L2 Plus Series Software for Advanced Force Measurement

Data Management



Starrett

The Better Solution





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6.0 **Data Management**

Data management is the collecting and saving of data from your test runs and the reporting of result using printouts.

L2 Plus Series software is designed to allow data to be managed easily. Files of raw data from a test run or files of your results are saved in a .csv format. This makes it easy to convert into Microsoft® Excel®, Word® or Access® for advanced data management and reporting, and the ability to interface your data and result into 3rd-party statistical process control applications.

L2 Plus Series systems can save up to 100,000 rows of data for a test run.

The maximum test run duration is 48 hours. This would include a cyclic test or a creep test. Therefore, the typical sampling rate for a 48 hour test is 5Hz.

61 Post Test Setup

The Post Test stage has functions that may be used to manage your results and data:

- Export Raw .
- Export Results .
- Print Results
- **Runs** Limit •

The Pre Test stage also effects how data is collected. The Sampling Rate (Hz) is used to specify the frequency that data is collected during a test run. The Sampling Rate (Hz) may be set from 0.001 to 2000 Hz.



samples per second.



Post Test Stage

6.1.1 Export Raw Data

The Export Raw option lets you specify how your raw data for a test run is saved. You have the following options:

- No •
- Overwrite
- Auto Number •

When Export Raw = No, data is not exported to the Exports subdirectory. No .csv file of your raw data for a test run is saved.

When Export Raw = Overwrite, a .csv file is created for each test run. The .csv file has a row based on the Sampling Rate that was setup in Pre Test for this test setup. "Overwrite" means that the current .csv file for this test is over-written with new data at the completion of each test run, e.g. there is only one (1) .csv file for this test.

The .csv file is named [Test Name]_RawData and is saved to the Metlogix/Exports directory.



NOTE

When Overwrite is selected, there is always only one (1) .csv file for the test setup. At the completion of a test run, the data from the previous run is replaced by the new data.



Metlogix/Exports Directory Default location for exported raw data When Export Raw = Auto Number, a new .csv file is created at the completion of each test run. If there were ten (10) test runs, there would be ten (10) .csv files, e.g. one .csv file for each test run.

The .csv naming convention is [Test Name]_RawData[Run Number].



When Auto Number is selected, a .csv file is created for each test run within the batch.

My Lo	ad Test		
	Pre Test	〔1	r J
۲	Pull Diir S =	n = 10.000 mm = 100.000 mm/min 2	r ,
	Data	ູ 3	1
	Return Home Export Raw Export Results Print Results Runs Limit	No a No a No a 100	
	Return Home Export Raw Export Results Print Results Runs Limit	No Overwrite No No 100	
	Return Home Export Raw Export Results Print Results Runs Limit	No Auto number No No	

Export Raw options

6.1.2 Export Results

The Export Results option is used when you want to create a .csv file of only the results (coefficients) measured and reported in each test run. When using Export Results, you have the following options:

- No
- Overwrite
- Auto Number
- Append

When Export Results = No, results are not exported to the Exports subdirectory. No .csv file of your results for a test run is saved.

When Export Results = Overwrite, a .csv file is created for each test run. The .csv file has a row containing the results. "Overwrite" means that the current .csv file for this test is over-written with new results at the completion of each test run, e.g. there is only one (1) .csv file for this test.

The .csv file is named [Test Name]_Results and is saved to the Metlogix/Exports directory.



NOTE

When Overwrite is selected, there is always only one (1) .csv file for the test setup. At the completion of a test run, the data from the previous run is replaced by the new data.

When Export Results = Auto Number, a new .csv file is created at the completion of each test run. If there were ten (10) test runs, there would be ten (10) .csv files, e.g. one .csv file for each test run.

The .csv naming convention is [Test Name]_Results[Run Number].



NOTE

When Auto Number is selected, a .csv file is created for each test run within the batch.

When Export Results = Append, a .csv file is created at the completion of the first test run with the results displayed on a single row. If there were ten (10) test runs, there would be ten (10) rows, e.g. one .csv file with a row added at the completion of each test run.

The .csv naming convention is [Test Name]_Results.



When Append is selected, a .csv file is created for the test with a unique row for each test run within the batch.



When APPEND is selected, there is a single .csv file for the test setup. Each test run reports its results to this .csv file. Results occupy a row on the file for each test run.

Selecting APPEND will add a new row with the results from the just complete test run. All previous test runs have their result on a row within the file.

