

Manufacturer	HEWLETT-PACKARD	Calibration date	August 28 2019
Model Number	3458A	Ambient Temperature	23.67 °C
Serial	2823A02491	Relative Humidity	21.30 %
ID Number	DMM10	Pressure	1002.17
Notes	Test PTFE, 3458-10, curr 5440-7003 cable	Test type	Automated verification

Reference standard	Mfg	Model	Options	Serial / Unc	CEID	Calibration date	Due date
DC STD	xDevs.com	792X[2]	9.9999838 VDC	±0.22 ppm	XD01	08/07/2019	08/07/2020
DC STD	Fluke	732B	10.0000152	±0.3 ppm	6480002	05/30/2019	05/30/2020
STDR	ESI	SR104	9999.9995 KΩ	±0.17 ppm	G202088930104	06/06/2019	06/06/2020
STDR	xDevs.com/Fluke	SL935	1.00006085 Ω	±0.17 ppm	XR03	08/14/2019	08/14/2020
STDR	xDevs.com/Fluke	SL935	9999.9739 kΩ	±0.17 ppm	XR02	08/14/2019	08/14/2020
MFC	Fluke	5720A	03/HLK	E2E6	XC01	08/18/2019	08/18/2020
Amplifier	Fluke	5725A		5930005	XB01	08/18/2019	08/18/2020
DMM	HP	3458A	001,X02	MY45040325	XD2	08/19/2019	08/19/2020
AVMS	Wavetek	4920M	80	29336	XA02	08/24/2019	08/24/2020
Divider	Fluke	752A	4295200		XR01	08/28/2019	08/29/2019

MFC last calibrated	10.0 days ago	MFC since DCV ZERO	0.0 days ago
MFC since WBFLAT	199.0 days ago	MFC since WBGAIN	9.0 days ago
MFC Confidence level	24h 95% REL	MFC Calibrate date	2019-08-17 00:00:00
MFC Calibrate date Zero	2019-08-27 00:00:00	Calibrate date WB Flatness	2019-02-09 00:00:00
Calibrate date WB Gain	2019-08-18 00:00:00	CAL CONST 6.5V reference voltage	6.95748455712
CAL CONST 13V reference voltage	13.85531006	CAL CONST 22V range positive zero	398.17951
CAL CONST 22V range negative zero	398.17922	CAL CONST DAC Linearity	0.0
CAL CONST 10KOHM true output resistance	9999.78412139	CAL CONST 10KOHM standard resistance	9998.72316298
CAL CONST, Zero calibration temperature	24.0	CAL CONST, All calibration temp	24.0
Booster type	VB5725,IB5725	Current output posts	AUX
Calibrate date 5725A AMP	2019-08-17 00:00:00	Calibrated days ago	Debug
CAL CONST, Amp ACAL temperature	24.0	CAL CONST, Amp CalCheck temperature	24.0

Total uncertainty of each calibration point calculated with RSS

$$U_{95\%} = \sqrt{U_{SRC}^2 * U_{DUT}^2 * 2}$$

Meter Info	HP3458A	Last calibration adjustment date	8/16/2019
CALSTR?	"8/16/2019, TEMP=40.1, xDevs CAL"	Test date	28 August 2019 15:00
DUT Internal TEMP?	37.9	DUT Calibrations number?	41
Self-test result?	0,"NO ERROR"	ACAL ALL result?	0,"NO ERROR"
Firmware	9,2	Options	1,0
CAL? 72	1.00013971	CAL? 1,1	39998.4356
CAL? 2,1	7.18463101	CAL? Res 73	1.00035333
CAL 0 TEMP	40.03	CAL 10V TEMP	37.23
CAL 10KOHm TEMP	37.13	CAL? DCI	1.0004154

Main DC Voltage ranges performance test. Checks +/-FS calibration on all ranges
The following test for the offset voltage specification using MFC 0V source in 2-wire int sense mode as reference.
DCV gain range points verify gain of the DC voltage function, using corrected 24-hour MFC output. *DC voltage offset of MFC is nulled with MATH NULL before FS+/- gain tests. Zero does NOT represent DMM's zero.

