

CERTIFICATE OF CALIBRATION

Preliminary

Customer: ROMAN MELNYK TEST ACCOUNT
35 VANTAGE POINT DRIVE
ROCHESTER, NY 14624

PO Number: ABC123



ANAB AC-2489



Certificate/SO Number: 1-FY5AR-160-1 Revision 2

Manufacturer: Fluke Corporation
Model Number: 87 V
Description: Multimeter, Digital
Serial Number: ABC123
ID: 54321

As-Found: In Tolerance, Pass Acceptance
As-Left: In Tolerance, Pass Acceptance

Issue Date: Mar 10, 2021
Calibration Date: Mar 16, 2021
Due Date: Mar 16, 2022

Calibrated To: Manufacturer Specification
Calibration Procedure: 1-AC08977-28

This calibration conforms to ISO/IEC 17025:2017, ANSI/NCSL Z540-1-1994, ISO 9001:2015, and ISO 10012:2003. When specified contractually, the requirements of ISO TS16949:2009, 10CFR21, 10CFR50 App. B, ASME NQA-1:2012, and ANSI/NCSL Z540.3-2006 (R2013) are also covered. Standards are traceable to the SI either through the National Institute of Standards & Technology (NIST), the National Research Council of Canada (NRC), other national measurement institutes (NMI) that are signatories to the CIPM Mutual Recognition Arrangement, natural physical constants, intrinsic standards, or ratio type measurements. The results of this report relate only to the item calibrated or tested. Reported data is valid at the time of calibration at the environmental conditions noted. This certificate shall not be reproduced except in full, without the written consent of Transcat Inc. Uncertainties are reported with a coverage factor k=2, providing a level of confidence of approximately 95%. When a decision rule is inherent in the specification or the standard the prescribed decision rule was used, otherwise where a statement of conformance is made, it was made based on the measurement meeting the guard banded limits using the decision rule of the client. Transcat's PCS (Probability of Compliance to Specification)

Calibrated At:
35 Vantage Point Dr
Rochester, NY 14624

Facility Responsible:
35 Vantage Point Dr
Rochester, NY 14624
800-828-1470

Calibrated By:

Kevin Kita
Calibration Technician

Reviewed By:

Kevin OGrady
Lab Manager



Date Received: November 09, 2020
Service Level: R11

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Description	Setpoints	Accuracy	Low Limit	High Limit	As Found / As Left	O O T	Cal Process Uncertainty (k=2; ±)	Measurement Uncertainty (k=2; ±)	Units	PCS	TUR
AC Volts Measure											
600 mV Range	330.0mVrms	±(0.7% Rdg + 4 LSD)	327.3	332.7	329.5 mVrms		8.6e-002	1.7e-001	mVrms	100.0	31.5 : 1
	60Hz										
	600.0mVrms	±(2% Rdg + 20 LSD)	586.0	614.0	602.4 mVrms		1.4e-001	2.0e-001	mVrms	100.0	100.0 : 1
	13kHz										
6 V Range	3.300Vrms	±(0.7% Rdg + 2 LSD)	3.275	3.325	3.295 Vrms		8.6e-004	1.7e-003	Vrms	100.0	29.2 : 1
	60Hz										
	3.300Vrms	±(2% Rdg + 20 LSD)	3.214	3.386	3.287 Vrms		1.1e-003	1.8e-003	Vrms	100.0	79.3 : 1
	20kHz										
60 V Range	33.00Vrms	±(0.7% Rdg + 2 LSD)	32.75	33.25	32.96 Vrms		6.5e-003	1.5e-002	Vrms	100.0	38.5 : 1
	60Hz										
	33.00Vrms	±(2% Rdg + 20 LSD)	32.14	33.86	32.87 Vrms		1.1e-002	1.8e-002	Vrms	100.0	77.3 : 1
	20kHz										
600 V Range	330.0Vrms	±(0.7% Rdg + 2 LSD)	327.5	332.5	329.6 Vrms		8.5e-002	1.5e-001	Vrms	100.0	29.4 : 1
	60Hz										
	330.0Vrms	±(2% Rdg + 4 LSD)	323.0	337.0	329.8 Vrms		7.2e-002	1.4e-001	Vrms	100.0	96.8 : 1
	2.5kHz										
1000 V Range	500Vrms	±(0.7% Rdg + 2 LSD)	494	506	500 Vrms		1.2e-001	1.2e+000	Vrms	100.0	48.0 : 1
	60Hz										
	1000Vrms	±(1% Rdg + 4 LSD)	986	1014	1002 Vrms		2.4e-001	1.2e+000	Vrms	100.0	57.8 : 1
	1kHz										

