

User Manual for HP 34401A Control and Datalogging Software.

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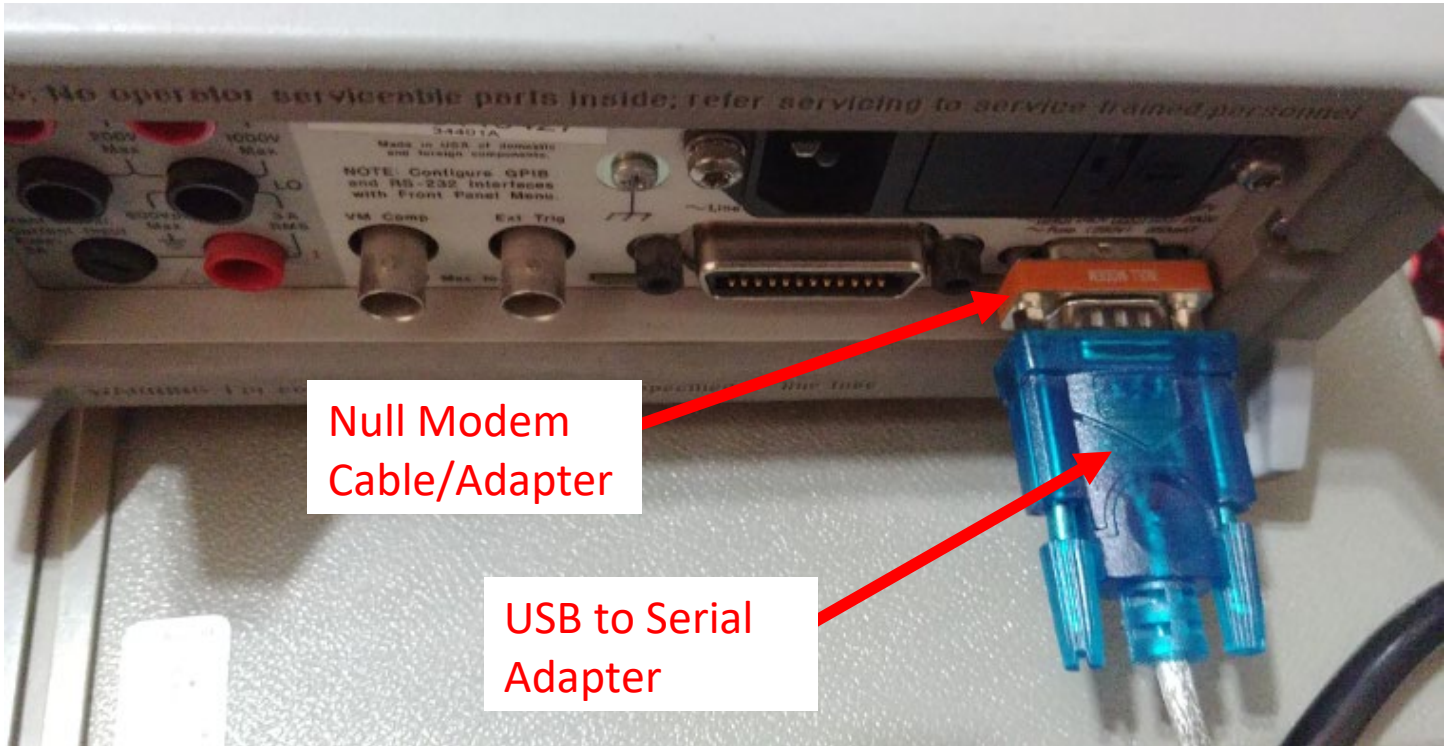
Table of Contents

RS232 Serial Port Setup	3
AR488 Arduino GPIB Setup	4

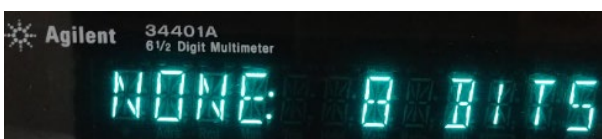
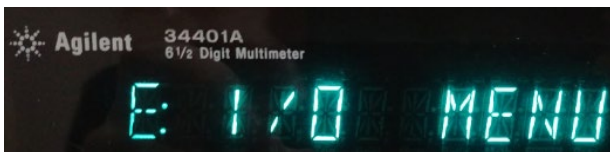


You will need a HP/Agilent/Keysight 34401A to use this software. There are two versions of this software. One is built for RS232 Serial Port and the other one is for GPIB Port, you will need a AR488 Arduino GPIB Adapter to utilize the GPIB Port.