6.2 File Locations

The Metlogix directory is the primary and default location for all files associated with your L2 Plus system.

The Metlogix directory is created when you launch your L2 Plus for the first time.

6.2.1 Metlogix Directory

The Metlogix directory is the root for your L2 Plus System. There are two sub-directories associated with data and results:

- Runs
- Exports

6.2.2 Runs Directory

The Runs Directory stores individual files for each test run. These Run files, when supplied with the Test file, may be analyzed by another user on another L2 Plus System. The other user must copy the Test file into their Tests directory and then copy all of the Run files into their Runs directory. When they open the test, each of the test runs will be listed in the Runs List.

Run files are saved as [Test Name]_[Run Number].mlxrundata.

Using Settings-File Locations, you have the ability to map your Runs files to another location other than the Exports directory. For example, you can map your Run files to a network server or to a secondary hard disk device connected via USB to your L2 Plus workstation, or to another directory accessible by another L2 Plus System.



Runs Directory Stored individual test run files

6.2.3 Archive Directory

The Archive directory is an "overflow" location for your test runs. When a test has exceeded its specified Runs Limit (Post Test option), the oldest run within the Runs List is automatically saved to the Archive directory.

Using the Import Run function, you may import a test run from the Archive directory and compare that run with the run(s) within your current and active test setup. This can be useful for benchmarking a historical run from the Archive directory to a current run.



NOTE

You may import any run from the Archive directory, even a run from a different test.



NOTE

Use the Multi-Run function when comparing an imported run with a current run.



NOTE

An imported archived run is displayed with a prefix "T".





Archive Directory Stores individual test run files once Runs Limit is exceeded within a test



Full Graph view Shows one (1) imported run for comparison to active runs



Active and Imported Run from Archive Directory Measure using Multi-run Tool

6.2.3 Exports Directory

The Exports directory is where all exported .csv files are saved to by default. Raw data files and result files are saved to the Exports directory either automatically at the completion of a test run, or ondemand when the operator selects the Share function.

Using Settings-File Locations, you have the ability to map your .csv files to another location other than the Exports directory. For example, you can map your .csv files to a network server or to a secondary hard disk device connected via USB to your L2 Plus workstation.



NOTE

Exported .csv files are saved to the default Exports directory. You may change where your exported files are saved using the File Locations Setting.

6.3 Exporting Data and Results

Data and results may be exported automatically or on-demand using the Share function.



File Locations Setting Map files to other directories besides the Metlogix directory



Share Function Exports files on-demand

6.3.1 Automatic Export

Data and Result files may be exported automatically by configuring the Post Test options for your test setup. When Export Raw or Export Results are set to any option other than No, export files are exported automatically to the designated file location.



6.3.2 On-Demand Export (Share)

The Share function appears on the footer of the views used to display your graphs or data tables. Selecting the Share function will display an option menu. The menu options will change based on the view you are looking at. If you are looking at a full graph view, the options on the menu are:

- Export Image
- Export Raw Data



If you are viewing one of the data view displays, the options are:

- Export Results
- Export to Clipboard
- Export Image
- Export Raw Data



Share Function Exports files on-demand

6.3.2.1 Export Results

Selecting the Share + .csv target will export the results from the currently displayed data table, e.g. for a single test run. The export is identical to exporting as a "Overwrite Export" had you used the Post Test Export Results option.

6.3.2.2 Export to Clipboard

The Export to Clipboard function is similar to a traditional "cut & paste"routine. When the clipboard symbol is selected, the highlited rows from the data table is copied to the clipboard where it can be pasted into a Microsoft Word or Excel document.

The Export to Clipboard is available on views with a data table only. The clipboard cannot be used to copy and paste an image, e.g. graph trace.



The Export to Clipboard function is available with views having a data table. It exports the table data only.

6.3.2.3 Export Image

The Export Image function is used when you want to create and copy an image of your graph from a test run. The image is saved as a .bmp and is used as a clipboard image. The image can be pasted into Microsoft Word or Excel.

6.3.2.4 Export Raw Data

Selecting the Share + Raw Data target will export the raw data points from the currently displayed data table or from the graph, e.g. for a single test run. The export is identical to exporting as a "Overwrite Export" had you used the Post Test Export Raw option.



Share Function Copy message displays when data is copied to clipboard

6.4 Printouts

Reports may be printed out from the display view. Reports are associated with the current view being displayed.

Prints this report type
Graph Report
Run Report (Graph and Run Data)
Statistics Report
Batch Report
Statistics Report
Tolerance Report

Printout Formats

Print reports by selecting the Printer symbol from the main menu.

