

# PCD-Out Users Guide

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## Purpose

The PCD-Out utility is designed to move measurement data from PC-DMIS to a spreadsheet or database with minimal effort. The main output is either an Excel Spreadsheet or a CSV file formatted as a spreadsheet. The output data contains the measurement results of one or more parts where each measurement is in a separate data column.

## Features

The PCD-Out utility has the following features:

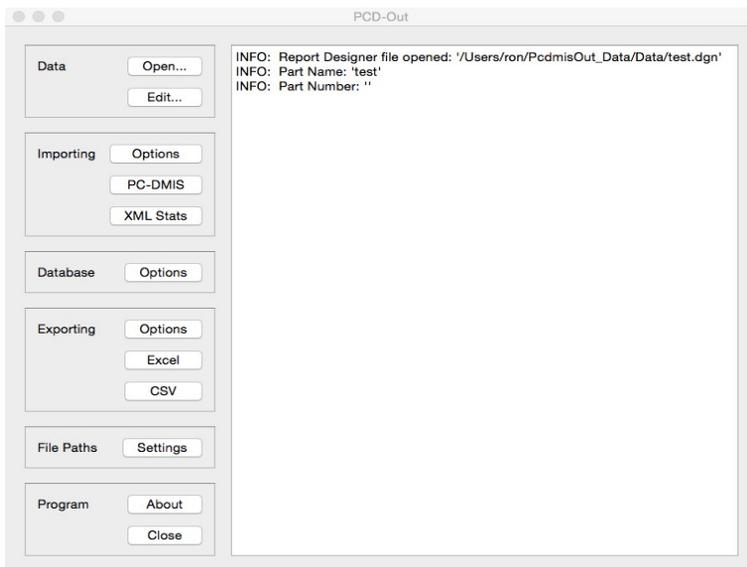
- Automatic generation of Report Designer files.
- Works with PC-DMIS version 3.2 and higher.
- Supports legacy and feature control frame dimensions.
- Output can be sent directly to Excel or a spreadsheet compatible CSV file.
- Imported data can be optionally sent to a database for additional data processing or reporting.
- Single or multiple measurements can be reported in a single spreadsheet.
- All measurement data stored in XML text files.

## Installation

The software is provided in a single compressed ZIP file and is installed by simply extracting it to any desired location.

## PCD-Out Overview

The PCD-Out utility has a single user interface; all features can be access through this main window.



*Illustration 1: PCD-Out main window*

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<i>Section</i>	<i>Option</i>	<i>Description</i>
Data	Open	<p>Open the reference data used to generate a report.</p> <p>The reference data contains all of the nominal information collected from the measurements.</p> <p> The names of the reference data files are automatically generated based on the part name and part revision fields from PC-DMIS.</p>
	Edit	Open the reference data editor. The reference data contains nominal, tolerances, and various other attributes used when creating the report.
Importing	Options	Data that is imported by PCD-Out can be controlled by manipulating the various options in this window.
	PC-DMIS	Import data from the active PC-DMIS part program. If PC-DMIS is not running or PC-DMIS does not have a program loaded no data collection will be performed.
	XML Stats	<p>Import data from any XML statistics files found in the input directory.</p> <p>See data handling section for details.</p>
Database	Options	Optional database setup page. Imported data can be automatically sent to a supported database.
Exporting	Options	<p>The report created by PCD-Out can be controlled by manipulating the various options in this window.</p> <p>See 'Options' section for details of this window.</p>
	Excel	Create a report by sending data directly to Excel.
	CSV	Create a comma separated text file in a format suitable for use by any spreadsheet program.
File Paths	Settings	List of file paths used by the PCD-Out utility.
Program	About	Display information about the PCD-Out utility.
	Close	Close the PCD-Out utility.

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## Nominal Editor

The nominal editor provides convenient access to the data used to generate the report. The final report is based on information contained in the nominal file.

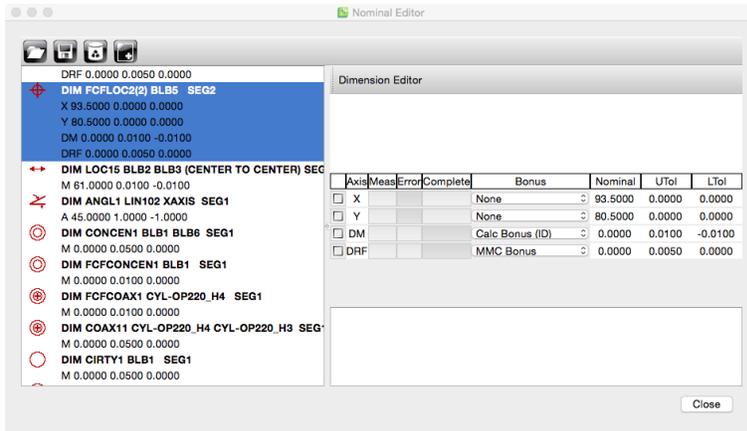


Illustration 2: Editor view of data

Items can be changed by selecting in the dimension list and modifying the available attributes in the Dimension Editor.