RS232 Serial Port Setup



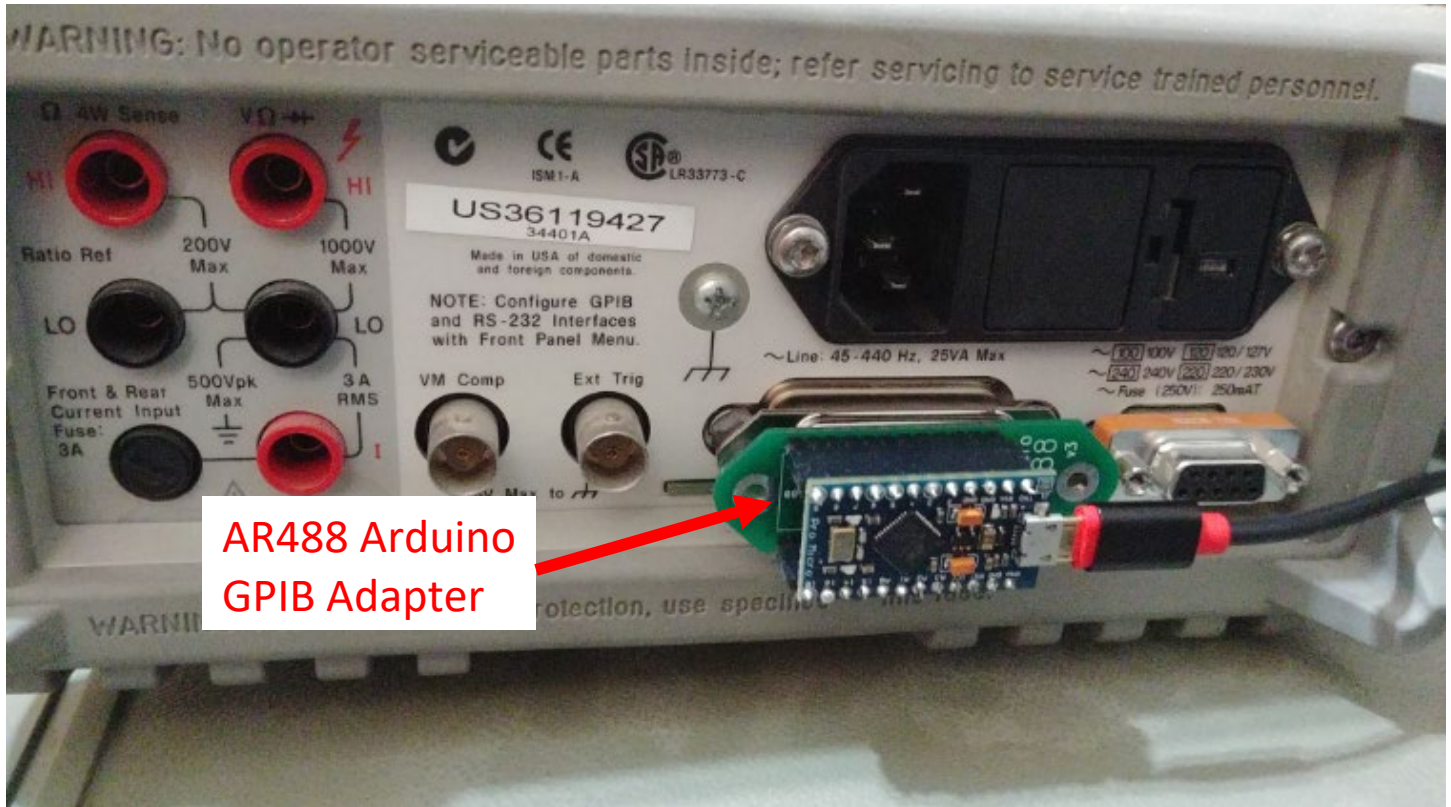
A USB to Serial Adapter and a Null Modem cable/adapter are required if you want to use the 34401A's RS232 Serial Port. Use the RS232 version of the Software if you decide to go this way.