Report layouts print landscape. You may change to a portrait layout by selecting the Page Format symbol from the L2 Plus main menu.



Main System Menu Execute a printout or change the page layout settings

6.4.1 Standard Reports

Your L2 Plus system provides a set of common report formats. These are described in the following sections.

User may also use the .csv files to create more complex reports using Microsoft Word, Excel and Access.

6.4.1.1 Graph Report

The Graph report prints from the full graph view. The Graph report prints the full graph with the result markers - WYSIWYG (What You See Is What You Get).

You may print the Graph report with multiple graph traces using the Multi-run function, however, the only markers that are displayed are for the "active" test run. The "active" test run always displays with a black trace line.

Graphs may print with grid lines or without.

Graphs may include selected coefficients when you add a coefficient into any of the Custom Text entry boxes in Printout Settings. Coefficients can be printed in the header boxes or in the single footer box.

To print a coefficient on a graph report, enter the coefficient label into the Custom Text entry box using the Printout Settings from the main Settings.



Print Full Graph Report

Printouts		U ²
Print report header	Yes	
Print column headers	Yes	
Print grid lines	Yes 🔲 = Graph .bmp is printed with grid lines.	
Print bitmap in header	Center 🔲 🖛 Graph .bmp is printed in the center of the printout. Other options are	
Print bitmap in footer	No justified left or right.	
Print user name in header	No	
Print date/time in header	Left	
Print page number in footer	Yes	
Print custom text in header	DPt] Load at 10N	
Print custom text in header		
Print custom text in header		
Print custom text in footer		
		Done

Printout Settings





Print Full Graph Report Report shows a specific coefficient (DPt) in the printout header



6.4.1.2 Run Report

The Run report is printed from the split Graph-Data view.

Select the test run from the table and the associated graph trace is displayed.

Select the Print symbol from the Main System Menu.

The Run table data is printed at the top of the graph image.

The test runs' data results are displayed above the graph image and below the header information. If there are many coefficients, the additional coefficients will print on a separate page.



Print Run Report Report shows Run #5, its coefficients and the graph with markers

6.4.1.3 Batch Report

The Batch report is printed from the full Data view. The full Data view displays all test runs and their coefficients in a table. Test runs are identified, which each test runs displaying on a row.



				Starr	ett		
minggros							
32:55 11/8	/2013						
o 10: 2056-)	FL.						
mple: Com	posite Filament Sp	ec 489XN-000	12				
Run	Lpt	Dpt mm	Lpt2 N	Dpt2 mm	Lavg		
1	10.00	0.040	\$ 15.00	0.059	11.42		
2	10.00	0.039	\$ 15.00	0.057	12.14		
3	+ 10.00	0.038	+ 15.00	0.059	11.91		
4	10.00	0.037	\$ 15.00	0.059	11.96		

Print Batch Report Use Multi-Run function and report all test runs

6.4.1.4 Statistics Report

The Statistics report prints from the full Data view or from the split Graph-Data view. Statistics are not displayed, nor can a Statistics report print when using tolerances. You must use the Tolerance report for printing tolerance information and result.

My Loa	ad Test				-	-			\Diamond	125	L ^{2*}
	T0.58 N	Run	L _{Pt}	D _{Pt} mm	L _{Pt2} N	D _{Pt2} mm	Lavg +				
	20.00 1	1	† 10.00	0.040	† 15.00	0.059	† 11.42				
D	0.000 mm	2	† 10.00	0.039	15.00	0.057	† 12.14				
		3	10.00	0.038	15.00	0.059	• 11.91				
Set	Return	4	+ 10.00	0.037	+ 15.00	0.059	11.96				
Home Star	rt Test Home				a de la compañía						
L _{Pt} €10.	00 N										
D _{Pt} 0.03	7 mm										
Lan \$15	5.00 N										
	50 mm										
D _{Pt2} 0.00											
L _{avg} ₹11	1.96 N										
in here's in the											
		-									
		Max	† 10.00	0.040	† 15.00	0.059	• 12.14				
		Min	10.00	0.037	† 15.00	0.057	11.42				
		Range	♦ 0.00	0.003	♦ 0.00	0.002	0.72				
The Test	has finished	Average	† 10.00	0.039	† 15.00	0.059	11.86				
rur	nina!	Std Dev	♦ 0.00	0.001	♦ 0.00	0.001	• 0.31				
		6 Sigma	♦ 0.00	0.008	0.00	0.006	1.85				
		田井			5 4	7					
					4						1

