98210 - Fixed an issue where measurement routines using the Recall Alignment command, with the INTERNAL reference option set, failed to recall the most recent copy of the referenced alignment when branching.

- PCD-98386 - Fixed an issue where the **Jump** and **Skip** buttons appeared in the **Execution** dialog box even though the `HideExecuteJumpSkipButtons` registry entry in the Settings Editor application was set to 1. (When this value is set to 1, the buttons are hidden from view.)

- PCD-98651 - Fixed an issue where manual edits to the rotary table offsets were not reflected in the probe position readouts.

- PCD-98819 - Fixed an issue that occurred after you mapped an Arm 2 CMS probe, closed that dual-arm measurement routine and loaded a new measurement routine, and then tried to create a Laser Auto Sphere on Arm 1. When you opened the Live View, a "Sensor Busy" error appeared. This required you to stop PC-DMIS and restart it in single arm mode.

- PCD-99527 - Fixed an issue where a new Colormap Scale did not appear in the Graphic Display window.

- PCD-99632 - Fixed an issue where PC-DMIS stopped working when it executed a measurement routine that was stored in a folder that had reduced permissions applied to it, and the **Record and display execution time** check box on the **General** tab in the **Setup Options** dialog box was selected.

- PCD-100128 - Fixed an issue where an unexpected hit was recorded during a tracker re-initialization sequence as part of a bundle alignment procedure.

- PCD-100129 - Fixed an issue for AT-960 trackers where a pulled hit could not be measured when a T-probe was used.

- PCD-100131 - Fixed an issue where PC-DMIS randomly displayed a "No scan data error" message when it measured a laser Auto Feature.

- PCD-100271 - Fixed an issue for Laser Trackers running Automatic Inspection (with DCC mode activated). When the measurement routine was re-executed, and a Load Probe command (e.g., TBR or RRR reflector) was inserted between the measured points, the points were not measured.

- PCD-100971 - Fixed an issue where the installation process installed the printed manuals for PC-DMIS 2015.1 instead of PC-DMIS 2016.0.

- PCD-100987 - Fixed an issue where the 64-bit interface for a manual CMM machine did not correctly read the hit and readout information from the GmServer.exe file that connected to a manual card (such as ENC7480).

- PCD-101279 - Fixed an issue where not all of the deviation arrows were displayed for a graphical analysis report.

# Release Notes - 2016.0

Version 2016.0 is a significant development release of the software.

## Featured Items

### Path Line Improvements

New options on the **Animation** tab in the **Setup Options** dialog box (**Edit | Preferences | Setup**) enable you to define path line colors:

- **Tip rotation color RGB** box - Defines the color for a probe's path lines as it rotates its tip to a new angle. The related registry entry in the Settings Editor application is `PathLinesColorPH9RGB`; the default is 0,255,0 (green).

- **Measure point color RGB** box - Defines the color for a probe's path lines as it contacts with the part to measure points that define the feature. The related registry entry is `PathLinesColorMeasurePointRGB`; the default is 0,255,0 (green).

For complete information about these options, refer to "Setup Options: Animation tab" in the PC-DMIS Core documentation.

Note that when you use Auto Features or Quick Features to add a new feature, PC-DMIS updates or refreshes the path lines.

If you select the new **Arrow** check box on the **Symbols** tab in the **CAD and Graphic Setup** dialog box (**Edit | Graphic Display window | Display Symbols**), PC-DMIS draws an arrow symbol on each path line in that path line's color. The related registry entry is `DrawPathLinesArrow`; the default is False. For complete information about the check box, refer to "Modifying Display Symbols" in the PC-DMIS Core documentation.

For complete information about registry entries, refer to the topic with the same name in the Settings Editor documentation.

### Self Centering Point Strategy

The new Self Centering Point is available as a strategy for Auto Vector Point. You can use this strategy to measure a 2D (2 axis) or 3D (3 axis) self-centered point. PC-DMIS provides CAD selection of a self-centered point.

Self-centering is available only with scanning probes. For complete information, refer to "Self Centering Point Strategy" in the PC-DMIS CMM documentation.

### Measurement Strategy Editor

You can use the Measurement Strategy Editor to set parameter values for each feature type.

The Measurement Strategy Editor fits the new user experience guidelines for Hexagon Manufacturing Intelligence products.

For complete information, refer to "Using the Measurement Strategy Editor" in the PC-DMIS Core documentation.