Editing items can be done individually or by groups. To set the bonus calculations for a group of features select all of the dimensions in the dimension list then change the options as required. Group editing requires similar features and some options will automatically be disabled when differences are detected.

The order of the dimension items can be changed by drag and drop. One or more dimensions can be moved anywhere in the dimension list. The order of the dimensions in the list is the same order that will appear on the final report.

If an item is removed from the nominal file it will no longer be reported. The measurement data is simply ignored in this case.

Comment items can be added anywhere in the dimension list. The comments can be used to break up blocks of dimensions in both the editor and on the file report.

The bonus tolerance is calculated only using the information available in the dimension item. Bonus tolerance from the datum (if any) usually reflects on the measured value. The amount of bonus tolerance is limited to the tolerance of the reference axis.

## Bonus Tolerance Example

This is assuming that the DM field is set to 'Calc Bonus (ID)' and the DRF field is set to 'MMC Bonus'.

DM: 3.200 +/- 0.05  
DRF: 0.000 +0.05  
Actual: 3.225

Bonus:  $3.225 - (3.200 - 0.05) = 0.075$   
Maximum Possible Bonus: 0.100

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<i>Section</i>	<i>Option</i>	<i>Description</i>
Toolbar Options	Open	Open an existing reference data file. These files have a DGN extension.
	Save	Save the current reference data to a file.   When saving a modified reference file choose a unique file name otherwise the next imported data may replace the modified file. The name of the nominal file is irrelevant.
	Remove	Delete selected report items.
	Add Comment	Add a comment line to the report.
Dimension Editor	Comment Editing	Any text may be added to report items in this section. Only text belonging to the Report Comments will appear on the report (text added to a dimension item will be saved but is not currently reported).
	Axis	List of the axis of the currently selected report item(s).
	Meas Error Complete	Hints used to indicate how to report the axis. 'Meas' would report the measured value only, 'Error' for the deviation from nominal only, and 'Complete' would include an evaluation if the axis is inside or outside of tolerance. Changes to these fields are not currently used by PCD-Out.
	Bonus	This sets the options for the bonus tolerance calculation. In order to use bonus tolerance two conditions must be satisfied:  <ul style="list-style-type: none"> <li>- One axis is selected as the calculation source.</li> <li>- One axis is selected to apply the calculated bonus.</li> </ul> ID and OD refer to inside or outside diameter. This will determine if the bonus is calculated from the upper or lower tolerance limits.
	Nominal Tolerances	Nominal and tolerances for each axis of a nominal item.

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## Importing Options

The importing options window provide some control when data is imported by PCD-Out.

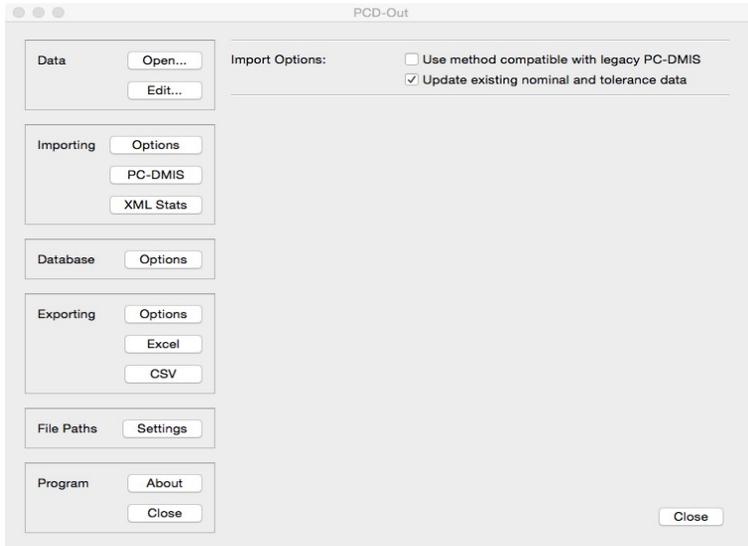


Illustration 3: Importing Options

<i>Option</i>	<i>Description</i>
Use method compatible with legacy PC-DMIS	<p>Two methods were developed to extract measurement data directly from PC-DMIS. If using older versions of PC-DMIS then this option should be checked.</p> <p>To verify if your version of PC-DMIS can use the newer method try to import data and inspect the results. If the measured values are incorrect (zero) then you must use the legacy method.</p> <p>The difference between the two methods is support for dimensions that show a datum feature. For example, a legacy perpendicularity dimension of a cylinder with MMC bonus applied will show two values in the PC-DMIS report; one for the size (bonus) and the other for the perpendicularity. The legacy compatible import method will only return the perpendicularity value.</p>
Update existing nominal and tolerance data.	<p>When new data is imported by PCD-Out a reference file is generated automatically unless there is an existing reference file and this option is unchecked.</p> <p>The reference file contains the nominal, tolerances, comments, and various other information regarding data so only one file is required for any part program.</p>

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## Database Options

The database options page allows the user to optionally configure the PCD-Out utility to send imported data directly to a database. The measurement data is not required by PCD-Out in order to create a report but can be accessed by other database aware software and used if needed.