				Starr	ett	
(6 1D) 2056-F	£					
ample: Comp	issne muantent St	000 489XN-000	N	D IIII	N N	
Run	LPt	DPt	LPt2	DPt2	Lavg	
2	10.00	0.040	15.00	0.053	12.42	
2	10.00	0.038	A 15.00	0.057	A 11 01	
4	€ 10.00	0.037	\$ 15.00	0.059	♠ 11.96	
Max	▲ 10.00	0.040	15.00	0.059	♠ 12.14	
Min	♠ 10.00	0.037	15.00	0.057	▲ 11.42	
Range	♠0.00	0.003	♠ 0.00	0.002	◆ 0.72	
Average	♠ 10.00	0.039	♦ 15.00	0.059	11.86	
Std Dev	€0.00	0.001	€0.00	0.001	0.31	
6 Sigma	€0.00	0.008	♠0.00	0.006	1.85	

Print Batch Report Use Multi-Run function and report all test runs with statistics

6.4.1.5 Tolerance Report

When tolerances are used, you may print a Tolerance report from any Data view, e.g. full or split graph-data.

The Tolerance reports will print in a WYSIWYG format.

You cannot print a report with both tolerances and statistics.

⇔ My Loa	ad Test										\Diamond	125	L 2*
	T0 29 N	Run	Coef	Units	Actual	Limit 1	Limit 2	Deviation	P/F	Comment			=
	20.20 N	1	LPt	N	† 10.00							1.	
D	0.000 mm	1	DPt	mm	0.040								
		1	LPt2	N	15.00								
Set	Ratom	1	DPt2	mm	0.059								
Home Star	t Test Home	1	Lavg	N	11.42	+ 11.50	+ 12,50		Fail				
1 \$10	00 N	2	LPt	N	10.00								
$L_{Pt} \neq 10.$		2	DPt	mm	0.039								
D _{Pt} 0.03	/ mm	2	LPt2	N	15.00								
L _{Pt2} €15	.00 N	2	DPt2	mm	0.057								
D _{Pt2} 0.05	59 mm	2	Lavg	N	♦ 12.14	• 11.50	+ 12.50		Pass				
L., \$11	.96 N	3	LPt	N	† 10.00								
avy		3	DPt	mm	0.038								
		3	LPt2	N	† 15.00								
		3	DPt2	mm	0.059								
		3	Lavg	N	† 11.91	+ 11.50	+ 12.50)	Pass				
		4	LPt	N	10.00								
TI T		4	DPt	mm	0.037								
run	nas finisned nning!	4	LPt2	N	† 15.00								
					Σ	Y	-						X

				Starr	ett				
ISmith2013									
5:48:38 11	18/2013								
ab ID; 205	8-FL								
Sample: Co	mposite Filame	ent Spiec 489XN-0	0012						
Run	Coef	Units	Actual	Limit 1	Limit 2	Deviation	P/F	Comment	
1	LPt	N	10.00						
1	DPt	mm	0.040						
1	LPt2	N	† 15.00						
1	DPt2	mm	0.059	-					
4	Lavg	N	\$11.42	\$ 11.50	\$ 12.50		Fail		
2	LPt	N	† 10.00						
2	DPt	mm	0.039						
2	LPt2	N	15.00						
2	DPt2	កាពា	0.057						
2	Lavg	N	12.14	\$ 11.50	\$ 12.50		Pass		
3	LPt	N	10.00						
3	DPt	mm	0.038						
3	LPt2	N	† 15.00						
3	DPt2	mm	0.059						
3	Lavg	N	11.91	\$ 11.50	\$ 12.50		Pass		
4	LPt	N	\$ 10.00						
4	DPt	mm	0.037						
4	LPt2	N	\$ 15.00						
4	DPt2	mm	0.059						
4	Lavg	N	11.96	\$11.50	\$ 12.50		Pass		
4	Lavg	N	11.9	6	6 🔶 11.50	6 🔶 11.50 🔶 12.50	6 🔶 11.50 🔶 12.50	6 \$11.50 \$12.50 Pass	6 \$11.50 \$12.50 Pass

Print Tolerance Report Use Multi-Run function and report all test runs with tolerance



6.4.2 Automatic Printouts

You may print reports automatically by specifying the Print Results option in the test setup's Post Test stage.

The default for Print Results = No. No report is printed at the completion of a test run.

