



## Certificate of Calibration

Certificate Number 477507 - 8044 - 477517

### Illiana Instrumentation Service

1831 Govert Drive

Schererville, In 46375

Customer Ship To Address:

Laura Grolla 219-227-8788

Contact

P.O. Number

Release Number

Calibration Location: Tru Cal Intl. Inc.

Description

Manufacturer Hewlett Packard

Model No. 34401A

Serial No. 3146A27542

Control No. 3146A27542

Asset No. 1731

Department

Location

Rec'd Date 06/19/2024

Cal Date 06/19/2024

Due Date 06/19/2025

Procedure Used  Mfg.  Other M1680

Temperature 70.53 °F

Humidity 48.2 %RH

10-05-02

NA

Fault/Symptom

Received Condition: In Tolerance

Work Performe:

IEEE Defective. Verified Manufacturers Specifications.

Returned Condition: In Tolerance/Cal Only

Calibration Standards		
Asset No.	Asset Model	Due Date
A1033	Fluke 5520A Calibrator	6/28/2024
		Traceability Number EVL895266

This certifies that the above instrument was calibrated in compliance with ANSI/NCSL Z540-1-1994, with a quality system that meets ISO9001:2015 and accredited to ISO/IEC 17025:2017 using applicable procedures. Standards of known accuracy used to perform this calibration are traceable to National Institute of Standards and Technology (NIST). Some measurements are traceable to natural physical constants, consensus standards or ratio type measurements. The test limits stated in the report correspond to the published specifications of the equipment, at the points tested unless otherwise noted. Acceptance Criteria per Simple Acceptance Rule: Measurement Uncertainty is not applied to the measured value when in/out of tolerance statement is made. A final decision about whether the item's performance actually satisfies requirements of the user can only be made by the user. Points to be found outside of specifications will be marked with an "M". Measurement uncertainties are calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement." When requested, reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. ! Indicates Non-Accredited Service. This certificate or report shall not be reproduced, except in full, without written approval of Tru Cal International Inc. As found and as left readings are the same unless otherwise noted.

Issued/Approved by Shauna Ernst on 6/20/2024

Eric Tu

sme

Rec'd Date

QAM Initial

Certified By

Inspected By

Page 1 of 4

# CALIBRATION DATA SHEET

Certificate Number  
477507 - 8044 - 477517

Hewlett Packard / 34401A

Self Test	Parameters Tested/Test Specification	Nom. Applied	- Limit		+ Limit		As Found	As Left	Uncertainty
			Pass	Fail	Pass	Fail			
Zero Offset Test (Rear Inputs)		----							
10mA DC Range		Open	-0.00200	0.00200	0.00200	0.00020			----
100mA DC Range		Open	-0.0050	0.0050	0.0050	0.0004			----
1A DC Range		Open	-0.000100	0.000100	0.000100	0.000010			----
3A DC Range		Open	-0.000600	0.000600	0.000600	0.00002			----
100mV DC Range		Short	-0.0035	0.0035	0.0035	0.0001			----
1V DC Range		Short	-0.000007	0.000007	0.000007	0.000002			----
10V DC Range		Short	-0.00005	0.00005	0.00005	0.00001			----
100V DC Range		Short	-0.0006	0.0006	0.0006	0.0001			----
1000V DC Range		Short	-0.010	0.010	0.010	0.001			----
100 Ohm Range, 2-Wire		Short	-0.0040	0.0040	0.0040	0.0001			----
1kOhm Range, 2-Wire		Short	-0.000010	0.000010	0.000010	0.000000			----
10kOhm Range, 2-Wire		Short	-0.00010	0.00010	0.00010	0.00000			----
100kOhm Range, 2-Wire		Short	-0.0010	0.0010	0.0010	0.0000			----
1MOhm Range, 2-Wire		Short	-0.000010	0.000010	0.000010	0.000001			----
10MOhm Range, 2-Wire		Short	-0.00010	0.00010	0.00010	0.00001			----
100MOhm Range, 2-Wire		Short	-0.0100	0.0100	0.0100	0.0001			----
1000Ohm Range, 4-Wire		Short	-0.0040	0.0040	0.0040	0.0002			----
1kOhm Range, 4-Wire		Short	-0.000010	0.000010	0.000010	0.000000			----
10kOhm Range, 4-Wire		Short	-0.00010	0.00010	0.00010	0.00000			----
100kOhm Range, 4-Wire		Short	-0.0010	0.0010	0.0010	0.0000			----
1MOhm Range, 4-Wire		Short	-0.000010	0.000010	0.000010	0.000000			----
10MOhm Range, 4-Wire		Short	-0.00010	0.00010	0.00010	0.000001			----
100MOhm Range, 4-Wire		Short	-0.0010	0.0010	0.0010	0.00000			----
Zero Offset Test (Front Inputs)									
10mA DC Range		Open	-0.00200	0.00200	0.00200	0.00014			----
100mA DC Range		Open	-0.0050	0.0050	0.0050	0.0003			----
1A DC Range		Open	-0.000100	0.000100	0.000100	0.000008			----
3A DC Range		Open	-0.000600	0.000600	0.000600	0.00001			----
100mV DC Range		Short	-0.0035	0.0035	0.0035	-0.0013			----
1V DC Range		Short	-0.000007	0.000007	0.000007	0.000001			----
10V DC Range		Short	-0.00005	0.00005	0.00005	0.00001			----
100V DC Range		Short	-0.0006	0.0006	0.0006	0.0001			----
1000V DC Range		Short	-0.010	0.010	0.010	0.001			----
1000Ohm Range, 2-Wire		Short	-0.0040	0.0040	0.0040	0.0004			----
1kOhm Range, 2-Wire		Short	-0.000010	0.000010	0.000010	0.000000			----
10kOhm Range, 2-Wire		Short	-0.00010	0.00010	0.00010	0.00000			----
100kOhm Range, 2-Wire		Short	-0.0010	0.0010	0.0010	0.0000			----
1MOhm Range, 2-Wire		Short	-0.000010	0.000010	0.000010	0.000001			----
10MOhm Range, 2-Wire		Short	-0.00010	0.00010	0.00010	0.00001			----
100MOhm Range, 2-Wire		Short	-0.0100	0.0100	0.0100	0.0000			----
1000Ohm Range, 4-Wire		Short	-0.0040	0.0040	0.0040	0.0001			----
1kOhm Range, 4-Wire		Short	-0.000010	0.000010	0.000010	0.000000			----
10kOhm Range, 4-Wire		Short	-0.00010	0.00010	0.00010	0.00001			----
100kOhm Range, 4-Wire		Short	-0.0010	0.0010	0.0010	0.0000			----
1MOhm Range, 4-Wire		Short	-0.000010	0.000010	0.000010	0.000000			----