Test Description	Expected Value	Measured Value	Measurement Uncertainty	Lower Limit	Upper Limit	Deviation	DUT Spec	Test Status
Short 0 mVDC	0.000000E+00	-0.51 μV	0.75 μV	-0.910 μV	0.910 μV	N/A	0.16 μV	INFO*
Short 0.0 VDC	0.000000E+00	-0.47 μV	0.75 μV	-0.900 μV	0.900 μV	N/A	0.15 μV	INFO*
Short 00.0 VDC	0.000000E+00	-0.14 μV	0.75 μV	-1.070 μV	1.070 μV	N/A	0.32 μV	INFO*
Short 000.0 VDC	0.000000E+00	26.03 μV	0.75 μV	-14.750 μV	14.750 μV	N/A	14.00 μV	INFO*
Short 0000.0 VDC	0.000000E+00	42.79 μV	0.75 μV	-41.750 μV	41.750 μV	N/A	41.00 μV	INFO*
DCV Test	0.1V-1000V	DUT	Source unc.	Low Limit	Hi limit	Measured	24h spec	Result
0.019 VDC (0.10 Range)	0.0190000	0.019000012	7.27 ppm	0.018999514	0.019000486	0.638 ppm	18.29 ppm	PASS 1.62 %
0.1 VDC (0.10 Range)	0.1000000	0.099999959	7.27 ppm	0.099998723	0.10000128	-0.412 ppm	5.50 ppm	PASS 2.26 %
0.11 VDC (0.10 Range)	0.1100000	0.11000001	7.27 ppm	0.10999863	0.11000137	0.050 ppm	5.23 ppm	PASS 0.28 %
-0.019 VDC (0.10 Range)	-0.0190000	-0.018999875	7.27 ppm	-0.019000486	-0.018999514	-6.592 ppm	18.29 ppm	PASS 16.75 %
-0.1 VDC (0.10 Range)	-0.1000000	-0.0999998	7.27 ppm	-0.10000128	-0.099998723	-1.998 ppm	5.50 ppm	PASS 10.96 %
-0.11 VDC (0.10 Range)	-0.1100000	-0.10999983	7.27 ppm	-0.11000137	-0.10999863	-1.567 ppm	5.23 ppm	PASS 8.75 %
0.19 VDC (1.00 Range)	0.1900000	0.19000007	7.27 ppm	0.18999803	0.19000197	0.375 ppm	3.08 ppm	PASS 2.37 %
1.0 VDC (1.00 Range)	1.0000000	0.9999992	3.86 ppm	0.99999434	1.0000057	-0.803 ppm	1.80 ppm	PASS 9.43 %
1.1 VDC (1.00 Range)	1.1000000	1.0999993	3.86 ppm	1.0999938	1.1000062	-0.598 ppm	1.77 ppm	PASS 7.04 %
-0.19 VDC (1.00 Range)	-0.1900000	-0.18999981	7.27 ppm	-0.19000197	-0.18999803	-1.001 ppm	3.08 ppm	PASS 6.34 %
-1.0 VDC (1.00 Range)	-1.0000000	-0.99999962	3.86 ppm	-1.0000057	-0.99999434	-0.375 ppm	1.80 ppm	PASS 4.40 %
-1.1 VDC (1.00 Range)	-1.1000000	-1.0999995	3.86 ppm	-1.1000062	-1.0999938	-0.467 ppm	1.77 ppm	PASS 5.50 %