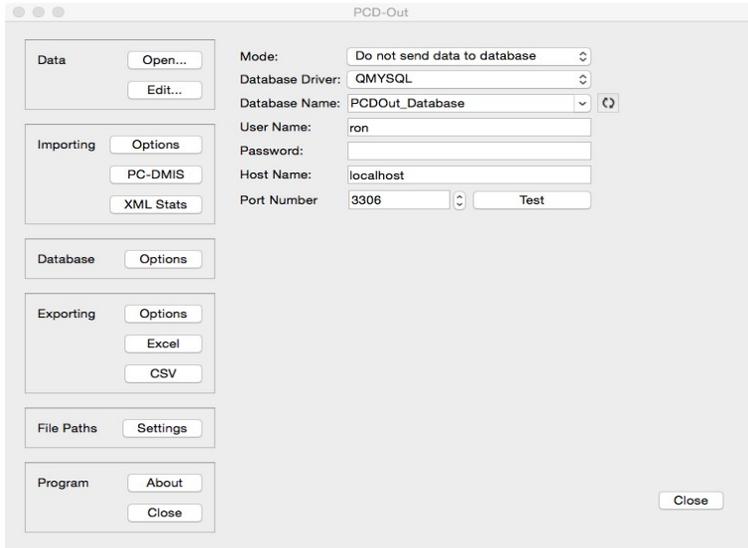


Illustration 4: Database Options

<i>Option</i>	<i>Description</i>
Mode	Option to enable or disable sending imported measurement data to the database.
Database Driver	The database driver. Each type of database will have a specific driver and must be selected accordingly. To use MySQL the QMYSQL driver must be selected for example.
Database Name	The name of the database the measurement data will be written to.
Database Name refresh button	This will update the list of available databases that can be accessed. The user information must be filled out in order to use this feature otherwise the list of databases will not be available.
User Name	The user name to login to the database
Password	The password assigned to the user. This field can be blank if no password is assigned.
Host Name	The IP address or lookup name of the database server. If the database server is on the same computer as this utility this field can be either 'localhost' or '127.0.0.1'
Port Number	The port number that the database server will monitor for connections.

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<i>Option</i>	<i>Description</i>
Test	Run a test to see if access to the database is possible.

It is not necessary to define the database tables as the PCD-Out utility will do this automatically if needed. The data in the database tables can be cross referenced by the 'Transaction' field (date and time of measurement). The format was intentionally kept clean and simple in order to allow easier access by other software.

The following shows an example of the data layout for a database called 'pcdout':

```
mysql> use pcdout
Database changed
```

```
mysql> show tables;
+-----+
| Tables_in_pcdout |
+-----+
| measured_data    |
| part_data        |
| trace_data       |
+-----+
3 rows in set (0.00 sec)
```

```
mysql> describe measured_data;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Transaction | varchar(20) | YES  |     | NULL    |      |
| Part        | text       | YES  |     | NULL    |      |
| Dimension   | text       | YES  |     | NULL    |      |
| Feature     | text       | YES  |     | NULL    |      |
| Axis        | varchar(10) | YES  |     | NULL    |      |
| Nominal     | double     | YES  |     | NULL    |      |
| UpperTol    | double     | YES  |     | NULL    |      |
| LowerTol    | double     | YES  |     | NULL    |      |
| Actual      | double     | YES  |     | NULL    |      |
+-----+-----+-----+-----+-----+-----+
9 rows in set (0.01 sec)
```

```
mysql> describe part_data;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Transaction | varchar(20) | NO   | PRI | NULL    |      |
| Part        | text       | YES  |     | NULL    |      |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.01 sec)
```

```
mysql> describe trace_data;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Transaction | varchar(20) | YES  |     | NULL    |      |
| Part        | text       | YES  |     | NULL    |      |
| Tracefield  | text       | YES  |     | NULL    |      |
| Value       | text       | YES  |     | NULL    |      |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```



The table 'trace\_data' is currently not populated by the PCD-Out utility.

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## Example Database Query

The following shows an example of how measurement data could be extracted from the database.

1) Find the transaction value for the desired part using the part\_data table:

```
mysql> select * from part_data;
+-----+-----+
| Transaction      | Part                               |
+-----+-----+
| 04/25/12 22:14:46 | Sample Program 1                 |
| 04/25/12 22:13:46 | Sample Program 1                 |
| 04/25/12 22:12:46 | Sample Program 1                 |
...
| 07/02/13 09:47:05 | Coil Spacer - Rev 2.mxi          |
| 07/03/13 12:21:45 | Hall Cell Assy.mxi               |
| 07/03/13 14:03:32 | Hall Cell Assy.mxi               |
| 07/03/13 14:09:21 | Hall Cell Assy.mxi               |
| 07/03/13 14:13:58 | Hall Cell Assy.mxi               |
| 07/03/13 14:18:17 | Hall Cell Assy.mxi               |
| 08/15/13 00:10:33 | Test Part Program Data           |
+-----+-----+
29 rows in set (0.00 sec)
```

2) Get all measurement data from the desired transaction for all measured diameters (DIA):