# CALIBRATION DATA SHEET

Hewlett Packard / 34401A

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Parameters Tested/Test Specification	Nom. Applied	- Limit	+ Limit	As Found	As Left	Uncertainty
100MΩ Range, 4-Wire	Short	-0.0100	0.0100	0.0000		----
DC Voltage						
100mV Range	100.0000mV	99.9915	100.0085	100.0009		.0024
1V Range	1.000000V	0.999953	1.000047	1.000002		.000010
10V Range	10.00000V	9.99960	10.00040	10.00003		.00013
10V Range	-10.00000V	-10.00040	-9.99960	-10.00007		.00013
100V Range	100.0000V	99.9949	100.0051	100.0002		.0018
1000V Range	1000.000V	999.945	1000.055	999.997		.017
AC Voltage						
100 mV Range @1kHz	10.000mV	9.9540	10.0460	9.988		.0066
100 mV Range @1kHz	100.0000mV	99.9000	100.1000	99.962		.0200
@50kHz	100.0000mV	99.8300	100.1700	99.946		.0370
1V Range @20Hz	1.00000V	0.999100	1.000900	0.999313		.00029
@1kHz	1.00000V	0.999100	1.000900	0.999581		.00019
@50kHz	1.00000V	0.998300	1.001700	0.999303		.00066
@100kHz	1.00000V	0.993200	1.006800	0.999305		.0022
@300kHz	1.00000V	0.955000	1.045000	1.004507		.0026
10V Range @ 1kHz	10.00000V@1kHz	9.99100	10.00900	9.99450		.0019
@50kHz	10.00000V	9.98300	10.01700	9.99194		.0038
@10Hz	10.00000V	9.99100	10.00900	9.99235		.0029
100V Range@1kHz	100.0000V	99.9100	100.0900	99.9994		.0200
@50kHz	100.0000V	99.8300	100.1700	100.0274		.0400
750V Range@ 1kHz	750.000V	749.325	750.675	749.382		.190
@50 kHz	320.000V	319.241	320.759	319.906		.090
Frequency Response						
@20Hz	1.00000V	0.999100	1.000900	0.999312		.0003
@1kHz	1.00000V	0.999100	1.000900	0.999576		.0003
@20kHz	1.00000V	0.999100	1.000900	0.999551		.00021
@50kHz	1.00000V	0.998300	1.001700	0.999358		.00029
@100kHz	1.00000V	0.993200	1.006800	0.999443		.00066
@300kHz	1.00000V	0.955000	1.045000	1.004642		.0026
Linearity @ 1kHz	10.00000V	9.99100	10.00900	9.99418		.0019
	1.00000V	0.99650	1.00350	0.99873		.00030
	0.10000V	0.08700	0.11300	0.09947		.00002
DC Current						
10mA Range	10.000000mA	9.99300	10.00700	10.00598		.0012
100mA Range	100.0000mA	99.9450	100.0550	100.0043		.0140
1A Range	1.000000A	0.998900	1.001100	0.999375		.0002
3A Range	2.000000A	1.995800	2.004200	1.99926		.0007
AC Current						
1A Range@1kHz	1.000000A	0.998600	1.001400	0.999428		.0007
3A Range@1kHz	2.000000A	1.995200	2.004800	1.99729		.0019
4-Wire Ohms						
1000hm Range	100.0000	99.9860	100.0140	100.0026		.0036
1kOhm Range	1.000000	0.999890	1.000110	0.999959		.00004
10kOhm Range	10.00000	9.99890	10.00110	9.99930		.00044
100kOhm Range	100.0000	99.9890	100.0110	99.9963		.004