1.9 VDC (10.00 Range)	1.9000000	1.8999992	3.86 ppm	1.8999912	1.9000088	-0.419 ppm	0.76 ppm	PASS 5.33 %
10.0 VDC (10.00 Range)	10.0000000	9.9999959	2.77 ppm	9.9999668	10.000033	-0.410 ppm	0.55 ppm	PASS 7.26 %
11.0 VDC (10.00 Range)	11.0000000	10.999997	2.73 ppm	10.999964	11.000036	-0.314 ppm	0.55 ppm	PASS 5.63 %
-1.9 VDC (10.00 Range)	-1.9000000	-1.8999988	3.86 ppm	-1.9000088	-1.8999912	-0.634 ppm	0.76 ppm	PASS 8.05 %
-10.0 VDC (10.00 Range)	-10.0000000	-9.9999951	2.77 ppm	-10.000033	-9.9999668	-0.486 ppm	0.55 ppm	PASS 8.61 %
-11.0 VDC (10.00 Range)	-11.0000000	-10.999997	2.73 ppm	-11.000036	-10.999964	-0.295 ppm	0.55 ppm	PASS 5.31 %
19 VDC (100.00 Range)	19.0000000	19.000046	2.77 ppm	18.99987	19.00013	2.433 ppm	4.08 ppm	PASS 24.67 %
100 VDC (100.00 Range)	100.0000000	99.999981	3.73 ppm	99.999347	100.00065	-0.186 ppm	2.80 ppm	PASS 2.00 %
110 VDC (100.00 Range)	110.0000000	109.99995	3.73 ppm	109.99928	110.00072	-0.413 ppm	2.77 ppm	PASS 4.44 %
-19 VDC (100.00 Range)	-19.0000000	-18.999954	2.77 ppm	-19.00013	-18.99987	-2.429 ppm	4.08 ppm	PASS 24.63 %
-100 VDC (100.00 Range)	-100.0000000	-99.999898	3.73 ppm	-100.00065	-99.999347	-1.020 ppm	2.80 ppm	PASS 10.93 %
-110 VDC (100.00 Range)	-110.0000000	-109.99988	3.73 ppm	-110.00072	-109.99928	-1.060 ppm	2.77 ppm	PASS 11.40 %
190 VDC (1000.00 Range)	190.0000000	189.99984	3.73 ppm	189.99872	190.00128	-0.824 ppm	3.03 ppm	PASS 8.58 %
500 VDC (1000.00 Range)	500.0000000	500.00074	3.73 ppm	499.99678	500.00322	1.473 ppm	2.70 ppm	PASS 19.75 %
1000 VDC (1000.00 Range)	1000.0000000	1000.0001	5.45 ppm	999.97995	1000.02	0.095 ppm	2.60 ppm	PASS 0.36 %
-190 VDC (1000.00 Range)	-190.0000000	-189.9998	3.73 ppm	-190.00128	-189.99872	-1.058 ppm	3.03 ppm	PASS 11.02 %
-500 VDC (1000.00 Range)	-500.0000000	-500.00065	3.73 ppm	-500.00322	-499.99678	1.291 ppm	2.70 ppm	PASS 5.14 %
-1000 VDC (1000.00 Range)	-1000.0000000	-1000.0002	5.45 ppm	-1000.02	-999.97995	0.232 ppm	2.60 ppm	PASS 0.88 %

