

Model 3166 Clamp On Power HiTESTER

User's Guide



Method for Calculating FD Storage Capacity

Procedure for Opening FD DATA with Microsoft Excel



<http://www.hioki.co.jp/>

HIOKI company overview, new products, environmental considerations and other information are available on our website.

Power Management to Match a New Era

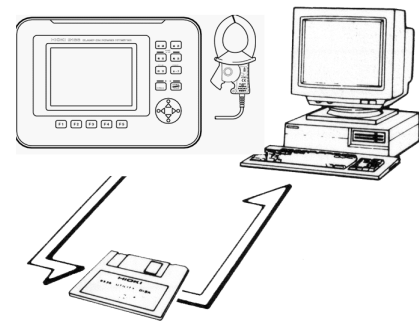
Using a personal computer for speedy power measurement and data processing

Using a personal computer allows energy-saving measures to be made efficiently, by providing the necessary measurements, statistics and analyses.

★ Data transfer using a 3.5" floppy disk

Using a 1.2 MB / 1.44 MB floppy disk (*) (MS-DOS* written, and settings saved and restored. The measur that it can be loaded rapidly into a standard spreadsheet (*)) Requires the optional Model 9595 FDD Unit.

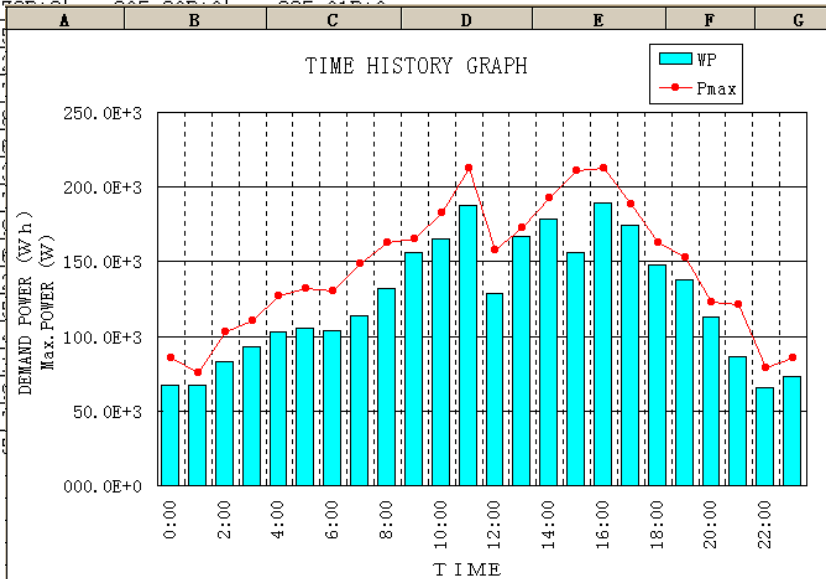
Transfer to computer using a 3.5" floppy disk



Example of Data Analysis Using a Spreadsheet Program

	A	B	C	D	E
1	TIME	WP	P _{max}	U _{1max}	I _{1max}
2	0:00	67.58E+3	85.38E+3	220.84E+0	120.40E+0
3	1:00	67.50E+3	75.24E+3	218.00E+0	124.01E+0
4	2:00	83.27E+3	102.83E+3	220.42E+0	135.57E+0
5	3:00	92.72E+3	110.27E+3	216.46E+0	151.23E+0
6	4:00	102.58E+3	127.33E+3	214.64E+0	204.26E+0
7	5:00	105.28E+3	132.13E+3	211.28E+0	223.04E+0
8	6:00	104.19E+3	130.21E+3	204.76E+0	220.15E+0
9	7:00	113.91E+3	148.75E+3	205.88E+0	225.24E+0
10	8:00	131.98E+3	162.91E+3	207.91E+0	232.33E+0
11	9:00	156.20E+3	165.91E+3	209.94E+0	239.42E+0
12	10:00	165.23E+3	182.91E+3	211.97E+0	246.51E+0
13	11:00	187.30E+3	212.91E+3	213.99E+0	253.60E+0
14	12:00	128.73E+3	157.91E+3	215.99E+0	260.69E+0
15	13:00	167.12E+3	172.91E+3	217.99E+0	267.78E+0
16	14:00	178.92E+3	192.91E+3	219.99E+0	274.87E+0
17	15:00	156.29E+3	210.91E+3	221.99E+0	281.96E+0
18	16:00	189.62E+3	212.91E+3	223.99E+0	289.05E+0
19	17:00	174.27E+3	188.91E+3	225.99E+0	296.14E+0
20	18:00	147.52E+3	162.91E+3	227.99E+0	303.23E+0
21	19:00	137.86E+3	152.91E+3	229.99E+0	310.32E+0
22	20:00	112.82E+3	123.91E+3	231.99E+0	317.41E+0
23	21:00	86.27E+3	120.91E+3	233.99E+0	324.50E+0
24	22:00	65.20E+3	78.91E+3	235.99E+0	331.59E+0
25	23:00	73.10E+3	85.91E+3	237.99E+0	338.68E+0

