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I. Introduction

Welcome to the mDATA[®] User Guide. This manual will provide you basic instructions on how to implement and use the mDATA[®] software. The mDATA[®] software program is utilized to review and modify Laser Micrometer measurements (OD) / Lot History Records (LHR) generated by the measureOD[®] program

- If you are a measureOD[®] Data Storage Subscriber then the LHR records may be accessed from any computer attached to the Internet with the mDATA[®] software.
 - NOTE: measureOD[®] Data Storage Subscribers pay an annual fee for this service. In this model, the laser micrometer measured data is stored on our MySQL server.
- If you are NOT a measureOD[®] Data Storage Subscriber then the mDATA[®] software must be run on the computer where the data is measured OR the files generated by the measureOD[®] program may be copied and moved to the computer running the mDATA[®] program.
 - NOTE: mDATA[®] expects the data to be stored in the Documents folder on your computer.
- If you have multiple manufacturing lines running the measureOD[®] software each LHR is assigned a unique tracking number.

II. Reference Documents

- MeasureOD[®] End User License Agreement (EULA), Roth Technologies, LLC
- mSPECIFY® User Guide, Roth Technologies, LLC
- measureOD® User Guide, Roth Technologies, LLC
- measureOD® Install Guide, Roth Technologies, LLC

III. Necessary Components

The following components are necessary in order to run the mDATA® software:

1. The software must be installed on your computer via the Installation CD that was provided with your order. The latest released software may also be downloaded from our website at www.measureod.com.

2. The MySQL ODBC driver must be loaded on your test computer. This only needs to be done one time for each computer.

3. Your computer that is used to run the software MUST be connected to the Internet and Port 3306 must be open on your Test Computer and Network. There is an interchange of material data between the computer and the MySQL Server. If the interchange of data is slow and/or interrupted, the program may not run correctly or timeout.

4. Data must have been generated by the measureOD® system.

IV. Running the Program

Execute the mDATA[®] program by double clicking program icon. This ICON is provided on the desktop as part of the software installation. It is also available under the PROGRAM manager.

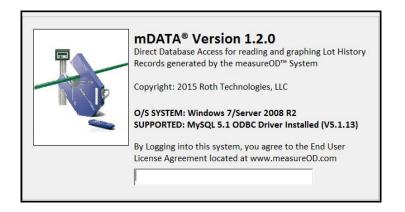


V. Using the mDATA® Software

In a production environment, the following steps may be taken for reviewing data generated by the MeasureOD[®] system with the mDATA[®] software utility program.

Step 1: Log into the system. Your company has been provided a twelve character length password for logging into the MeasureOD[®] system. You may submit a request to <u>sales@measureod.com</u> to change your password character string. This character string identifies your company within the MeasureOD[®] system.

If you happen to lose control of your passcode, contract sales@measureod.com and we will change your login passcode.



After logging into the system, the Main Menu will appear on the screen as shown. The software at this point is waiting for a product to be selected from the Lot History Records drop down menu. Select the LHR that you wish for the software to load.

NOTE: If the LHR consists of a large number of data points, it may take the software some time to load the data into memory. Please be patient.

2 mDATA® V1.2.0	
STATUS BAR WAITING: Plassa select a PRODUCT from the Drop Down Box	LOT HISTORY RECORDS
WAITING: Please select a PRODUCT from the Drop Down Box	PRODUCT NUMBER \$1000208 \$1000210 \$1000210 CONFIGURATION \$1000211 \$1000211 \$1000212 Upper Spec Limit \$1000214 \$1000230 * Nominal Minimum Upper Graphical CPK Start Number of Samples End STATE
0 0.2 0.4 0.6 0.A 1	XY Axis Averaging (E DIT C DN
CLIP RIGHT CLIP LEFT OUTLIERS PRINT EXIT	Braid Mode (ดิบหา Cบท

Upon loading a LHR, the software command buttons become functional as shown. We will now describe the command function keys available that can be applied to a LHR.

TATUS BAR				ORY RECORDS	
VAITING: Select a (Command Button AND/OR a different Lot History Record		S100024	5	
0.0251	measureOD™ Global Graph	MANUAL	DESCRIPT	10N	
- X Ax		CONFIGURATION		STATISTICS	
0.02478	tis	Upper Spec Limit	0.024600	Mean	0.02430
		Lower Spec Limit	0.024000	Standard	0.0008
턴 0.02446		Nominal	0.024300	Minimum	0.02415
(sa 0.02446 		Upper Graphical	0.025100	Maximum	0.02445
ă :		Lower Graphical	0.023500	СРК	1.15
0.02382-		Start 11/21/2	2015 3:10:26 PM	Number of Samples	677,86
0.0235		End 11/29/20	015 11:21:58 PM	STATE	
0	67800 135600 203400 271200 33900 Time (seconds)		C 1.33 C 2.0	Estimated Footage	
		XY Axis Averaging	C OFF C ON		
CLIP RIGHT C	CLIP LEFT OUTLIERS PRINT EXIT	Braid Mode	GOTE CON		

CLIP RIGHT: This allows the User to delete all the data points to the RIGHT of an indicated position.