## Feature Based Measurement

The `FEATURE BASED MEASUREMENT` parameter in the `GROUP` command block in the Edit window was renamed to `EXECUTION CONTROL`. The options in the group control were changed as follows:

- `YES` was changed to `FBM Check` - At the time of execution, PC-DMIS determines if a feature or dimension is marked in the group.

- `NO` was changed to `AS MARKED` - PC-DMIS executes all of the marked features and skips all of the non-marked commands.

- The `ALL ALWAYS` option was added. For this option, PC-DMIS always marks and executes the entire group and its nested subgroups.

For complete information, refer to "Creating a Measurement Routine with FBM" in the PC-DMIS Core documentation.

## Modern PC-DMIS and Planner Installer

A modern installer was implemented for PC-DMIS and Planner. This installer enables you to install subproducts. The installer works better than previous installers on high DPI (dots per inch) systems. It also fits the new user experience guidelines for Hexagon Manufacturing Intelligence products.

## Multiple Surface Colormaps

Use the new **SurfaceColorMaps** list box on the **QuickCloud** and **Pointcloud** toolbars to quickly show the active surface colormap along with its annotations and color scale in the Graphic Display window. This is ideal for showing colormaps when:

- Different tolerances or scales are required in your inspection.

- You need to report colormaps of individual CAD surfaces or colormaps in a different alignment.

- Each individual colormap is shown in the report (Text and CAD, CAD Only, and CAD Only Landscape templates).

- You want to create viewsets to control the "view" position of each colormap in the report.

For complete information, refer to "Pointcloud Toolbar" in the PC-DMIS Laser documentation and "QuickCloud Toolbar" in the PC-DMIS Portable documentation.

## Pointcloud Cross Sections

An intuitive user interface was implemented for you to create annotations (point deviations) and distance gages on Pointcloud cross sections.

- When you display a cross section in 2D view, you can move the pointer around the cross section to see the annotation deviations in real time, or click to create an annotation. You no longer need to edit the cross section and select the **Add** button to create annotations.

- To create a cross section distance gage, click and drag the cross section in the 2D view. You can select parallel or offset points for the distance.

- You can constrain the distance to an axis or the first side picked, or 3D between points. The measurement can be point-to-point. Or, use points within the specified size to create a Best Fit, Max Fit, or Min Fit distance.

- Click the **Distance Gage Options** button on the label to display the **Distance Gage Options** dialog box. Use this dialog box to change the measurement type or constraint.

- The **Cross Section Graphic Control** toolbar in the Graphic Display window of a 2D cross section enables you to show or hide labels and nominal or measured polylines.

For complete information, including examples, refer to "CROSS SECTION" in the PC-DMIS Laser documentation.

## I++ Client Probe Changer

PC-DMIS supports the I++ Client probe changer. You can assign all of the probes that are available for DCC tool changes by the I++ server to the one slot that is available for the I++ Client probe changer. When loading one of those probes, a request to load it is sent to the I++ server. The I++ server performs the actual change. For complete information, refer to "Defining the I++ Client Probe Changer" in the PC-DMIS Core documentation.

PC-DMIS also supports Senmation sensor changing technology. The SENMATION connection identifier specifies the Senmation joint (a joint to change sensors). For complete information, refer to "Editing the usrprobe.dat Data File" in the PC-DMIS Core documentation.

## CWS Spectrum Plot Tab

The new **Spectrum Plot** tab is visible in the Graphic Display window when the Chromatic White Light Sensor (CWS) is the active probe in the measurement routine. When the measurement routine is not executing, the spectrum plot shows the structure ("noise") of the CWS signal. This helps you select the optimal settings for parameters such as illumination and frequency.

Following are the minimum requirements for using the spectrum plot:

- A CHRocodile S or CHRocodile SE white light sensor

- CHRocodile firmware version starting with 5.97

- The CHRocodile sensor must be connected to the personal computer via a USB cable

For complete information about the spectrum plot, including an example, refer to "Spectrum Plot Tab" in the PC-DMIS Vision documentation.

## CWS Intensity and Distance Readouts

If the CWS is the active sensor, and the **Spectrum Plot** tab is not selected, the Probe Readouts window for PC-DMIS Vision displays two additional readouts:

- **Intensity** - Is a percentage that appears in a circular graphic. A value above 99% indicates a measurement error; for example, the sensor may be out of detection range. If a measurement error occurs, the non-gray part of the graphic turns red.