*Excel and MS-DOS are registered trademarks of Microsoft Corporation.



How to Calculate FD Storage Capacity

For Automatic Output

1 For Integrated Measurement Mode

Storage capacity for all connection modes Unit: B (bytes)

Items to be saved (select any item from 2 to 6)		1 ϕ 2W	1 ϕ 3W 3 ϕ 3W	3 ϕ 3W (3 A)	3 ϕ 4W
1	Time data (be sure to save)	47	47	47	47
2	Instantaneous value	75	97	119	141
3	Maximum value	196	252	308	364
4	Minimum Value	196	252	308	364
5	Integrated Power Value	84	84	84	84
6	Interval Time Average	43	43	43	43
TOTAL					

Multiple items can be selected

Calculation Method

Possible number of saves =

$\{ \text{FD capacity} - 4 \text{ kb [settings file, header]} - ([\text{total bytes of data to be saved for list item 1 to 6}]) \} /$

$(\text{Total bytes of data to be saved for list item 1 to 6})$

(Where settings file size is approx. 3 kb and header is approx. 1 kb)

Example

1.44 MB format

- When connection mode is 3-phase, 3-wire and the selected save items are instantaneous value, integrated power value, and interval time average:

Possible number of saves = $(1.44 \text{ MB} - 4 \text{ kb} - (47 \text{ B} + 97 \text{ B} + 84 \text{ B}; 43 \text{ B})) /$

$(47 \text{ B} + 97 \text{ B} + 84 \text{ B} + 43 \text{ B})$

= 5297.9 times

- When the output interval time is 10 minutes:

Possible save hours = $5297 \text{ times} \times 10 \text{ minutes} / 60 \text{ minutes} = 882 \text{ hours} = \text{approx. } 36 \text{ days}$

Reference

Save timing

Integrated data: for each output interval (including integration start time)

How to Calculate FD Storage Capacity

For Automatic Output

2 For Demand Measurement Mode

Storage capacity for all connection modes Unit: B (bytes)

Items to be saved (select any item from 2 to 6)		1 ϕ 2W	1 ϕ 3W 3 ϕ 3W	3 ϕ 3W (3 A)	3 ϕ 4W
1	Time data (be sure to save)	47	47	47	47
2	Instantaneous value	75	97	119	141
3	Maximum value	196	252	308	364
4	Minimum Value	196	252	308	364
5	Integrated Power Value	84	84	84	84
6	Interval Time Average (When daily, weekly, monthly reporting, or integrated is selected)	203	203	203	203
	Interval Time Average (for demand setting)	43	43	43	43
TOTAL					

Multiple items can be selected

Calculation Method

Possible number of saves =

$(\text{FD capacity} - 4 \text{ kb [settings file, header]}) / (\text{total bytes of data to be saved for list item 1 to 6})$

(Where settings file size is approx. 3 kb and header is approx. 1 kb)