A summary of this procedure is provided for this command button. A confirmation screen is provided to make sure this is what the User intends. Click YES to proceed and NO to cancel.

20 mDATA® V12.0	
STATUS BAR LOT HISTOR CLIP RIGHT OPERATION: Confirm Click Right Operation S1000210	T RECORDS
measureOD™ Global Graph PRODUCT NUMBER DESCRIPTION 0.0251 MANUAL CONFIGURATION CONFIGURATION	DN STATISTICS
0.02478 V-Axis Upper Spec Limit O 0.2460 CLIP RIGHT OPERATION CONFIRMATION	Mean 0.024299
	Standard 0.000086 Minimum 0.024150
Yes No 0	Maximum 0.024450 CPK 1.155
0.0235 End 11/12/2015 11:54:18 PM	Number of Samples 13,026 STATE
0 1320 2640 3960 5280 6600 Time (seconds) CPK @ 1.0 C 1.33 C 2.0 XY Axis Averaging @ DFF C ON	Estimated Footage 154
CUP RIGHT CUP LEFT OUTLIERS PRINT EXIT Braid Mode @ OFF C ON	

CLIP RIGHT: INDICATE THE CLIP RIGHT POINT ON THE GRAPH

The STATUS BAR shows that the software is waiting for this INPUT from the USER. Find and indicate the CLIP RIGHT point on the GLOBAL GRAPH with your mouse cursor and click the right mouse button.

1 mDATA® V1.2.0	*
STATUS BAR WAITING: Click on the globalGRAPH to designate CLIP RIGHT point	LOT HISTORY RECORDS S1000210 -
measureOD™ Global Graph	PRODUCT NUMBER DESCRIPTION
X-Axis	CONFIGURATION STATISTICS
0.02478 Y Axis	Upper Spec Limit 0.024600 Mean 0.024299
	Lower Spec Limit 0.024000 Standard 0.000086
	Nominal 0.024300 Minimum 0.024150
	Upper Graphical 0.025100 Maximum 0.024450
	Lower Graphical 0.023500 CPK 1.155
0.02382-	Start 11/12/2015 10:04:20 PM Number of Samples 13,026
0.0235	End 11/12/2015 11:54:18 PM STATE
0 1320 2640 3960 5280 6600 Time (seconds)	CPK @ 1.0 C 1.33 C 2.0 Estimated Footage 154
	XY Axis Averaging @ OFF C ON
CLIP RIGHT CLIP LEFT OUTLIERS PRINT EXIT	Braid Mode @ OFF C DN

CLIP RIGHT: CONFIRM THE CLICK RIGHT ENTRY

The software will draw a YELLOW LINE at your indicated CLIP RIGHT entry point. Select YES to continue, NO to reenter the CLIP RIGHT point, and CANCEL to quit this function.

mDAIA® V120 STATUS BAR MAITING: Click on the globalGRAPH to designate CLIP RIGHT point	LOT HISTORY RECORDS S1000210
	RODUCT NUMBER DESCRIPTION
0.02478- CONFIRM CLIP RIGHT POINT ENTRY	ONFIGURATION STATISTICS
0.02446 Click YES to confirm CLIP RIG	ADD0 Standard 0.000086 HT POINT of [4,981] seconds 4300 Minimum 0.024150
0.02446 Click YES to confirm CLIP RIG 0.02446 Click YES to confirm CLIP RIG 0.02414 All DATA to the RIGHT of th	e CLIP POINT will be deleted 5100 Maximum 0.024450
0.02382-	No Cancel PM Number of Samples 13,026
0.0235 0 1320 2640 3950 5200 6600	Ind 11/12/2015 11:54:13 PM STATE PK @ 1.0 C 1.83 C 2.0 Estimated Footage 154
X	Y Axis Averaging ดิบษ Cบท
CLIP RIGHT CLIP LEFT OUTLIERS PRINT EXIT B	rald Mode @ DFF C DN

CLIP RIGHT: OPERATION COMPLETED

Upon confirmation, the software will (a) delete the data and (b) compute the statistics for the abridged data set. This data manipulation is NOT SAVED permanently but allows the User to obtain an updated print out of the dataset via the PRINT function.