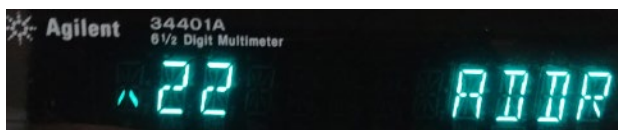
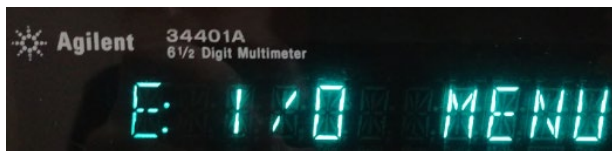
Navigate to the I/O menu and set interface to RS-232, Baud rate to 9600, Parity and Data bits to None: 8 Bits. Also make sure language is set to SCPI.

Then, run the RS-232 version of the software and follow the instructions.

AR488 Arduino GPIB Setup



An AR488 Arduino GPIB Adapter is required if you wish to utilize the 34401A's GPIB Port. Use the AR488 GPIB version of the Software if you decide to go this way.



Navigate to the I/O menu and set Address to 22 (Optional). Then set interface to HP-IB / 488. After that set language to SCPI.

Then, run the AR488 Arduino GPIB version of the software and follow the instructions.

Features of the Measurement Table

The screenshot shows the HP 3478A COM5 measurement table interface. The window title is "HP 3478A COM5". The menu bar includes "File", "Table", and "Table Colors". The table has four columns: "#", "Date Time", "Measurement", and "Unit". The data is displayed in rows, with the first row being 300, 2021-05-10 1:08:43 AM, -2.004 VDC, and the last row being 322, 2021-05-10 1:08:43 AM, 1.373 VDC. The total measurement is 322. Red arrows point from text annotations to specific features: "Set the Table's Cell's colors." points to the "Table Colors" menu; "You can clear the table from here." points to the "Table" menu; "Data is displayed in cells. These cells can be edited." points to a cell in the table; "Save data from the table into text file or CSV file." points to the "File" menu.

Set the Table's Cell's colors.

You can clear the table from here.

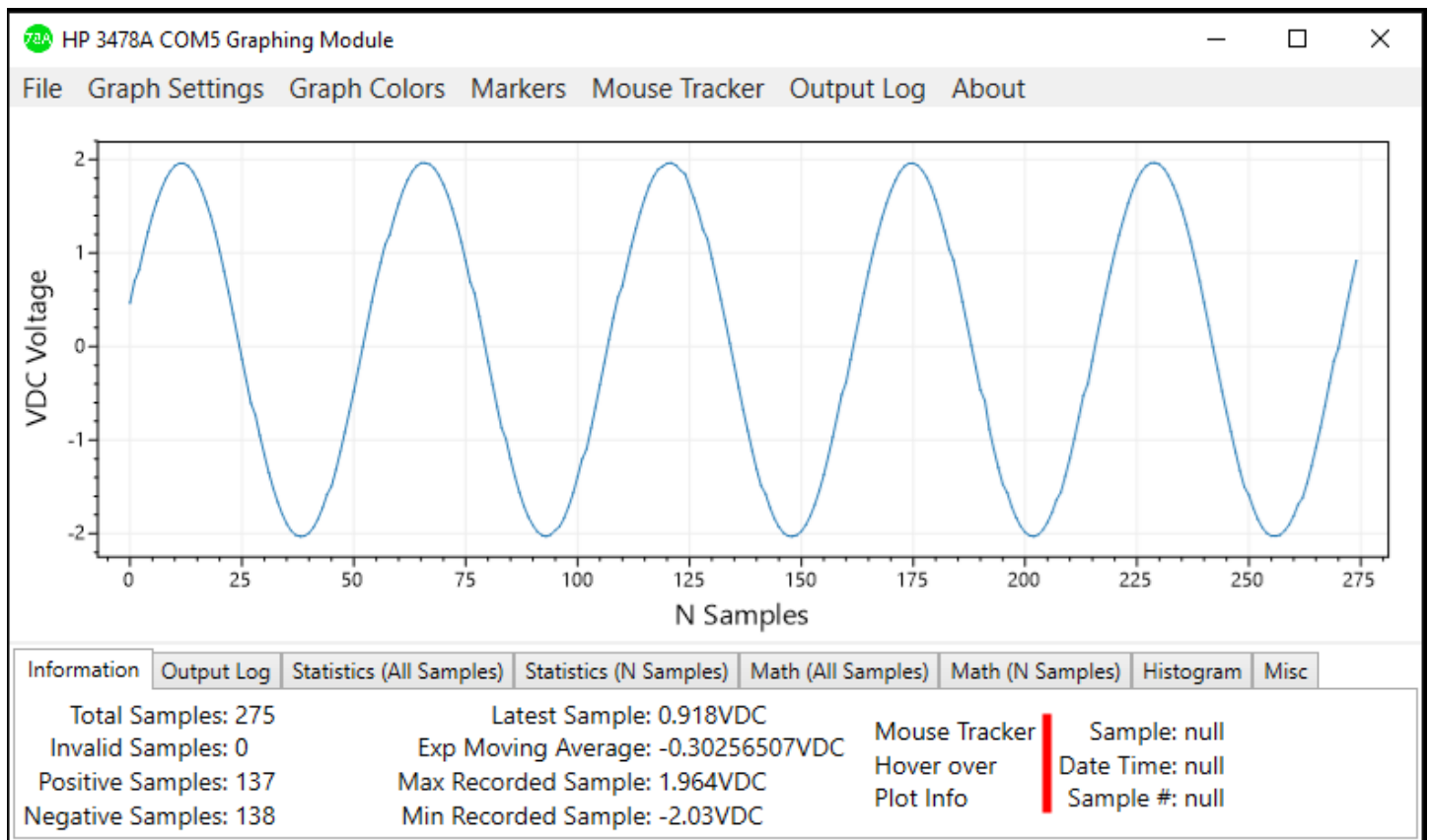
Data is displayed in cells. These cells can be edited.