Example 1: 1.44 MB format

- When connection mode is 3-phase, 3-wire and the selected save items are instantaneous value, integrated power value, interval time average, and demand:

$$\text{Possible number of saves} = (1.44 \text{ MB} - 4 \text{ kb}) / (47 \text{ B} + 97 \text{ B} + 84 \text{ B} + 43 \text{ B}) = 5298.9 \text{ times}$$

- When Demand time is 30 minutes:

$$\text{Possible save hours} = 5298 \text{ times} \times 30 \text{ minutes} / 60 \text{ minutes} = 2649 \text{ hours} = \text{approx. } 110 \text{ days}$$

How to Calculate FD Storage Capacity

For Automatic Output

When Multiple Items are Selected for Calculation

(when the data includes items with different save timings)

Example 2: 1.44 MB format

From the table, when connection mode is three-phase, three-wire, demand time is 30 minutes, and the selected save items are instantaneous value, integrated power value, interval time average, demand, and daily reporting:

$$\text{Demand data} = 47 \text{ B} + 97 \text{ B} + 84 \text{ B} + 43 \text{ B} = 271 \text{ B}$$

$$\text{Daily reporting data} = 47 \text{ B} + 97 \text{ B} + 84 \text{ B} + 203 \text{ B} = 431 \text{ B}$$

- When possible save time is X:

$$* 1.44 \text{ MB} - 5 \text{ kb} [\text{setting file and header}] = 271 \text{ B} \times X / (30 \text{ minutes}/60 \text{ minutes}) + 431 \text{ B} \times X / 24 \text{ hours}$$

(Where setting file size is approx. 3 kb, and demand data header and daily reporting data header are approx. 1 kb each.)

From the above expression: possible save time X = 2562 hours = approx. 106 days.

Example 3: 1.44 MB format (when the data includes items with different save timings)

From the table, when connection mode is three-phase, three-wire, demand time is 30 minutes, and the selected save items are instantaneous value, integrated power value, interval time average, demand, daily reporting, weekly reporting, monthly reporting, and integrated:

$$\text{Demand data} = 47 \text{ B} + 97 \text{ B} + 84 \text{ B} + 43 \text{ B} = 271 \text{ B}$$

$$\text{Daily report data} = 47 \text{ B} + 97 \text{ B} + 84 \text{ B} + 203 \text{ B} = 431 \text{ B}$$

$$\text{Weekly report data} = 47 \text{ B} + 97 \text{ B} + 84 \text{ B} + 203 \text{ B} = 431 \text{ B}$$

$$\text{Monthly report data} = 47 \text{ B} + 97 \text{ B} + 84 \text{ B} + 203 \text{ B} = 431 \text{ B}$$

$$\text{Integrated data} = 47 \text{ B} + 97 \text{ B} + 84 \text{ B} + 203 \text{ B} = 431 \text{ B}$$

- When possible save time is X:

$$1.44 \text{ MB} - 8 \text{ kb} [\text{setting file and header}] - 431 \text{ B} [\text{integrated data}]$$
$$= 271 \text{ B} \times X / (30 \text{ minutes}/60 \text{ minutes}) + 431 \text{ B} \times X / 24 \text{ hours} + 431 \times X / (24 \text{ hours} \times 7)$$
$$+ 431 \times X / (24 \text{ hours} \times 30)$$

(Where setting file size is approx. 3 kb, and demand data header, daily reporting data header, weekly reporting data header, monthly reporting data header, and integrated data header are approx. 1kb each)

From the above expression: possible save time X = 2542 hours = approx. 105 days.