- **Distance** - Is in the current unit of measurement (inches or millimeters). The value appears in a circular graphic. If the value is within 10% of the upper or lower limit of the sensor range, the non-gray part of the graphic turns red.

For more information, including an example of the window, refer to "Using the Probe Readouts Window with Optical Probes" in the PC-DMIS Vision documentation.

## CWS Surface Point Modes and Feature Extraction

These modes are now available for the Laser Surface Point Auto Feature:

- Measurement or Feature Extraction Mode in Command Mode

- Measurement or Feature Extraction Mode in Summary Mode

For complete information about the modes, refer to "Using the Chromatic White Light Sensor (CWS)" in the PC-DMIS Vision documentation.

The option of creating a CWS Surface Point through feature extraction from a cloud of points (COP) was added. You can either measure with the CWS (as you could do previously) or select which COP the Surface Point is to be created from.

## Alignments

- PCD-67895 - Added the 2D **Vector_Min_Max**, 3D **Min_Max**, and 3D **Vector_Min_Max** math options for the Best Fit Alignment and Profile tolerances. These options conform to ASME Y14.5 - 2009 and ISO 1101 - 2012 for Position and Profile tolerances. The options are available in these dialog boxes:

    - **Best Fit Alignment** dialog box (**Insert | Alignment | New | Best Fit** button)

    - **Line Profile** dialog box for a legacy Line Profile - Form Only (**Insert | Dimension | Profile | Line**)

    - **Surface Profile** dialog box for a legacy Surface Profile - Form Only (**Insert | Dimension | Profile | Surface**)

    - **Advanced** tab in the **XactMeasure GD&T - Line Profile Dimension** dialog box for an FCF (Feature Control Frame) Line Profile (**Insert | Dimension | Profile | Line**) when you do not specify a datum feature

    - **Advanced** tab in the **XactMeasure GD&T - Surface Profile Dimension** dialog box for an FCF Surface Profile (**Insert | Dimension | Profile | Surface**) when you do not specify a datum feature

## Animate Path

- PCD-89590, PCD-89608, PCD-89586 - Added color and arrow options for path lines. For details, see "Featured Items".

- PCD-83682 - Added the ALT+SHIFT+P keyboard shortcut to the **View | Path Lines From Cursor** menu option.

## Auto Features

- PCD-60238 - Added the Self Centering Point. For details, see "Featured Items".

- PCD-42994 - Added the ability to draw targets at the screen resolution.

## CAD

- PCD-84467, PCD-88621, PCD-92644 - Added the Measurement Strategy Editor. For details, see "Featured Items".

- PCD-85831, PCD-56126 - Added STEP AP242 to the list of formats that PC-DMIS supports for GD&T Selection.

- PCD-82911 - Added the ability to import an Autodesk Inventor model into a PC-DMIS measurement routine. You can import a part file (.ipt) as a CAD file or an assembly file (.iam) as a CAD assembly.

- PCD-87204 - Enhanced the **Operation** menu as follows:

    - Renamed the **Select GD&T** option on the **Graphic Display Window** menu to **GD&T Selection**.

- Added the **View Invalid GD&T for Selection** option to the **Graphic Display Window | GD&T Selection** menu. This option opens the **CAD GD&T Selection Information** dialog box. You can use this dialog box to analyze all of the CAD GD&T callouts to locate invalid callouts. Invalid callouts are those that the software cannot solve for selection. The dialog box then displays these callouts in a list.

- PCD-89223 - Added the **Datums** list to the **CAD Information** dialog box (**View | CAD Information**). This list shows all of the datums in the CAD model. If you click on a datum, it is highlighted in the Graphic Display window. The window also rotates to the datum.

- PCD-91404 - Added a progress bar that shows the import status of one or more CAD files (**File | Import | CAD**).

- PCD-90988 - Added the **CAD GD&T Selection** area to the **Colors** tab in the **CAD and Graphic Setup** dialog box (**Edit | Graphic Display Window | Screen Color**). You can use the options in this area to set the colors of the CAD GD&T callouts to color those that are valid and not valid for selection in the Graphic Display window.

- PCD-85824, PCD-92905 - Added the ability to specify the order of the sensors in the measurement routine when you import a multi-sensor inspection plan.

## Change Manager

- PCD-82615 - Enabled the Change Manager to update the dimension that is associated with a feature when it updates the feature.