```
mysql> select * from measured_data where Transaction = '07/03/13 14:13:58' and Axis = 'DIA';
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| Transaction      | Part                               | Dimension | Feature   | Axis | Nominal | UpperTol | LowerTol | Actual |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 07/03/13 14:13:58 | Hall Cell Assy.mxi |           | Circle(26) | DIA | 15      | 0.2      | 0        | 15.0627 |
| 07/03/13 14:13:58 | Hall Cell Assy.mxi |           | Circle(42) | DIA | 2.95    | 0.025    | -0.025   | 2.9333 |
| 07/03/13 14:13:58 | Hall Cell Assy.mxi |           | Circle(43) | DIA | 2.95    | 0.025    | -0.025   | 2.938  |
| 07/03/13 14:13:58 | Hall Cell Assy.mxi |           | Circle(44) | DIA | 2.95    | 0.025    | -0.025   | 2.9305 |
| 07/03/13 14:13:58 | Hall Cell Assy.mxi |           | Circle(45) | DIA | 2.95    | 0.025    | -0.025   | 2.9324 |
| 07/03/13 14:13:58 | Hall Cell Assy.mxi |           | Circle(47) | DIA | 1.4     | 0.1      | -0.1     | 1.4725 |
| 07/03/13 14:13:58 | Hall Cell Assy.mxi |           | Circle(48) | DIA | 1.4     | 0.1      | -0.1     | 1.4324 |
| 07/03/13 14:13:58 | Hall Cell Assy.mxi |           | Circle(49) | DIA | 1.4     | 0.1      | -0.1     | 1.4383 |
| 07/03/13 14:13:58 | Hall Cell Assy.mxi |           | Circle(50) | DIA | 1.4713  | 0.1      | -0.1     | 1.4779 |
| 07/03/13 14:13:58 | Hall Cell Assy.mxi |           | Circle(51) | DIA | 1.4     | 0.1      | -0.1     | 1.4775 |
| 07/03/13 14:13:58 | Hall Cell Assy.mxi |           | Circle(53) | DIA | 1.9     | 0.3      | 0        | 1.9359 |
| 07/03/13 14:13:58 | Hall Cell Assy.mxi |           | Circle(55) | DIA | 1.9     | 0.3      | 0        | 1.9361 |
| 07/03/13 14:13:58 | Hall Cell Assy.mxi |           | Circle(57) | DIA | 1.94    | 0.3      | 0        | 1.94   |
| 07/03/13 14:13:58 | Hall Cell Assy.mxi |           | Circle(59) | DIA | 1.94    | 0.3      | 0        | 1.9426 |
| 07/03/13 14:13:58 | Hall Cell Assy.mxi |           | Circle(61) | DIA | 1.94    | 0.3      | 0        | 1.9438 |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
15 rows in set (0.01 sec)
```

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## Exporting Options

The options window provide some control for the output of information from PCD-Out. The format of the report created by PCD-Out is internally defined but various fields can be enabled or disabled as required.

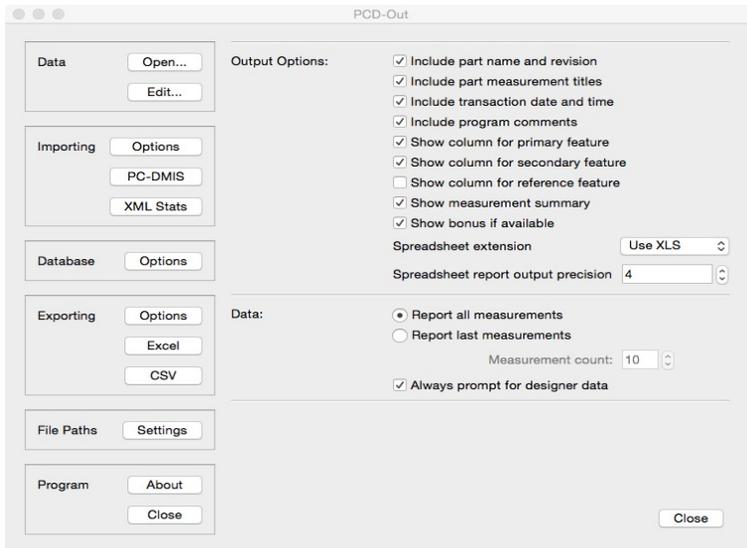


Illustration 5: Output Options

<i>Option</i>	<i>Description</i>
Include Part Name and Revision	If checked the part name and part revision data from the PC-DMIS program will be included at the top of the report.
Include part measurement titles	If checked each set of measurement data will have the title 'Part <n>' at the top of the report where n is the measurement number.
Include transaction date and time	If checked each set of measurement data will have the transaction date and time at the top of the report.
Include program comments	PC-DMIS Part program comments can be included in the report if enabled. This will break up the data but does make the report easier to read.
Show column for primary feature	The primary feature is the first feature selected for a dimension. In most cases there is at least one feature for a given dimension.  If unchecked this column will not be included in the report.

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<i>Option</i>	<i>Description</i>
Show column for secondary feature	<p>The secondary feature is the second feature selected for a dimension (example: a distance dimension).</p> <p>If unchecked this column will not be included in the report.</p>
Show column for reference feature	<p>The reference feature is the reference axis or feature required for this dimension. This is common in distance dimensions (example: distance between feature A and B parallel to the XAXIS).</p> <p>If unchecked this column will not be included in the report.</p>