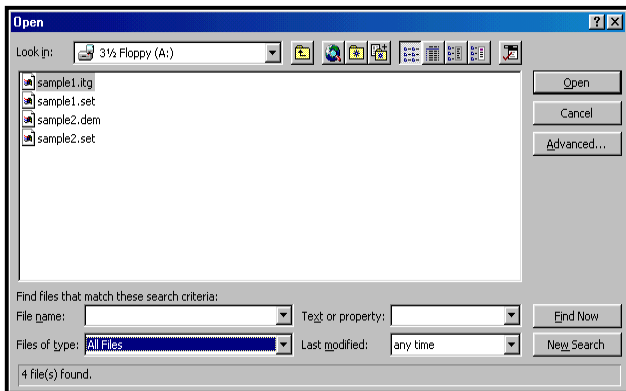
Reference

Save timing: Demand data is saved at the set demand hour, daily reporting data is saved every 24 hours, weekly reporting data is saved every 7 days, monthly reporting data is saved every month, and integrated data is saved when demand measurement is completed.

How to Open FD Data using Microsoft Excel

1. Place the floppy disk containing the measurement files in the floppy disk drive.
2. Click Open in the Microsoft Excel File menu to display the Open File dialog box.
3. Select 3.5 inch FD (A:) from the File Destination box.

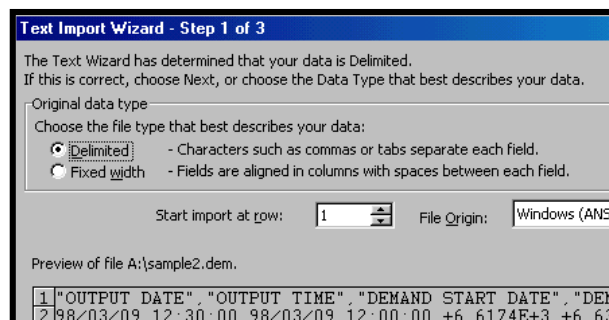
4. Select All files from Files of type scroll down box.



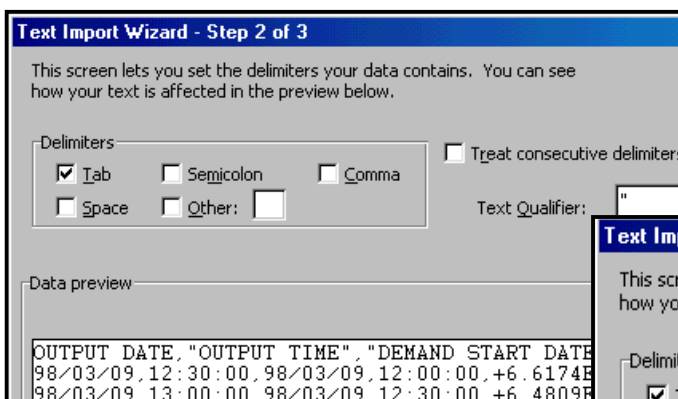
5. Select a file and click Open.

6. Text Import Wizard - Step 1 of 3 appears.

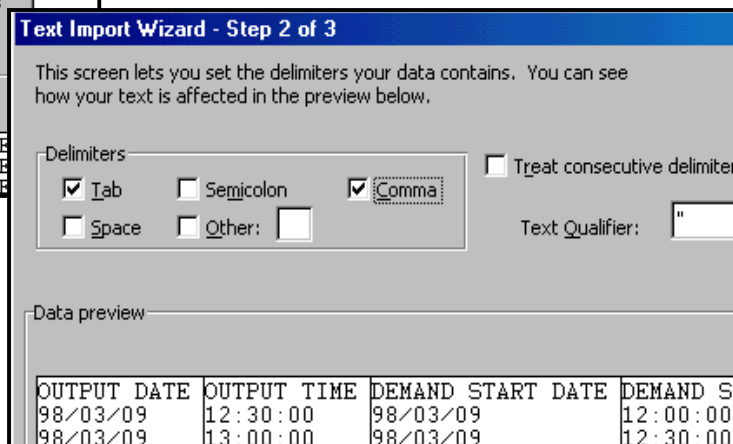
7. For the original data type, select the "Delimited-Characters such as commas or tabs separate each field" option button.



8. Click Next and Step 2 of 3 appears.



9. Select "comma" as the delimiter character.



10. Click Finish.

11. You can paste up to 3166 data items onto a Microsoft Excel worksheet.

12. If you optimize the column width, data will be easier to read.