Save data from the table into text file or CSV file.

#	Date Time	Measurement	Unit
300	2021-05-10 1:08:43 AM	-2.004	VDC
301	2021-05-10 1:08:43 AM	-2.02	VDC
302	2021-05-10 1:08:43 AM	-2.027	VDC
303	2021-05-10 1:08:43 AM	-2.004	VDC
304	2021-05-10 1:08:43 AM	-1.951	VDC
305	2021-05-10 1:08:43 AM	-1.869	VDC
306	2021-05-10 1:08:43 AM	-1.76	VDC
307	2021-05-10 1:08:43 AM	-1.625	VDC
308	2021-05-10 1:08:43 AM	-1.54	VDC
309	2021-05-10 1:08:43 AM	-1.363	VDC
310	2021-05-10 1:08:43 AM	-1.171	VDC
311	2021-05-10 1:08:43 AM	-0.964	VDC
312	2021-05-10 1:08:43 AM	-0.741	VDC
313	2021-05-10 1:08:43 AM	-0.507	VDC
314	2021-05-10 1:08:43 AM	-0.269	VDC
315	2021-05-10 1:08:43 AM	-0.146	VDC
316	2021-05-10 1:08:43 AM	0.097	VDC
317	2021-05-10 1:08:43 AM	0.335	VDC
318	2021-05-10 1:08:43 AM	0.568	VDC
319	2021-05-10 1:08:43 AM	0.787	VDC
320	2021-05-10 1:08:43 AM	0.995	VDC
321	2021-05-10 1:08:43 AM	1.194	VDC
322	2021-05-10 1:08:43 AM	1.373	VDC

Total Measurement: 322

Features of the Graphing Module



The graphing module is the main feature of the software. You can pan, zoom and highlight an area and zoom into it. The graph has natural pan and zoom capabilities, like how you can zoom and pan in Google Maps. There are too many features for me to list them here. You can reset the graph by going to Graph Settings then click Reset Graph.

Information	Output Log	Statistics (All Samples)	Statistics (N Samples)	Math (All Samples)	Math (N Samples)	Histogram	Misc
Total Samples: 4036			Latest Sample: 1.964VDC				
Invalid Samples: 0			Exp Moving Average: 0.05872102VDC				
Positive Samples: 1998			Max Recorded Sample: 1.964VDC				
Negative Samples: 2038			Min Recorded Sample: -2.03VDC				
				Mouse Tracker			Sample: null
				Hover over			Date Time: null
				Plot Info			Sample #: null

Sample information is displayed here, you can get the date and time of each sample by Enabling the Mouse Tracker from the mouse tracker menu.