mDATA® V120				
STATUS BAR SUCCESS: Clip Operation was completed and Statistics were updated		S1000210	RY RECORDS	
measureOD™ Global Graph	PRODUCT NUMBER MANUAL	DESCRIPTI	ON	
0.0251 X. Aviis	CONFIGURATION		STATISTICS	
0.02478- -	Upper Spec Limit	0.024600	Mean	0.024299
	Lower Spec Limit	0.024000	Standard	0.000086
	Nominal	0.024300	Minimum	0.024150
19 10.02414- 19 10	Upper Graphical	0.025100	Maximum	0.024450
0.02382-	Lower Graphical	0.023500	СРК	1.154
	Start 11/12/2015 10		Number of Samples	9,962
0.0235	End 11/12/2015 11	:54:18 PM	STATE	
Time (seconds)	CPK © 10 C	1.33 C 2.0	Estimated Footage	830
	XY Axis Averaging	FF C ON		
CLIP RIGHT CLIP LEFT OUTLIERS PRINT EXIT	Braid Mode 💿 🛛	FF C ON		

CLIP LEFT: This allows the User to delete all the data points to the LEFT of an indicated position. This process is similar to the CLIP RIGHT process and is not detailed in this document.

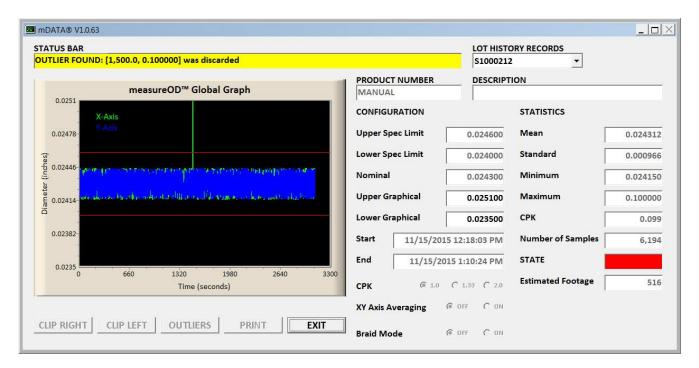
Upon completion of the CLIP LEFT process, the software will (a) delete the data and (b) compute the statistics for the abridged data set. This data manipulation is NOT SAVED permanently but allows the User to obtain an updated print out of the dataset via the PRINT function.

OUTLIERS: This function removes statistical outliers from your data set. A statistical outlier is defined as being more than six (6) standard deviations from the mean value.

This screenshot shows a LHR record with a potential outlier at the midway point of the data set. Select the OUTLIERS command button to remove it.

ATUS BAR		LOT HIST	DRY RECORDS	
AITING: Select a Command Button AND/OR a different LHR		S1000212		
measureOD™ Global Graph	PRODUCT NUMBER MANUAL	DESCRIPT	ION	
0.0251 X-Axis	CONFIGURATION		STATISTICS	
0.02478- Y-Axis	Upper Spec Limit	0.024600	Mean	0.02431
	Lower Spec Limit	0.024000	Standard	0.00096
	Nominal	0.024300	Minimum	0.0241
0.02446 รายการของสุขาว การระบบการของสุขาว การระบบการของสุขาว การของสุขาว การของสุขาวการของสุขาวการของสุขาวการข 0.02414 - การของสุขาวของสุขาวของสุขาวของสุขาวให้เขาการของสุขาวการของสุขาวของสุขาวของสุขาวการของสุขาวการของสุขาว	Upper Graphical	0.025100	Maximum	0.1000
	Lower Graphical	0.023500	СРК	0.0
0.02382-	Start 11/15/2015	12:18:03 PM	Number of Samples	6,1
0.0235	End 11/15/201	5 1:10:24 PM	STATE	
0 660 1320 1980 2640 3300 Time (seconds)	CPK (@ 1.0 (1.33 C 2.0	Estimated Footage	51
	XY Axis Averaging	OFF C ON		

Upon selecting the OUTLIERS function, the software reviews the data and displays potential data outliers that it has found. In this case, the mDATA® software has found the outlier and displayed the time stamp and measured diameter of the outlier.



The outlier data is removed from the LHR and the statistics for the data set is recomputed. In this example, the manufactured lot has gone from a FAILED state to a PASSED state. This data manipulation is NOT SAVED permanently but allows the User to obtain an updated print out of the dataset via the PRINT function.

mDATA® V1.0.63		
STATUS BAR WAITING: Select a Command Button AND/OR a different LHR		T HISTORY RECORDS
measureOD™ Global Graph	PRODUCT NUMBER DE	SCRIPTION
0.0251 X-Axis	CONFIGURATION	STATISTICS
0.02478-	Upper Spec Limit 0.02	4600 Mean 0.024300
e e	Lower Spec Limit 0.02	24000 Standard 0.000086
	Nominal 0.02	4300 Minimum 0.024150
	Upper Graphical 0.02	5100 Maximum 0.024450
	Lower Graphical 0.02	23500 CPK 1.160
0.02382-	Start 11/15/2015 12:18:0	3 PM Number of Samples 6,192
0.0235	End 11/15/2015 1:10:24	4 PM STATE
0 660 1320 1980 2640 3300 Time (seconds)	CPK @ 1.0 C 1.33	C 2.0 Estimated Footage 516
	XY Axis Averaging	C ON
CLIP RIGHT CLIP LEFT OUTLIERS PRINT EXIT	Braid Mode @ OFF	C on

The User will probably wonder when this function might be useful. The OUTLIER function may be able to remove measurement "noise" caused by the following events.