## Edit Window

- PCD-85552 - If you copy, rename, delete, or mirror a measurement routine, PC-DMIS also copies, renames, deletes, and mirrors the *<name of measurement routine>*.MiniRoutines.xml file.

- PCD-89083 - Added these keyboard shortcuts to the Edit window's shortcut menu:

  - Ctrl+Shift+H to **Feature | Highlight in CAD**

  - Ctrl+Shift+U to **Feature | UnHighlight in CAD**

## Execution

- PCD-88217, PCD-91181 - Renamed `FEATURE BASED MEASUREMENT` to `EXECUTION CONTROL` in the `GROUP` command block in the Edit window. For details, see "[Featured Items]".

- PCD-88033 - Improved the performance of PC-DMIS and large measurement routines as follows:

  - PC-DMIS opens a measurement routine up to 60% faster

  - PC-DMIS copies and pastes commands to the clipboard up to 90% faster

  - PC-DMIS updates the dimensions of multiple features up to 90% faster

The performance of PC-DMIS and large measurement routines with loops was also improved:

- PC-DMIS starts to execute a measurement routine up to 100% faster
- PC-DMIS starts to generate a report up to 100% faster

- PCD-90411 - Improved the marking speed of mini routines to provide faster marking of the required dimensions and features that they are dependent on.

## GD&T Selection

- PCD-87190 - Improved the handling of patch scans with GD&T Selection.

- PCD-92936, PCD-92953 - Added the **Map features to sensors** check box to the **Import** dialog box (**File | Import | Inspection Plan**). When you select this check box and then click the **Import** button, the **Feature - Sensor Mapping** dialog box appears. You can use this dialog box to assign features to probes (sensors) during the import of an inspection plan.

## Graphics

- PCD-29054 - Added the **CAD GD&T Selection** area to the **Colors** tab in the **CAD and Graphic Setup** dialog box (**Edit | Graphic Display Window | Screen Color**). You can use the options in this area to set the colors that PC-DMIS uses for selectable and unselectable CAD GD&T callouts in the Graphic Display window:

  - **Selectable** - The CAD GD&T callouts that are valid for GD&T selection.
  - **Unselectable** - The CAD GD&T callouts that are not valid for GD&T selection. These include notes, the surface finish, material specifications, and so forth.

  The related registry entries are:

  - `ColorSelectableGDT` - Specifies the color of valid CAD GD&T callouts in the Graphic Display window.
  - `ColorUnselectableGDT` - Specifies the color of invalid CAD GD&T callouts in the Graphic Display window.

## Help / Documentation

- PCD-92288 - Re-themed most of the Help content to give it a more modern color scheme with larger text for improved readability.

## Installation

- PCD-88618 - Implemented a modern installer for PC-DMIS and Planner. For details, see "Featured Items."

- PCD-88622 - Changed the file locations (path locations) from "WAI" to "Hexagon". For more information about file locations, see "Understanding File Locations" and "Required User Access Rights".

- PCD-88338 - Added a warning indicating that PC-DMIS 2017 R1 will be the final 32-bit version of PC-DMIS that Hexagon Manufacturing Intelligence supports. This warning appears when you open PC-DMIS.

- PCD-97139 - Added a prerequisite installer for PC-DMIS to install Microsoft .NET Framework 4.6.1. This installer is required for some new elements in PC-DMIS.

## Interface

- PCD-91655 - Added support for the CW43L Vertical Station to FDC interface.

## Licensing

- PCD-86068 - Removed the localization of the Export Module list (modulelist.txt) in the CUSTPROG HASP license tool. This file is now exported only in English, which enables it to be used to help create LMS entitlements.

## Machine Interface

- PCD-98621 - Added support for the stacked rotary table on the Firmware Distributed Controller (FDC). DC firmware version starting with 10.0 is required.

## Path Optimization

- PCD-85822, PCD-86273 - Enhanced PC-DMIS to use the auto wrist algorithm to select the best tip, which enhances speed and performance. If the tip fails, PC-DMIS flips the feature vector and checks a second time. If both tips fail, PC-DMIS moves to the next feature.

- PCD-89585 - Added the **Optimize Path** option to the **Path** option on the Edit window's shortcut menu in Summary mode. This option only appears if you right-click on a GROUP command. It performs a path optimization on the features inside of the group.

## Planner

- PCD-86935, PCD-86883 - Added these features to Planner:

  - The ability to construct a Width feature from two opposing sides of a notch, tab, or other similar surface. The Width feature is useful to the GD&T standard, which requires the width as a Datum in Feature Control Frame dimensions.