4W test procedure for all test points that verify Gain of the OHMF function. 4-wire kelvin connection is used between DMM and MFC.
 1GΩ resistance range is not tested, as it require external standard, MFC unable to provide this range value.

OHM Test	Reference	DUT	Source unc.	Low Limit	Hi limit	Measured	24h spec	Result
1 Ω OCOMP 1, DELAY 1.5	0.9997928 Ω	0.99977222 Ω	32.0 ppm	9.9972581E-01	9.9985979E-01	-20.588 ppm	35.0 ppm	PASS, 21.70 % of 94.86 ppm
1.9 Ω OCOMP 1, DELAY 1.5	1.8998366 Ω	1.8997986 Ω	25.0 ppm	1.8997496E+00	1.8999236E+00	-20.028 ppm	20.8 ppm	PASS, 30.80 % of 65.03 ppm
10 Ω OCOMP 1, DELAY 1.5	10.000584 Ω	10.000585 Ω	5.0 ppm	1.0000454E+01	1.0000714E+01	0.082 ppm	8.0 ppm	PASS, 0.44 % of 18.87 ppm
19 Ω OCOMP 1, DELAY 1.5	19.000245 Ω	19.000288 Ω	4.0 ppm	1.8999812E+01	1.9000678E+01	2.279 ppm	18.8 ppm	PASS, 5.93 % of 38.42 ppm
100 Ω OCOMP 1, DELAY 1.5	99.99666 Ω	99.996802 Ω	1.7 ppm	9.9995890E+01	9.9997430E+01	1.416 ppm	6.0 ppm	PASS, 11.36 % of 12.47 ppm
190 Ω OCOMP 1, DELAY 1.5	189.99422 Ω	189.9948 Ω	1.7 ppm	1.8999332E+02	1.8999512E+02	3.048 ppm	3.1 ppm	PASS, 43.62 % of 6.99 ppm
1.0 kΩ OCOMP 1, DELAY 1.5	1000.025 Ω	1000.0261 Ω	1.7 ppm	1.0000211E+03	1.0000289E+03	1.105 ppm	2.2 ppm	PASS, 19.88 % of 5.56 ppm
1.9 kΩ OCOMP 1, DELAY 1.5	1899.903 Ω	1899.9077 Ω	1.7 ppm	1.8998940E+03	1.8999120E+03	2.500 ppm	3.1 ppm	PASS, 35.77 % of 6.99 ppm
10 kΩ OCOMP 1, DELAY 1.5	9999.784 Ω	9999.7984 Ω	1.6 ppm	9.9997460E+03	9.9998220E+03	1.442 ppm	2.2 ppm	PASS, 26.51 % of 5.44 ppm
19 kΩ OCOMP 1, DELAY 1.5	18999.247 Ω	18999.286 Ω	1.7 ppm	1.8999157E+04	1.8999337E+04	2.064 ppm	3.1 ppm	PASS, 29.54 % of 6.99 ppm
100 kΩ OCOMP 1, DELAY 1.5	99994.5 Ω	99994.446 Ω	2.0 ppm	9.9994080E+04	9.9994920E+04	-0.542 ppm	2.2 ppm	PASS, 9.11 % of 5.95 ppm
190 kΩ OCOMP 1, DELAY 1.5	189988.68 Ω	189989.18 Ω	2.0 ppm	1.8998540E+05	1.8999196E+05	2.608 ppm	15.3 ppm	PASS, 8.47 % of 30.79 ppm
1.0 MΩ OCOMP 1, DELAY 1.5	999979.8 Ω	999978.51 Ω	2.5 ppm	9.9996630E+05	9.9999330E+05	-1.291 ppm	11.0 ppm	PASS, 5.72 % of 22.56 ppm
1.9 MΩ OCOMP 1, DELAY 1.5	1899973.9 Ω	1899987.4 Ω	3.0 ppm	1.8998232E+06	1.9001246E+06	7.126 ppm	76.3 ppm	PASS, 4.66 % of 152.75 ppm
10 MΩ OCOMP 1, DELAY 1.5	9999063 Ω	9999010.7 Ω	10.0 ppm	9.9984131E+06	9.9997129E+06	-5.229 ppm	55.0 ppm	PASS, 4.68 % of 111.80 ppm
19 MΩ OCOMP 1, DELAY 1.5	18998631 Ω	18998718 Ω	20.0 ppm	1.8987752E+07	1.9009510E+07	4.571 ppm	552.6 ppm	PASS, 0.41 % of 1105.99 ppm
100 MΩ 2-wire, OCOMP 0, DELAY 0	1.0000492E+08 Ω	1.0000483E+08 Ω	50.0 ppm	9.9948917E+07	1.0006092E+08	-0.888 ppm	510.0 ppm	PASS, 0.09 % of 1024.89 ppm

4W and 2W Zero test procedure for all test points that verify Zero offset of the OHMF function. 4-wire kelvin connection is used between DMM and MFC. 1GΩ resistance range is tested using the external standard, as MFC unable to provide this range value.