Show measurement summary	<p>If checked the min, max, range, mean, standard deviation, mean deviation, and two evaluation columns indicating if the data is in or out of specification will be displayed at the end of each measurement row.</p>
Show bonus if available	<p>When checked an additional line labeled 'Bonus' will appear with the measurement data that has the bonus calculation enabled. The bonus value is calculated and applied regardless if the additional row is displayed.</p>
Spreadsheet Extension	<p>When creating a spreadsheet report the final extension can be set to either '.xls' or '.xlsx'. The choice of extension depends on the version of the office software. If set incorrectly the output will still be created but the contents of the file may not match the extension.</p>
Spreadsheet report output precision	<p>When data is sent directly to Excel all values can be formatted to display a specific number of decimal places.</p>
Report all measurements	<p>If checked, all measurement data found for a select part will be sent to the output report.</p> <p> The upper limit is not enforced but be aware that some spreadsheets cannot handle more than 676 columns (669 measurements with all columns active).</p>
Report last measurements	<p>If checked only the last number of measurements will be reported. The upper limit is set to a safe value of 600 parts.</p>
Always prompt for designer data	<p>When checked the user is always prompted to select the part designer data when creating a report. When unchecked the designer data that is currently loaded is used and prompts only appear if nothing is loaded.</p>

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## File Paths

The PCD-Out utility uses four directories for processing and storage of measurement data. On program start-up these directories will default to the directory 'PCDOut\_Data' in your home folder. On first use of any of the import or export functions these directories will be created if they do not exist.

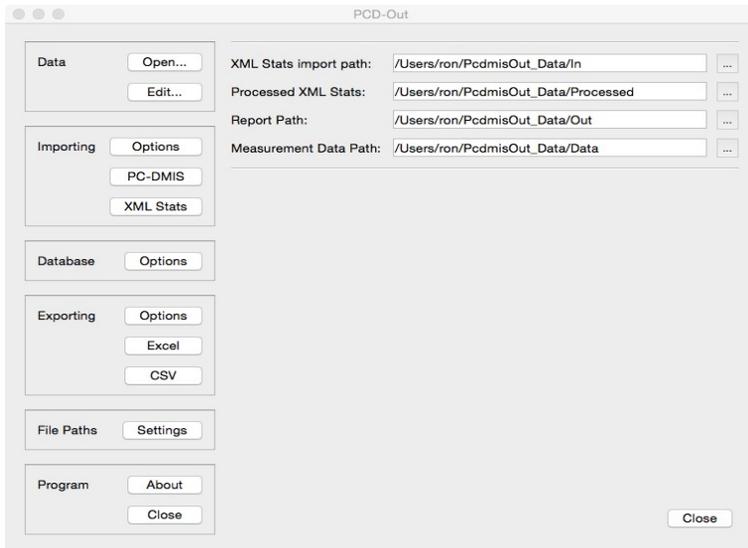


Illustration 6: File path settings

The directories used by the PCD-Out program have specific functions which are described in the following table:

<i>Directory Name</i>	<i>Purpose</i>
XML Stats import path	Directory searched for PC-DMIS XML statistic files. All statistic files should be written to this location from PC-DMIS.
Processed XML Stats	Directory where processed PC-DMIS XML statistic files are stored. Files imported will automatically be moved into this folder.
Report Path	Directory where spreadsheet or csv reports are created by default. The actual output file can be created with any name at any location but PCD-Out will always default initially to this directory.
Measurement Data Path	This directory contains all of the measurements and the report designer reference data. Selecting 'Open' from the PCD-Out utility will show a file selection dialog of data from this directory.

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## Data Collection from PC-DMIS

To collect measurement data from PC-DMIS one of three options must be used:

1. Add the XML Statistic output option somewhere near the top of the part program and direct the output to the folder designated as the 'XML Stats import path'.
2. Add an external command at the end of the part program to automatically trigger PCD-Out to read the measurement data directly from the part program.
3. Open the PCD-Out utility and click the button 'Import – PC-DMIS' at the end of program execution. This method is not desirable for repeated part measurements as this step may be omitted on occasion.

## XML Statistics Example

Adding the XML Statistic option at an appropriate place near the top of the program will automatically generate the required measurement file.