If you specify Print Results = Graph, a Graph report is printed at the completion of a test run.

If you are displaying a full graph at the completion of your runs, a full Graph report will print.

If you are displaying a split Graph-Data view, a Run report will print at the completion of your test runs.

If you specify Print Results = Data, a Batch Report is printed. This result table for the selected test run. If statistics or the tolerance view is used, the associated statistics or tolerance report will print.

If you specify Print Results = Both, a Run Report is printed. This will include the graph and the result table for the selected test run.

6.4.3 On-Demand Printouts

On-demand printouts use the Print symbol from the Main System Menu. While at the display view of your result, select the Print symbol. The report associated with that view will print.



Print Results = No. No automatic printout at completion of a run



Main System Menu Execute a printout or change the page layout settings



Post Test Stage Setup Print Results = Graph Prints Graph Report at completion of a test run



Post Test Stage Setup

```
Print Results = Data Prints Batch Report at completion of a test run
```



Print Results = Both Prints Run Report at completion of a test run

6.4.4 Printout Settings

The Printout Setting is used to globally format your printouts. All printouts will use these settings options on all printouts.

6.4.4.1 Print Report Header

You may specify that all printouts output with a header when this option = Yes. All reports will print with a header.

If this option = No, all reports will print without a header.

When the Print Header option = No, the Print Custom Text in Header options will not print even if you have enter information in the Settings.

6.4.4.2 Print Column Headers

Print Column Headers refers to the column labels used in your Data views. These labels are generally the name used to distinguish your results (coefficients). A Column Header example would be LPt.

If Print Column Headers = Yes, all reports using the data view information will print with these headers.

If the Print Column Headers = No, reports using the data view information will print row information without the column labels.

6.4.4.3 Print Grid lines

Graphs are displayed with grid lines. When you print a report that uses the graph image, you have the option to print with or without the grid lines.

If Print Grid lines = Yes, the report will print the graph image with grid lines.

If Print Grid lines = No, the report will print the graph image without grid lines. Both the y-axis and x-axis lines are printed, including their numerical values and labels.

6.4.4.4 Print Header Logo

You can setup your reports to print your company logo in the header. You first must create a .bmp file of your logo with a height no greater than 300 pixels (25 pixels is recommended). Next, you will rename your .bmp file to "Headerlogo". Then, save this file in your Metlogix/ LogosAndBitmaps directory.

You can choose to print your header logo and position the logo center, left or right on your printout.



6.4.4.5 Print Footer Logo

You can setup your reports to print your company logo in the footer. You first must create a .bmp file of your logo with a height no greater than 300 pixels (25 pixels is recommended). Next, you will rename your .bmp file to "Footerlogo". Then, save this file in your Metlogix/ LogosAndBitmaps directory.

You can choose to print your footer logo and position the logo center, left or right on your printout.

6.4.4.6 Print User Name in Header

When User Names are setup for your operators, you may specify that the User Name prints in the Header.

The user who is logged into the system at the time the report is printed (either print automatically or printed on-demand), has their User Name printed in the header.

The User Name may be printed in the center, left or right on the header.

6.4.4.7 Print Date/Time in Header

You may time stamp your printouts using the Print Date/Time in Header option.

The Date and Time may be printed in the center, left or right on the header. The Date and Time represent the actual date and time that the printout was executed either automatically or on-demand.

6.4.4.8 Print Page Number in Footer

You may print page numbers on your printouts using the Print Page Number in Footer option.

The Page Number may be printed in the center, left or right on the footer.

6.4.4.9 Print Custom Text in Header

There are three rows reserved in the header for printing custom text. The text may be up to 100 characters, including spaces, in length.

Additionally, you may print coefficients in any of these three rows using a bracket and the coefficient name, e.g. [LPt].



If using a coefficient in your custom text, please note that this coefficient will always be printed on all reports. If the coefficient was reported as an out-of-range value (XXXXX), the XXXXX is printed in this location.

If any of the rows are left blank, no information is printed.

Custom text prints left-to-right.

6.4.4.10 Print Custom Text in Footer

There is a single row reserved in the footer for printing custom text. The text may be up to 100 characters, including spaces, in length.

Additionally, you may print coefficients in this rows using a bracket and the coefficient name, e.g. [LPt].



If using a coefficient in your custom text, please note that this coefficient will always be printed on all reports. If the coefficient was reported as an out-of-range value (XXXXX), the XXXXX is printed in this location.

No information is printed when left blank.

Custom text prints left-to-right.



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