OHM ZERO 4W	DUT	Source unc.	Low Limit	Hi limit	Measured	24h spec	Result
10 Ω	Range -0.0000033 Ω	5.000e-05 Ω	-5e-05	5e-05	N/A	8.0000e-06 Ω	PASS
100 Ω	Range -0.0000482 Ω	5.500e-04 Ω	-0.00055	0.00055	N/A	2.2000e-06 Ω	PASS
1.0 kΩ	Range 0.0000000 Ω	5.500e-03 Ω	-0.0055	0.0055	N/A	2.2000e-06 Ω	PASS
10 kΩ	Range 0.0003784 Ω	5.500e-02 Ω	-0.055	0.055	N/A	2.2000e-06 Ω	PASS
100 kΩ	Range 0.0018003 Ω	5.500e-01 Ω	-0.55	0.55	N/A	2.2000e-06 Ω	PASS
1.0 MΩ	Range 0.2052237 Ω	5.500e+00 Ω	-5.5	5.5	N/A	2.2000e-06 Ω	PASS
10 MΩ	Range 1.5864768 Ω	5.500e+00 Ω	-5.5	5.5	N/A	2.2000e-06 Ω	PASS
100 MΩ	Range 1.9470401 Ω	5.500e+00 Ω	-5.5	5.5	N/A	2.2000e-06 Ω	PASS
1 GΩ	Range 1.9830965 Ω	5.500e+00 Ω	-5.5	5.5	N/A	2.2000e-06 Ω	PASS
OHM ZERO 2W	DUT	Source unc.	Low Limit	Hi limit	Measured	24h spec	Result
10 Ω	Range 0.2529217 Ω	3.000e-01 Ω	-0.3	0.3	N/A	8.0000e-06 Ω	PASS
100 Ω	Range 0.2408156 Ω	3.500e-01 Ω	-0.35	0.35	N/A	2.2000e-06 Ω	PASS
1.0 kΩ	Range 0.2348471 Ω	4.000e-01 Ω	-0.4	0.4	N/A	2.2000e-06 Ω	PASS
10 kΩ	Range 0.2386310 Ω	4.000e-01 Ω	-0.4	0.4	N/A	2.2000e-06 Ω	PASS
100 kΩ	Range 0.2405133 Ω	5.500e-01 Ω	-0.55	0.55	N/A	2.2000e-06 Ω	PASS
1.0 MΩ	Range 0.2700300 Ω	5.500e+00 Ω	-5.5	5.5	N/A	2.2000e-06 Ω	PASS
10 MΩ	Range 0.6490114 Ω	5.500e+00 Ω	-5.5	5.5	N/A	2.2000e-06 Ω	PASS
100 MΩ	Range -0.1442247 Ω	5.500e+00 Ω	-5.5	5.5	N/A	2.2000e-06 Ω	PASS
1 GΩ	Range 0.0000000 Ω	5.500e+01 Ω	-55	55	N/A	2.2000e-06 Ω	PASS

Procedure for all test points in the AC performance verification for SYNCronous mode. This is highest AC accuracy test. AC-measurements does not suffer from TEMF offsets, test connection can be made using shielded leads terminated with dual banana plugs. MFC main AC output is used as reference source