```
.....
A3      =ALIGNMENT/START,RECALL:A2,LIST=YES
        ALIGNMENT/ROTATE_CIRCLE,XPLUS,TO,MAN_B,AND,MAN_C,ABOUT,ZPLUS
        ALIGNMENT/END
        MODE/DCC
        FLY/ON,3
        MOVESPEED/100
        TOUCHSPEED/1
        XMLSTATS/ON,C:\DATA_COLLECTION\PCDOut\IN\
        CLEARP/ZPLUS,20,ZPLUS,0,ON
DAT_A   =FEAT/PLANE,CARTESIAN,TRIANGLE
        THEO/<-0.013,-0.303,0>,<0,0,1>
        ACTL/<-0.013,-0.304,-0.006>,<-0.0010155,-0.0003941,0.9999994>
        MEAS/PLANE,6
        MOVE/CLEARPLANE

        ENDMEAS/
.....
```

After running the PC-DMIS part program one or more times there should be one or more XML files in the input directory of PCD-Out. To process the measurement data click on the option 'Import – XML Statistics'. The data must be processed in order to generate a report from the measurements.

The Import XML statistics option can be triggered at any time by the user if intermediate verification of data is required.



The XMLSTATS/ON command in PC-DMIS must be prior to any desired measurement data so it should be added near the beginning of the part program.



The output file path in PC-DMIS requires a trailing backslash character '\'. If the line is edited ensure the trailing backslash character is included.

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## External Command Example

Adding an external command at the end of the program will allow seamless data collection if the XML statistics output option from PC-DMIS is not available.

```
FCFPROF1 =SURFACE PROFILE : PNT8-43
    FEATCTRLFRAME/SHOWPARAMS=YES, SHOWEXPANDED=YES
    CADGRAPH=OFF, REPORTGRAPH=OFF, TEXT=OFF, MULT=10.00, ARROWDENSITY=100, OUTPUT=BOTH, UNITS=MM
    COMPOSITE=NO,
    CUSTOMIZED DRF=NO
    STANDARDTYPE=ISO_1101
        PRIMARY DIMENSION/PROFILE OF SURFACE, 1, A, B, C
        NOTE/FCFPROF1
    FEATURES/PNT8-43,,
EXTERNALCOMMAND/NO_DISPLAY, WAIT ; C:\DATA COLLECTION\PCDout\PCDOUT.EXE -import_pcdmis
```

The PCD-Out utility can be automatically started to collect measurement data from PC-DMIS by including the command line option '-import\_pcdmis' as shown above. Unless a processing error was detected PCD-Out will close automatically when importing is complete.



The EXTERNALCOMMAND command in PC-DMIS must be added near the end of the of the part program. This command will trigger reading all current measurement data from the program.



The command line option '-import\_pcdmis' is case sensitive.

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## Creating a Report

To create a report of the measurement data the following steps must be performed:

- Open the PCD-Out utility and select 'Open...'.
- Select a reference file for the measurement data.
- Press Export – Excel or CSV to generate a desired report of the data. The output will be formatted as defined by the current program options.

	A	B	C	D	E	F	G	H	I	J	K	L
1	Part Name:	3033280 LH BEZEL with LIGHT										
2	Part Revision Number:											
3												
4	Dimension	Feature 1	Axis	Nominal	Upper Tolerance	Lower Tolerance	Part 1	Part 2	Part 3	Part 4	Part 5	
5							2012.05.22:13:37:07	2012.05.22:13:56:58	2012.05.22:14:50:27	2012.05.22:15:03:01	2012.05.22:15:16:13	
6	Balloon 1 & 2	*****										
8	FCFLOC1	CIR_A1	X	-29.04700	0.00000	0.00000	-29.70767	-29.67146	-29.65907	-29.69909	-29.66951	
9			Y	19.20830	0.00000	0.00000	19.20830	19.20830	19.20830	19.20830	19.20830	
10			Z	-72.19140	0.00000	0.00000	-71.70679	-71.74957	-71.32159	-71.60768	-71.60253	
11			DM	3.20000	0.05000	-0.05000	3.37159	3.36431	3.36984	3.37916	3.36256	
12			DRF	0.00000	0.50000	0.00000	1.63875	1.52998	2.12720	1.75043	1.71387	