Information	Output Log	Statistics (All Samples)	Statistics (N Samples)	Math (All Samples)	Math (N Samples)	Histogram	Misc
[2021-05-10 1:04:58 AM] [Success] Graph has been reset.							
[2021-05-10 1:06:31 AM] [Statistics] [All Samples (0, 5050)] Calculated Mean (Average): -0.0360271233419125 VDC							
[2021-05-10 1:06:33 AM] [Success] [Start Sample: 5/10/2021 1:04:58 AM, 0.469VDC, End Sample: 5/10/2021 1:06:33 AM, 0VDC]							
[2021-05-10 1:06:33 AM] [Success] Δ Time Difference between [Start Sample: 0, End Sample: 5161] is 95 Seconds							

Important information will be displayed here. You can save the contents of this log by going to the Output Log menu.

Information	Output Log	Statistics (All Samples)	Statistics (N Samples)	Math (All Samples)	Math (N Samples)	Histogram	Misc
Mean (Average):	Calculate	[Max] Sample:	Calculate	Geometric Mean:	Calculate	Mean Std Deviation:	Calculate
Std Deviation:	Calculate	[Min] Sample:	Calculate	Harmonic Mean:	Calculate	Mean Variance:	Calculate
Max Sample:	Find	Root Mean Square:	Calculate	Pop Variance:	Calculate		
Min Sample:	Find	Variance:	Calculate	Pop Std Deviation:	Calculate		

Get statistics for all the samples captures so far.

Information	Output Log	Statistics (All Samples)	Statistics (N Samples)	Math (All Samples)	Math (N Samples)	Histogram	Misc
N Samples [Start , End]		Max Sample:	Find	Root Mean Square:	Calculate	Pop Variance:	Calculate
0 , 50		Min Sample:	Find	Variance:	Calculate	Pop Std Deviation:	Calculate
Mean (Average):	Calculate	[Max] Sample:	Calculate	Geometric Mean:	Calculate	Mean Std Deviation:	Calculate
Std Deviation:	Calculate	[Min] Sample:	Calculate	Harmonic Mean:	Calculate	Mean Variance:	Calculate

Get statistics for select few samples. You can enable vertical markers to help you with selecting the start and ending sample numbers. This will calculate statistics for all the samples between two samples.

Information	Output Log	Statistics (All Samples)	Statistics (N Samples)	Math (All Samples)	Math (N Samples)	Histogram	Misc
Addition (Samples + Value):		Calculate		Graph Title:			
Subtraction (Samples - Value):		Calculate		Y-Axis Label:			
Multiplication (Samples * Value):		Calculate		Graph Color:	30 255 30 Set Randomize		
Division (Samples / Value):		Calculate					

Create Math Waveforms with all the samples captured so far.

Information	Output Log	Statistics (All Samples)	Statistics (N Samples)	Math (All Samples)	Math (N Samples)	Histogram	Misc
Addition (Samples + Value):		Calculate		N Samples (Start, End):			
Subtraction (Samples - Value):		Calculate		Graph Title:			
Multiplication (Samples * Value):		Calculate		Y-Axis Label:			
Division (Samples / Value):		Calculate		Graph Color:	30 144 255 Set Randomize		