- Lumps or obvious defects in the product that will be removed via visual or automated inspection
- Measurements errors -- such as in the case where the product line is bumped or moved out of the laser micrometer measurement window
- Debris on the product line that can be removed

PRINT: With this function, the data set is exported to MicroSoft Excel. This software must be loaded on the computer and is NOT provided with our product.

If the data set is large, please be patient as it takes a long time to export data from the program to Microsoft Excel (depending on the speed of your computer).

× I	Microsoft Exc	el - Book1												
	<u>File</u> <u>E</u> dit	View Insert	Format Tools	Data Window	Help									
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-	A1		fx Time (sec)		G	9 -	LT AT							
	A	в	C	D	E	F	G	Н		J	К	L	М	N
1	Time (sec)	Footage (feet)		Y-Axis Dia (inch)		-								
2	1.0	0.17	0.02442	0.02422				measureO		Tranhies	Docult	2		
3	2.0	0.33	0.02430	0.02441				measured	D 7-1 (Stapinea	arresun	.5		
4	3.0	0.50	0.02429	0.02445			0.02510 -							
5	4.0	0.67	0.02422	0.02441										
6	5.0	0.83	0.02418	0.02426		_	0.02490							_
7	6.0	1.00	0.02428	0.02433										
8	7.0	1.17	0.02443	0.02442		_	0.02470							
9	8.0	1.33	0.02442	0.02420		Diameter (inches)	0.02450							
10	9.0	1.50		0.02435			100	al a second and the second	NA MILANOPH	Mater Mond	(CONSIGNERY	wallestler bu	M-MAXMAN -	
11	10.0	1.67	0.02418	0.02424		\	0.02430 -							_
12	11.0	1.83	0.02431	0.02434		nete	1. LL	and the second second	abilities and the state	Jan hi	hash talk		A strate	
13	12.0	2.00	0.02436	0.02424		Dian	0.02410							_
14	13.0	2.17	0.02424	0.02427			0.02390							
15	14.0	2.33	0.02426	0.02434		_	0.02000							
16	15.0	2.50		0.02427		_	0.02370							_
17	16.0	2.67	0.02429	0.02424		_								
18	17.0	2.83	0.02438	0.02443		_	0.02350	100.0 200.0	300.0 400	.0 500.	0 600.0	700.0	800.0	900.0
19	18.0	3.00		0.02419		-	0.0	100.0 200.0		tage (fee		700.0	800.0	900.0
20	19.0	3.17	0.02423	0.02441		_			FUU	laye (ree	IJ			
21	20.0	3.33 3.50	0.02435	0.02425			-	-	1		-	-		_
22	21.0 22.0	3.50	0.02427	0.02425	6	UMMAR	v		-		-			
23 24	22.0	3.83	0.02444	0.02434		roduct N		Manual Configura	tion		-		-	
25	23.0	4.00	0.02424	0.02437		escriptio		Wandar Comigura	lion					
25	24.0	4.00	0.02433	0.02418		easure		S1000210		1	1	1		_
26	25.0	4.17	0.02433	0.02443		tart Date		11/12/2015 22:04	-		-			
28	20.0	4.50	0.02413	0.02435		nd Date/		11/12/2015 22:04			-		-	
29	28.0	4.50	0.02422	0.02425		linimum		0.02400	inches					
30	29.0	4.83	0.02431	0.02425		laximum		0.02460	inches					
31	30.0	5.00	0.02432	0.02435		lean		0.02430	inches					
32	31.0	5.17	0.02431	0.02438			Deviation	0.00009	inches					
33	32.0	5.33	0.02428	0.02427		linimum		0.02415	inches					
34	33.0	5.50		0.02441		laximum		0.02445	inches					
35	34.0	5.67	0.02420	0.02417		umber o		9962						
36	35.0	5.83	0.02422	0.02429		РК		1.154						
37	36.0	6.00	0.02420	0.02438		esults		PASSED						
38	37.0	6.17	0.02418	0.02425				10007276						
39	38.0	6.33	0.02436	0.02419										
40	39.0	6.50		0.02434										

EXIT: Upon confirmation, the program is exited. The software will ask for a confirmation from the User.

VI. Reporting Errors

Please report errors via email to sales@cathcad.com. Please provide as much information as possible with regards to the setup of the program when the error occurred.