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Frequency Measure											
600 mV Range	99.95kHz	±(0.005% Rdg + 1 LSD)	99.94	99.96	99.95 kHz		1.9e-004	1.2e-002	kHz	100.0	51.3 : 1
	150mVrms										
	199.50kHz	±(0.005% Rdg + 1 LSD)	199.48	199.52	199.50 kHz		3.9e-004	1.2e-002	kHz	100.0	51.5 : 1
	150mVrms										
6 V Range - Sensitivity	99.95kHz	±(0.005% Rdg + 1 LSD)	99.94	99.96	99.95 kHz		1.9e-004	1.2e-002	kHz	100.0	51.3 : 1
	0.7Vrms										
60 V Range - Sensitivity	99.95kHz	±(0.005% Rdg + 1 LSD)	99.94	99.96	99.95 kHz		1.9e-004	1.2e-002	kHz	100.0	51.3 : 1
	7Vrms										
6 V Range - Trigger Level	1000.0Hz	±(0.005% Rdg + 1 LSD)	999.8	1000.2	1000.0 Hz		2.0e-003	1.2e-001	Hz	100.0	100.0 : 1
	3.4Vp-p										
Duty Cycle											
Duty Cycle - 6 V DC Range	1kHz	±(0.3 %)	49.7	50.3	50.0 %		9.8e-005	1.2e-001	%	100.0	100.0 : 1
	5Vp-p										
DC Volts Measure											
6 V Range	3.300V	±(0.05% Rdg + 1 LSD)	3.297	3.303	3.300 V		5.0e-005	1.2e-003	V	100.0	59.5 : 1
60 V Range	33.00V	±(0.05% Rdg + 1 LSD)	32.97	33.03	33.00 V		6.3e-004	1.2e-002	V	100.0	47.8 : 1
600 V Range	330.0V	±(0.05% Rdg + 1 LSD)	329.7	330.3	330.0 V		6.0e-003	1.2e-001	V	100.0	50.1 : 1
1000 V Range	1000V	±(0.05% Rdg + 1 LSD)	998	1002	1000 V		1.6e-002	1.2e+000	V	100.0	100.0 : 1
600 mV Range	33.0mV	±(0.1% Rdg + 1 LSD)	32.9	33.1	33.0 mV		1.3e-003	1.2e-001	mV	100.0	76.7 : 1
	330.0mV	±(0.1% Rdg + 1 LSD)	329.6	330.4	330.0 mV		4.6e-003	1.2e-001	mV	100.0	86.8 : 1

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Resistance 2 Wire Comp Measure											
600 Ohm Range	330.0Ohm	±(0.2% Rdg + 2 LSD)	329.1	330.9	330.1 Ohm		2.4e-002	1.4e-001	Ohm	100.0	36.8 : 1
6 kOhm Range	3.300kOhm	±(0.2% Rdg + 1 LSD)	3.292	3.308	3.300 kOhm		2.4e-004	1.4e-003	kOhm	100.0	32.7 : 1
60 kOhm Range	33.00kOhm	±(0.2% Rdg + 1 LSD)	32.92	33.08	33.02 kOhm		2.4e-003	1.4e-002	kOhm	100.0	32.7 : 1
600 kOhm Range	330.0kOhm	±(0.6% Rdg + 1 LSD)	327.9	332.1	330.3 kOhm		2.6e-002	1.4e-001	kOhm	100.0	81.9 : 1
6 MOhm Range	3.300MOhm	±(0.6% Rdg + 1 LSD)	3.279	3.321	3.303 MOhm		5.4e-004	1.4e-003	MOhm	100.0	39.2 : 1
50 MOhm Range	30.00MOhm	±(1% Rdg + 3 LSD)	29.67	30.33	30.09 MOhm		7.9e-003	1.5e-002	MOhm	100.0	41.6 : 1
60 nS Range (Open)	0.00MOhm	±(1% Rdg + 30 LSD)	-0.30	0.30	-0.05 nS		0.0e+000	1.2e-002	nS		4 : 1
60 nS Range	100MOhm	±(1% Rdg + 30 LSD)	9.60	10.40	9.93 nS		4.6e-003	1.3e-002	nS	100.0	87.2 : 1
Diode Test											
Diode Test	3.000V	±(2% Rdg + 1 LSD)	2.939	3.061	3.000 V		2.9e-005	1.2e-003	V	100.0	100.0 : 1
A AC Measure											
6 A Range	3.000A	±(1% Rdg + 2 LSD)	2.968	3.032	2.999 A		3.0e-003	3.4e-003	A	100.0	10.7 : 1
	60Hz										
A DC Measure											
6 A Range	3.000A	±(0.2% Rdg + 4 LSD)	2.990	3.010	3.001 A		1.9e-003	2.3e-003	A	100.0	5.2 : 1
10 A Range	10.00A	±(0.2% Rdg + 2 LSD)	9.96	10.04	10.00 A		5.5e-003	1.3e-002	A	100.0	7.3 : 1
mA AC Measure											
60 mA Range	33.00mA	±(1% Rdg + 2 LSD)	32.65	33.35	32.97 mA		2.7e-002	3.2e-002	mA	100.0	13.0 : 1
	60Hz										
400 mA Range	330.0mA	±(1% Rdg + 2 LSD)	326.5	333.5	330.0 mA		2.1e-001	2.6e-001	mA	100.0	16.7 : 1
	60Hz										