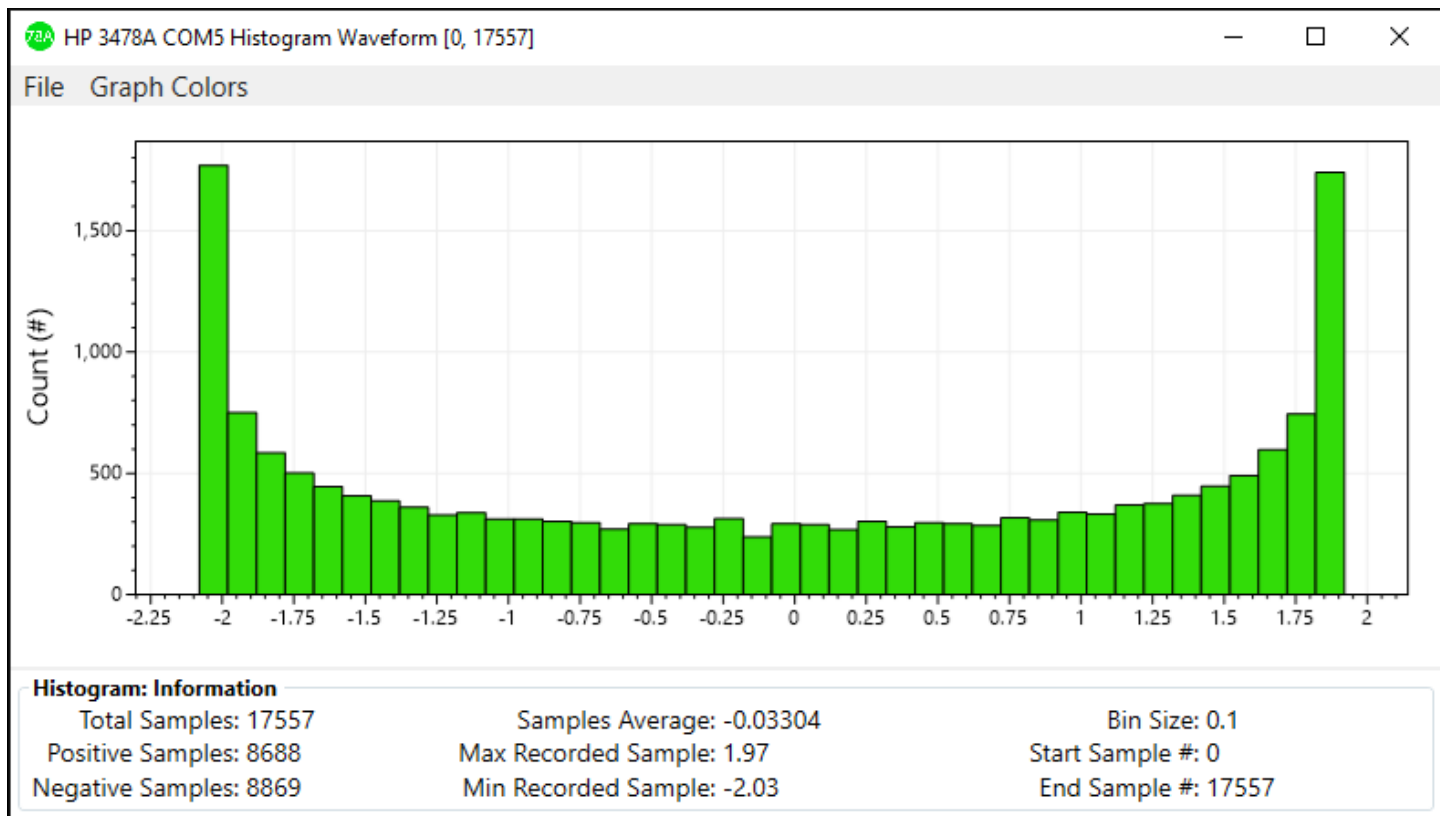
Create Math Waveforms for select few samples. This will create a math waveform for all the samples between two samples.

Information	Output Log	Statistics (All Samples)	Statistics (N Samples)	Math (All Samples)	Math (N Samples)	Histogram	Misc
[All Samples]:	Calculate		Bin Size:	0.1	Plot Curve:	<input type="checkbox"/>	
[N Samples (Start, End)]:	Calculate		Bar Width:	0	Graph Title:		
			Bar Border Thickness:	1	X-Axis Label:		
			Graph Color:	30 144 255 Set Randomize			

Create Histogram for all the samples or for select few samples. Make sure to type the appropriate bin size.

Information	Output Log	Statistics (All Samples)	Statistics (N Samples)	Math (All Samples)	Math (N Samples)	Histogram	Misc
Δ Time [All Samples]:	Seconds	Calculate					
Δ Time [N Samples (Start, End)]:	Seconds	Calculate					

Calculate the time different between two samples. The All-Samples option will calculate time difference between the first sample and the current last sample.



You can create Histogram from all the samples or for select few samples. Pan, zoom, and zoom to highlighted area is also possible.