  - The **Constructed Feature** button and drop-down arrow to the **QuickPlan** toolbar. This button displays the **Constructed Feature** dialog box that is related to the icon shown on the button. From the dialog box, you can select any of the available feature commands to insert into the measurement routine.

- PCD-86935, PCD-86886 - Modified GD&T Selection to support a properly formatted width feature GD&T callout.

## Pointclouds

- PCD-86809 - Added the ability to create multiple surface colormaps in a measurement routine. For details, see "Featured Items".

- PCD-91023, PCD-91590 - Implemented an intuitive user interface to create annotations (point deviations) and distance gages on pointcloud cross sections. For details, see "Featured Items".

- Enhanced the **Laser Data Collection Settings** dialog box (**Operation | Pointcloud | Data Collection**) in PC-DMIS Laser as follows:

  - PCD-30091 - Added the **Incidence Angle** check box. This filter helps to remove "noise" caused by reflections from the part surface. During scanning, the angle is calculated between the estimated surface normal and the scan direction of the laser sensor. Scanned points that have an incidence angle greater than the entered value are filtered out.

    The default value is 75 degrees. The smaller the value, the more points are filtered out.

  - PCD-67387 - Added the **Stitch Patches** check box. When you scan as a Mesh display and select the **Stitch Patches** check box, multiple scan passes are blended and the overlapping data is removed (portable arm interface only). Previously, multiple scan passes were overlayed on top of each other.

    To be stitched, the overlapping scan passes must be within a distance lower than the point density.

- Enhanced the **Pointcloud Operator** dialog box for the Cross Section operator (**Insert | Pointcloud | Cross Section**) as follows:

  - PCD-89254 - Added the **2 Points** method to the list underneath the **Operator** list. For this method, the cross section is created between the two points that you select on the CAD model. It is oriented normal to the current Graphic View.

  - PCD-51110 - Added the ability to select a Mesh as a valid data object for creating a cross section. Depending on the quality of the mesh, the measured polyline may be more complete and represent the average pointcloud. The measured polyline represents data at the exact cross section location.

  - PCD-46433 - Added these boxes:

    - **Smoothing Tol** - Filters out the points that fall within this tolerance value to create a smoother measured cross-section polyline. You should set the value very small so that you do not change the measured results.

    - **Gap Fill Distance** - Fills gaps, with this distance or smaller, on the measured polyline by adding calculated points. You can also set this value in the `CrossSectionMaximumEmptyLength` registry entry in the Settings Editor application.

    - **Point Spacing** - Identifies the point spacing when you display the profile deviations on the cross section.

- PCD-91200 - Added the **Annotation Min/Max** option. Use this option to create annotation points at the lowest and highest deviations on the cross section. These annotations appear in the Graphic Display window when the cross section is in 2D view.

- PCD-81071 - Added the **Create MinMax annotation** check box to the **Pointcloud Operator** dialog box for the Surface Colormap operator (**Insert | Pointcloud | Surface Colormap**). Use this option to create annotation points at the lowest and highest deviations on the colormap. The minimum and maximum annotations are re-created when you use a new scanned COP to re-execute the measurement routine.

- PCD-57433 - Added the **Max distance** box to the **Pointcloud Operator** dialog box for the Point ColorMap operator (**Insert | Pointcloud | Point Colormap**) and Surface ColorMap Operator (**Insert | Pointcloud | Surface Colormap**). Only the points that fall within this distance relative to the CAD model are used for the point colormap. A good rule of thumb is to set this value slightly larger (for example, 10%) than the largest deviation.

- PCD-47714 - Added a method to create section cut curves on a CAD model (**Edit | Graphic Display Window | CAD Section Cut**). You can create CAD section curves along an axis, a vector, perpendicular to an existing curve, or between two points (normal to the current view).

- PCD-89521 - Improved the COP cross section graphic so that CAD section cut planes display as shaded and transparent in the Graphic Display window.

- PCD-85827, PCD-68444 - A colormap command now uses the Dimension Color Key object that is specified by the pointcloud command.

- PCD-90518 - Added the ability to select the active surface colormap (which appears in the Graphic Display window) from either the **QuickCloud** toolbar or **Pointcloud** toolbar.