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mA DC Measure											
60 mA Range	33.00mA	±(0.2% Rdg + 4 LSD)	32.89	33.11	33.00 mA		4.5e-003	1.4e-002	mA	100.0	24.6 : 1
400 mA Range	330.0mA	±(0.2% Rdg + 2 LSD)	329.1	330.9	329.9 mA		8.2e-002	1.6e-001	mA	100.0	10.9 : 1
µA AC Measure											
600 µA Range	330.0µA	±(1% Rdg + 2 LSD)	326.5	333.5	329.9 µA		3.8e-001	4.0e-001	µA	100.0	9.3 : 1
	60Hz										
6000 µA Range	3300µA	±(1% Rdg + 2 LSD)	3265	3335	3299 µA		2.8e+000	3.3e+000	µA	100.0	12.7 : 1
	60Hz										
µA DC Measure											
600 µA Range	330.0µA	±(0.2% Rdg + 4 LSD)	328.9	331.1	330.0 µA		6.7e-002	1.6e-001	µA	100.0	16.4 : 1
6000 µA Range	3300µA	±(0.2% Rdg + 2 LSD)	3291	3309	3300 µA		5.1e-001	1.4e+000	µA	100.0	17.5 : 1
Capacitance Measure											
10 nF Range	0.26nF	≥ (0.21 nF) ; ≤ (0.31 nF)	0.21	0.31	0.26 nF		0.0e+000	1.2e-002	nF		4 : 1
100 nF Range	5.0nF	±(1% Rdg + 2 LSD)	4.7	5.3	5.0 nF		1.6e-002	1.3e-001	nF	100.0	18.3 : 1
100 µF Range	9.5µF	±(1% Rdg + 2 LSD)	9.2	9.8	9.5 µF		2.5e-002	1.3e-001	µF	100.0	11.8 : 1
Low Pass Filter											
Low Pass Filter - 1000 V Range	400Vrms	-(6% Rdg + 4 LSD) ; +(1% Rdg + 4 LSD)	372	408	381 Vrms		1.0e-001	1.2e+000	Vrms	100.0	100.0 : 1
	400Hz										
(Not spec'd - Approx 226 to 340Vrms)	400Vrms				289 Vrms		7.2e-002	1.2e+000	Vrms		4 : 1
	800Hz										
Low Pass Filter @ 800Hz											
Filter follows an expected roll-off curve.			P	P	P						

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Peak MIN/MAX											
MAX - 6 VDC Range	6Vp-p 2kHz	±(0.103 V)	3.897	4.103	4.025 V		5.6e-004	1.4e-003	V	100.0	100.0 : 1
MIN	6Vp-p 2kHz	±(0.102 V)	-2.102	-1.898	-2.009 V		2.8e-004	1.3e-003	V	100.0	100.0 : 1
Temperature Measure											
Type K (ITS90)	0.0°C	±(1% Rdg + 10 LSD)	-1.0	1.0	0.1 °C		0.0e+000	1.2e-001	°C		4 : 1
	100.0°C	±(1% Rdg + 10 LSD)	98.0	102.0	100.1 °C		1.6e-001	2.0e-001	°C	100.0	12.5 : 1
Function Check											
Backlight Comes On			P	P	P						
Backlight Intensifies			P	P	P						
Backlight Off			P	P	P						

Field not applicable.

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Traceable Standards

Asset	Manufacturer	Model Number	Description	Cal Date	Due Date	Traceability Number	Use
5312	Fluke Corporation	5520A	Multifunction Calibrator	27-Aug-20	27-Aug-21	5-&5312-38-2	AF/AL

The use of the standard is defined as: AF - used for as-found readings, AL - used for as-left readings.

Environmental Data

Temperature	Relative Humidity	Temp / RH Asset
71.40°F /21.89°C	53.00%	3133A