13	FCFLOC1	CIR_A2	X	-69.98160	0.00000	0.00000	-70.65950	-70.62471	-70.60487	-70.76584	-70.81052	
14			Y	21.83270	0.00000	0.00000	21.83265	21.83265	21.83265	21.83265	21.83265	
15			Z	6.64050	0.00000	0.00000	7.45675	7.41977	7.36872	7.32223	7.33295	
16			DM	3.20000	0.05000	-0.05000	3.36910	3.36709	3.36844	3.36352	3.36156	
17			DRF	0.00000	0.50000	0.00000	2.12203	2.02069	1.91700	2.07971	2.16012	
18	FCFLOC1	CIR_A3	X	71.63980	0.00000	0.00000	71.45440	71.52454	71.62945	71.37207	71.33631	
19			Y	18.18280	0.00000	0.00000	18.18280	18.18280	18.18280	18.18280	18.18280	
20			Z	61.02380	0.00000	0.00000	61.29255	61.48064	61.42093	61.45175	61.48410	
21			DM	3.20000	0.05000	-0.05000	3.36225	3.36425	3.36463	3.36821	3.36673	
22			DRF	0.00000	0.50000	0.00000	0.65299	0.94232	0.79454	1.00959	1.10269	
23	FCFLOC1	CIR_A4	X	19.55280	0.00000	0.00000	19.72599	19.81571	19.95730	19.68179	19.69896	
24			Y	21.83270	0.00000	0.00000	21.71490	21.64224	21.50657	21.59232	21.55795	
25			Z	58.11610	0.00000	0.00000	58.20349	58.25785	58.02550	58.20752	58.18906	
26			DM	3.20000	0.05000	-0.05000	3.31335	3.30833	3.34090	3.33335	3.33118	
27			DRF	0.00000	0.50000	0.00000	0.38791	0.59731	0.82904	0.31612	0.32665	
28	Balloon 3	*****										
30	DIST1	CLIP_X_PNT1	M	6.94600	0.10000	-0.10000	6.92600	6.89200	6.84200	6.94700	6.94500	
31	DIST2	CLIP_X_PNT3	M	6.94600	0.10000	-0.10000	6.85900	6.79000	6.71200	6.90100	6.97900	
32	DIST3	CLIP_X_PNT5	M	6.89900	0.10000	-0.10000	6.89900	6.91900	6.85200	6.97300	6.97200	
33	DIST4	CLIP_X_PNT7	M	6.94600	0.10000	-0.10000	6.94500	6.93500	6.86900	6.90400	6.95500	
34	Balloon 4	*****										
36	FCFPROF1	NET A1	M	0.00000	0.25000	-0.25000	-0.04310	0.04406	0.18460	0.06153	0.05547	
37	FCFPROF2	NET A2	M	0.00000	0.25000	-0.25000	0.08358	0.06648	0.07809	0.07331	0.08522	
38	FCFPROF3	NET A3	M	0.00000	0.25000	-0.25000	0.11924	0.11665	0.09869	0.08946	0.09985	
39	FCFPROF4	NET A4	M	0.00000	0.25000	-0.25000	0.16989	0.24945	0.36016	0.27292	0.30739	
40	Balloon 5	*****										
42	DIST5	CLIP_TL_ZPNT1	M	3.59100	0.10000	-0.10000	3.42600	3.40000	3.39000	3.50900	3.50600	
43	DIST6	CLIP_TR_Z_PNT1	M	3.59100	0.10000	-0.10000	3.43900	3.44400	3.42100	3.47400	3.46800	
44	Balloon 6	*****										
46	DIST7	REL_PNT7	M	3.61600	0.10000	-0.10000	3.43300	3.42300	3.38400	3.46400	3.48800	
47	DIST8	REL_PNT13	M	3.61500	0.10000	-0.10000	3.47600	3.47400	3.46200	3.47500	3.49000	
48	Balloon 7	*****										

Illustration 7: Output report example showing comments, transactions, and various other options.



The Excel and CSV files are formatted identically where possible.

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## Troubleshooting

Although PCD-Out is written to be as problem free as possible there are a few situations which are known and frequently encountered:

### Error reported creating an Excel report

In order to create a report in Excel a copy of Microsoft office must be installed. The trial version that is included with most new computers is not sufficient.

### Error 'PC-DMIS is not running'

In order to retrieve measurement data from PC-DMIS the software must be running and the target part program loaded. If PC-DMIS is not running then no instance of it will be created by PCD-Out as this is a very slow process (and most likely unintentional).

### Error 'CoCreateInstance: Status 0x800702e4 - The Requested Operation Requires Elevation'

If PC-DMIS is running with administrative privileges then PCD-Out must also run with the same elevated permissions. If the privileges are mismatched then a 'Require Elevation' error is reported.

An example of an insufficient privilege error as reported on Windows Vista:

```
Starting automation...
Checking what is running...
    Found: !{FB50E079-F904-4833-B7C0-309366351F3A}
Testing for PC-DMIS...
Connecting to PC-DMIS
ERR: Cannot create instance of PC-DMIS.
ERR CoCreateInstance: Status 0x800702e4 - The Requested Operation Requires Elevation.
ERR: Cannot import PC-DMIS data.
```

### Error 'CoCreateInstance: Status 0x80080005'

If PC-DMIS is running with user privileges then it may not be accessible by other users depending on policy. This error will take up to 120 seconds to be returned to the program.

An example of a server error as reported on Windows 7 x64:

```
Starting automation...
ERR CoCreateInstance: Status 0x80080005
```

### Event Log:

```
Unable to start a DCOM Server: {ECA6CD05-7A02-480D-9B75-E6C5680B215D}. The error:
"740"
Happened while starting this command:
C:\Program Files (x86)\WAI\PC-DMIS 2012 MR1\PCDLRN.exe -Embedding
```

There are two solutions to this:

- 1) Run both PC-DMIS and PCD-Out with administrator privileges.
- 2) Change the DCOM permissions of the PC-DMIS Automation Server to allow users to access the software.

- 2.1) Startup the 32bit windows component services with the command 'MMC COMEXP.MSC /32'

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2.2) Change the launch permissions to allow 'users' to start the application.

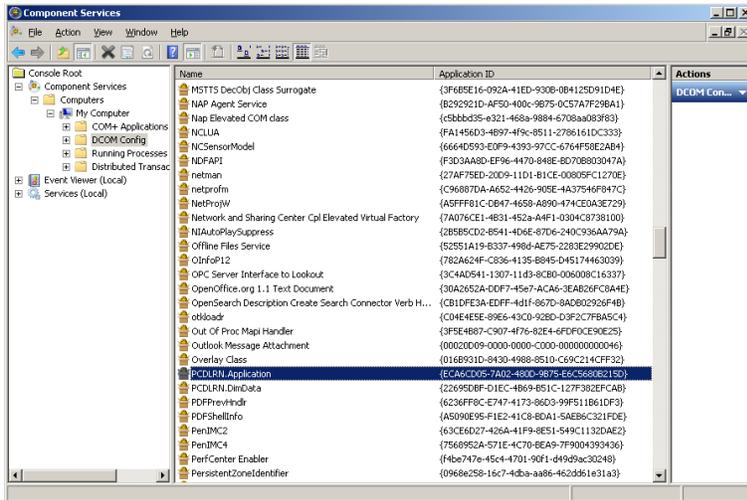


Illustration 8: Windows 32 bit component services with PCDLRN.APPLICATION highlighted

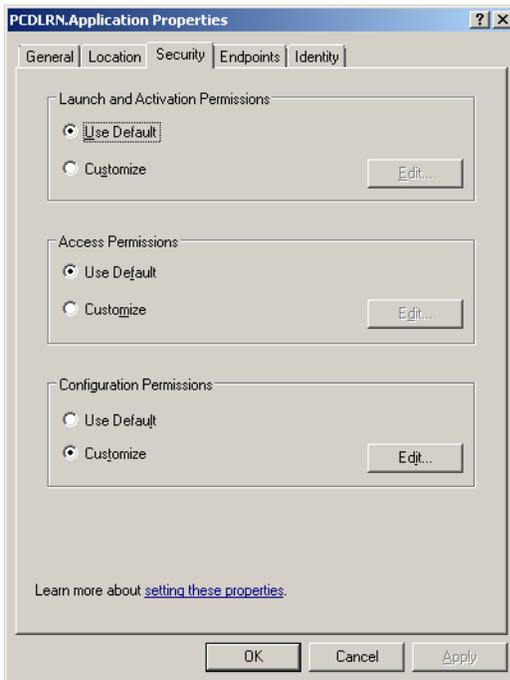


Illustration 9: Properties for PCDLRN.APPLICATION. 'Use Default' refers to MyComputer defaults.

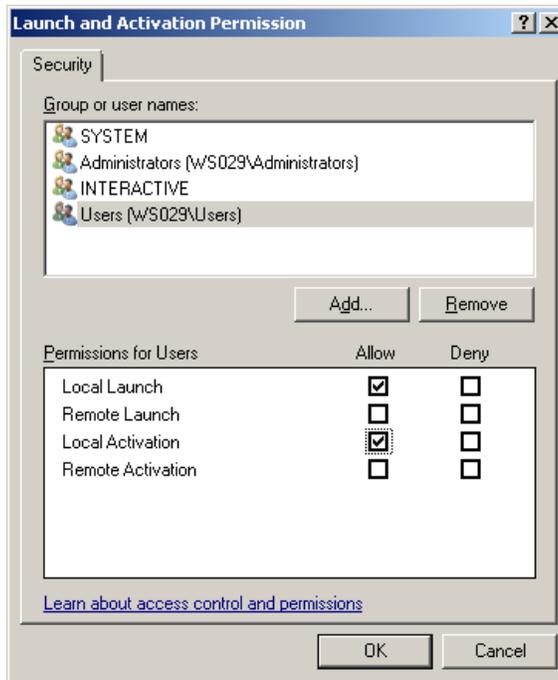


Illustration 10: Changed security to allow local users to startup PCDLRN.APPLICATION. Option available after selecting 'Customize' launch.



It is more secure to change the launch permissions for a specific application than to change the default settings for all applications.

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## Reported Data Shows Improper Rounding of Values

Depending on the method used to retrieve measurement data the values returned to PCD-Out could have the same precision as those displayed in the PC-DMIS part program.

DIST1	CLIP_X_PNT1	M	6.94600	0.10000	-0.10000	6.92600	6.89200
DIST2	CLIP_X_PNT3	M	6.94600	0.10000	-0.10000	6.85900	6.79000
DIST3	CLIP_X_PNT5	M	6.89900	0.10000	-0.10000	6.89900	6.91900
DIST4	CLIP_X_PNT7	M	6.94600	0.10000	-0.10000	6.94500	6.93500

*Illustration 11: Results of data rounding from PC-DMIS*

In the example shown from illustration 11 the measured values are rounded to three decimal places despite the spreadsheet configured to show five.

To prevent premature rounding of values set the display precision in PC-DMIS to a large value such as four or five decimal places. This command should be added to the top of the part program (example: DISPLAYPRECISION/5).

## Removal of Measurement Data

Delete (or move is more safer) any files from the PCD-Out 'Data' directory that are no longer required. The measurement files have a '.MEAS' extension and the nominal files use '.DGN'. The names of all measurement files are decorated using the part name, part revision number, and the measurement date and time.