- PCD-88968 - Added Pointcloud Alignment functionality to CAD and CAD++ licenses. Previously, this was only available for laser scanner users (those with the BigCOP option). Licenses without the BigCOP option are limited to using pointclouds that are 500,000 points or less in size.

## Reporting

- PCD-85827, PCD-35167 - Added the `AnalysisColorInterpLineWidth` registry entry to the Settings Editor application. This registry entry controls the line width in the Analysis reporting object.

- PCD-85827, PCD-85644 - Added these options to the **Graphical Analysis Options** dialog box (**Insert | Report Command | Analysis**):

  - **Worst** - Defines the number of worst deviations for which to display arrows. The related registry entry is `AnalysisViewArrowDensityWorst`; the default value is 10.

  - **Best** - Defines the number of best deviations for which to display arrows. The related registry entry is `AnalysisViewArrowDensityBest`; the default value is 10.

- PCD-85827, PCD-88459 - Added the **Report Minimum/Maximum Value** check box to the **Excel** tab in the **Output Configuration** dialog box (**File | Printing | Report Window Print Setup**). If you select this check box, PC-DMIS displays the maximum and minimum deviation values from the points that make up the dimension.

- PCD-85827, PCD-92243 - Added the ability to download custom report templates from the Hexagon Metrology Support Center web site (http://support.hexagonmetrology.us/). Also added a black-and-white report to the web site that reports out-of-tolerance (OOT) dimensions in the OOT color.

## Temperature Compensation

- PCD-88951 - Added the **Controller Compensates Axes Only** method to the **Compensation Method** list in the **Temperature Compensation Setup** dialog box (**Edit | Preferences | Temperature Compensation Setup**). This method tells the FDC controller to execute the whole thermal compensation of the machine, excluding the thermal compensation of the part.

## Tool Changers

- PCD-92197 - Added the I++ Client probe changer and Senmation sensor changing technology. For details, see "Featured Items".

- PCD-88548 - Enabled the ability to attach multiple HD extensions to multiple TKJ (Tesa Kinematic Joint) extensions.

- PCD-92496 - Added the ability to rotate the third axis position inside the HP-L tool changer slot. You can use the `CW43LTThirdAxisSlotAngle` registry entry in the Settings Editor application to tell PC-DMIS the third axis angle position of the probe inside the tool changer slot.

## Toolkit

- PCD-88617, PCD-88616 - Enhanced the Blade COP Section toolkit module as follows:

  - Renamed the toolkit module to Blade Section (**Insert | Modules | Blade Section**).

  - The Blade Section command can use any type of scanner device to construct a blade section by cutting the Mesh that was created in addition to the cloud of points (COP) that was collected.

  - PC-DMIS can generate the Mesh from the COP.

- PCD-88617, PCD-92318 - Renamed the **Smoothing** option to **Smoothing Tol**, and the **Join Tolerance** option to **Gap Fill Distance**, in the **Blade Section** dialog box (**Insert | Modules | Blade Section**).

- PCD-91350, PCD-91601 - Renamed the **Select Points** tab in the Probe Toolbox for the Touch Trigger Probe (TTP) Plane Circle and TTP Free Form Plane strategies to **Select Hits**, and redesigned the options on the tabs. These enhancements enable you to select hit points by specifying the number of points.

- PCD-92927, PCD-92928, PCD-92929 - Added the LEAST_SQR (Least Squares) and MIN_SEP (Minimum Separation) best fit types to the **Setup** tab in the Probe Toolbox for these Plane Auto Feature strategies:

    - TTP Free Form Plane

    - TTP Plane Circle

    - Adaptive Plane Circle Scan

    - Adaptive Free Form Plane Scan

## User Interface

- Implemented changes in PC-DMIS and Planner that fit the new user experience guidelines for Hexagon Manufacturing Intelligence products:

    - PCD-88619 - New splash screen

    - PCD-88623 - New **About** box

    - PCD-92219 - New application icons

## Vision

- PCD-23581 - Added the **Spectrum Plot** tab to the Graphic Display window. For details, see "Featured Items".

- PCD-23586 - Added **Intensity** and **Distance** readouts to the Probe Readouts window. For details, see "Featured Items".

- PCD-83945 - Added surface point modes and feature extraction functionality for the CWS Surface Point Auto Feature. For details, see "Featured Items".

- PCD-85923 - Added support for Metronics in the 64-bit version of PC-DMIS.

- PCD-89396 - Added the `DiagnosticsAutoExport` registry entry to the **VisionParameters** section in the Settings Editor application. The default value is False. If you set the value to True, PC-DMIS automatically creates diagnostic files in the root PC-DMIS installation directory each time you execute a measurement routine. The diagnostic files include bitmap images and a descriptive text file with current feature parameters. PC-DMIS overwrites the diagnostic files each time you execute the measurement routine.

## Contact Hexagon Manufacturing Intelligence

If you are participating in the *technical preview* of PC-DMIS 2016.0, please post your feedback in the appropriate technical preview forum located at www.pcdmisforum.com/forum.php. Please do not contact Technical Support for technical previews.

If you are using the *commercially released version* of PC-DMIS 2016.0 and would like further information or technical support, please feel free to contact hexagonmi.com/contact-us or visit hexagonmi.com/products/software. You can also reach Hexagon Manufacturing Intelligence Technical Support by calling (1) (800) 343-7933.

# Appendix A

## Providing LMS Licensing Information to the Installer from the Command Line

You can send LMS licensing information to the installer by using the command line:

- If the installer is running in silent mode (**/q**) or basic silent mode (**/qb**), and the correct information is provided, everything runs without user interaction. The command switch **/qb** displays the progress bar and handles installer errors, while the **/q** switch hides the user interface.

- If the installer is not running in silent mode, the information provided is used to populate the LMS activation form and skip the [licensing screen](#).

A description of the parameters follows, along with examples:

**USELMSLICENSING="1"** - This flag is useful only if the system already has an LMS license that the user is using. It allows silent mode to work without having to prompt the user for a license choice. If the installer is not running in silent mode, it still allows the install process to skip the license type selection dialog (thus saving some time).

**ENTITLEMENTID="<entitlement id>"** - This parameter and value are useful on a new system where no LMS license was previously installed. It indicates that the user wants LMS licensing and provides an Entitlement ID to try and activate. When this value is specified, there is no need to specify **USELMSLICENSING**.

**LMSLICENSESERVERS="<server1>,<server2>…"** - This parameter is used on systems that speak with a license server. It also allows the license type selection dialog box to be skipped and the installation to be done silently.

**LMSPROXYHOST="<proxyhostaddress>"** - This optional parameter gives the address of a proxy host. In silent mode, it is used directly in activation. In non-silent mode, it populates the activation form with this value.

**LMSPROXYUSERNAME="<username>"** - This parameter is another optional parameter for the proxy user name. It behaves in the same manner as **LMSPROXYHOST**.

**LMSPROXYPASSWORD="<unencrypted password>"** - This parameter is another optional parameter for the proxy password. It behaves in the same manner as **LMSPROXYHOST**.

**LMSFNOURL="<URL to FNO server>"** - This parameter is mostly for internal development. The default URL is to the production server. The new value can be used to override the default value and point to the development server.

On a brand-new system with a node locked Entitlement ID, the following line installs PC-DMIS in silent mode:

> **/qb ENTITLEMENTID="99999-88888-77777-66666-55555"**

On a system that already has a license, the following installs PC-DMIS in silent mode:

> **/qb USELMSLICENSING**

On a brand-new system using license servers, the following installs PC-DMIS in silent mode:

> **/qb LMSLICENSESERVERS="123.12.134.42"**

On a brand-new system with no license, the following skips the license type selection dialog box and populates the activation form:

**ENTITLEMENTID="99999-88888-77777-66666-55555"**
**LMSPROXYHOST="123.123.123.123" LMSPROXYUSERNAME="bob"**
**LMSPROXYPASSWORD="marley"**

# Appendix B

## Understanding File Locations

The default file locations (path locations) for various user-specific settings and other files have changed in PC-DMIS 2016.0 and later. These files are now stored in the following locations, based on each file's role (where <version> is the PC-DMIS version).

### Public Documents

Measurement routine, CAD, probe, and other files:

**C:\Users\Public\Public Documents\Hexagon\PC-DMIS\<version>**

Demo CAD files:

**C:\Users\Public\Public Documents\Hexagon\PC-DMIS\<version>\CAD**

### Public Documents (Reporting Directory)

Report template, label template, rule definition, and color definition files:

**C:\Users\Public\Public Documents\Hexagon\PC-DMIS\<version>\Reporting**

### Public Documents (Fixturing)

Fixturing files:

**C:\Users\Public\Public Documents\Hexagon\PC-DMIS\<version>\FIVEUNIQUE**

### Program Data Files [Hidden]

Calibration files (such as comp.dat and compens.dat), setup files (such as tool.dat, toolc.dat, and usrprobe.dat), and other files:

**C:\ProgramData\Hexagon\PC-DMIS\<version>**

### User Data Files

Files for toolbar and menu layout, lighting and materials, and settings:

**C:\Users\<username>\AppData\Local\Hexagon\PC-DMIS\<version>**

Where <username> is your window's logon user name.

Also see "Understanding the .DAT Files" in the PC-DMIS Core documentation for more specific information on data files.

> **Note:** In addition, you can use the Settings Editor application to back up, restore, or clear user-specific files and settings. Rather than you manually deleting or restoring individual files on your own, we recommend that you use the tools provided in the Settings Editor instead. For more information, refer to the Settings Editor documentation.

## Required User Access Rights

PC-DMIS requires read, write, and create access to the locations defined below in the file system and registry.

## File System

**Windows 10, 8, 7, and Vista**

- **C:\ProgramData\Hexagon\PC-DMIS\2016.0**

- **C:\Users\Public\Documents\Hexagon\PC-DMIS\2016.0**

- **C:\Users\UserName\AppData\Local\Hexagon\PC-DMIS\2016.0**

- Any user-specified folder locations for storing measurement routines, probes, subroutines, and so on

**Windows XP**

- **C:\Documents and Settings\All Users\Application Data\Hexagon\PC-DMIS\2016.0**

- **C:\Documents and Settings\All Users\Documents\Hexagon\PC-DMIS\2016.0**

- **C:\Documents and Settings\User Name\Local Settings\Application Data\Hexagon\PC-DMIS\2016.0**

- Any user-specified folder locations for storing measurement routines, probes, subroutines, and so on

## Registry

All of these versions have their own registry settings, which are stored in a version-specific Key. The items shown below are for version 2016.0.

**x86 OS**

- HKEY_LOCAL_MACHINE\SOFTWARE\Hexagon\PC-DMIS\2016.0 Key and all sub keys

- HKEY_CURRENT_USER\Software\Hexagon\PC-DMIS\2016.0 and all sub keys

- HKEY_USERS\.DEFAULT\Software\Hexagon\PC-DMIS\2016.0 and all sub keys

**x64 OS**

- HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Hexagon\PC-DMIS\2016.0 Key and all sub keys

- HKEY_CURRENT_USER\Software\Hexagon\PC-DMIS\2016.0 and all sub keys

- HKEY_USERS\.DEFAULT\Software\Hexagon\PC-DMIS\2016.0 and all sub keys

## Notes

- The first time you run a new version, PC-DMIS automatically copies the settings from the most recent version of PC-DMIS that is installed. For this to work, PC-DMIS needs to run with administrator privileges the first time you run it. During the installation, if you select the **Launch PC-DMIS after the install finishes.** check box in the setup wizard, it runs PC-DMIS as an administrator and completes this first step.

  This initial migration automatically sets read, write, and create permissions on the registry for the relevant Keys.

- If you are using fixturing or laser sensors, the following registry keys are stored back one level:

    o HKEY_LOCAL_MACHINE\SOFTWARE\Hexagon\FxtServer

    o HKEY_LOCAL_MACHINE\SOFTWARE\Hexagon\PC-DMIS\NCSENSORSETTINGS

    o It may be easier to just apply create/read/write privileges to the HKEY_LOCAL_MACHINE\SOFTWARE\Hexagon\ key and all sub keys to cover these also.

# Appendix C

## First-Time PC-DMIS Installation with Flexible Fixturing

To be compliant with the permission rules for PC-DMIS products, files associated with fixturing are now located in this folder:

**C:\Users\Public\Documents\Hexagon\PC-DMIS\FIVEUNIQUE**

This allows access to the files without needing administrator privileges on the computer running PC-DMIS.

To accomplish this, the following steps are required when you install PC-DMIS for the first time:

1. The first time you install PC-DMIS and FxtServerInterface, run the FxtServerInterface installation program for the first time with administrator privileges (as is required for the PC-DMIS install).

2. When running FxtServerInterface, a message states that the system will migrate all your data files to the "FIVEUNIQUE" Documents folder described above.

   - If you choose "Yes", the files are moved, and the original folder is deleted.

   - If you choose "No", the files are copied, but the original folder is kept.

   Once this is done, the files are moved (or copied), and you are able to run FxtServerInterface.exe without administrator privileges.