ACV SYNC Test	DUT	w/Guardband	Low Limit	Hi limit	Measured	24h spec	Result, % spec
0.01 V AC+DC @ 10 Hz	0.010000875	0.0312 %	0.009991	0.010009	0.0088 %	0.0600 %	PASS 6.47 %
0.01 V AC+DC @ 20 Hz	0.010000687	0.0312 %	0.009991	0.010009	0.0069 %	0.0600 %	PASS 5.08 %
0.01 V AC+DC @ 40 Hz	0.010000627	0.0312 %	0.009991	0.010009	0.0063 %	0.0600 %	PASS 4.63 %
0.01 V AC+DC @ 100 Hz	0.010000636	0.0312 %	0.009994	0.010006	0.0064 %	0.0310 %	PASS 7.22 %
0.01 V AC+DC @ 1.0 kHz	0.0099997664	0.0312 %	0.009994	0.010006	-0.0023 %	0.0310 %	PASS 2.65 %
0.01 V AC+DC @ 10.0 kHz	0.0099988551	0.0312 %	0.009993	0.010007	-0.0114 %	0.0410 %	PASS 11.11 %
0.01 V AC+DC @ 20.0 kHz	0.0099990082	0.0312 %	0.009993	0.010007	-0.0099 %	0.0410 %	PASS 9.62 %
0.01 V AC+DC @ 50.0 kHz	0.0099957649	0.0447 %	0.009984	0.010016	-0.0424 %	0.1110 %	PASS 17.69 %
0.01 V AC+DC @ 100.0 kHz	0.0099740102	0.0773 %	0.009941	0.010059	-0.2599 %	0.5110 %	PASS 25.14 %
0.01 V AC+DC @ 300.0 kHz	0.0097998627	0.1500 %	0.009583	0.010417	-2.0014 %	4.0200 %	PASS 24.88 %
0.01 V AC+DC @ 500.0 kHz	0.0095352973	0.2500 %	0.007470	0.012530	-4.6470 %	25.0500 %	PASS 9.28 %
0.01 V AC+DC @ 1.0 MHz	0.0084634174	0.4000 %	0.007455	0.012545	-15.3658 %	25.0500 %	PASS 30.67 %
0.03 V AC+DC @ 10 Hz	0.029998695	0.0121 %	0.029989	0.030011	-0.0044 %	0.0233 %	PASS 8.27 %
0.03 V AC+DC @ 20 Hz	0.029997737	0.0121 %	0.029989	0.030011	-0.0075 %	0.0233 %	PASS 14.34 %
0.03 V AC+DC @ 40 Hz	0.029997828	0.0121 %	0.029989	0.030011	-0.0072 %	0.0233 %	PASS 13.76 %
0.03 V AC+DC @ 100 Hz	0.029997818	0.0121 %	0.029992	0.030008	-0.0073 %	0.0137 %	PASS 19.90 %
0.03 V AC+DC @ 1.0 kHz	0.029998645	0.0121 %	0.029992	0.030008	-0.0045 %	0.0137 %	PASS 12.35 %
0.03 V AC+DC @ 10.0 kHz	0.029998445	0.0121 %	0.029990	0.030010	-0.0052 %	0.0207 %	PASS 10.81 %
0.03 V AC+DC @ 20.0 kHz	0.029997232	0.0121 %	0.029990	0.030010	-0.0092 %	0.0207 %	PASS 19.25 %
0.03 V AC+DC @ 50.0 kHz	0.029996788	0.0256 %	0.029981	0.030019	-0.0107 %	0.0367 %	PASS 11.97 %
0.03 V AC+DC @ 100.0 kHz	0.029986453	0.0591 %	0.029956	0.030044	-0.0452 %	0.0867 %	PASS 21.53 %
0.03 V AC+DC @ 300.0 kHz	0.029932275	0.0964 %	0.029871	0.030129	-0.2257 %	0.3333 %	PASS 32.53 %
0.03 V AC+DC @ 500.0 kHz	0.02989526	0.1500 %	0.029645	0.030355	-0.3491 %	1.0333 %	PASS 16.72 %
0.03 V AC+DC @ 1.0 MHz	0.029862914	0.3000 %	0.029600	0.030400	-0.4570 %	1.0333 %	PASS 21.23 %
0.1 V AC+DC @ 10 Hz	0.099990916	0.0121 %	0.099974	0.100026	-0.0091 %	0.0140 %	PASS 24.51 %
0.1 V AC+DC @ 20 Hz	0.09998939	0.0121 %	0.099974	0.100026	-0.0106 %	0.0140 %	PASS 28.63 %
0.1 V AC+DC @ 40 Hz	0.099989005	0.0121 %	0.099974	0.100026	-0.0110 %	0.0140 %	PASS 29.67 %
0.1 V AC+DC @ 100 Hz	0.099988415	0.0121 %	0.099979	0.100021	-0.0116 %	0.0090 %	PASS 38.34 %
0.1 V AC+DC @ 1.0 kHz	0.099989623	0.0121 %	0.099979	0.100021	-0.0104 %	0.0090 %	PASS 34.34 %
0.1 V AC+DC @ 10.0 kHz	0.099988437	0.0121 %	0.099972	0.100028	-0.0116 %	0.0160 %	PASS 28.79 %
0.1 V AC+DC @ 20.0 kHz	0.099985099	0.0121 %	0.099972	0.100028	-0.0149 %	0.0160 %	PASS 37.10 %
0.1 V AC+DC @ 50.0 kHz	0.099979865	0.0256 %	0.099942	0.100058	-0.0201 %	0.0320 %	PASS 24.55 %
0.1 V AC+DC @ 100.0 kHz	0.099943516	0.0591 %	0.099859	0.100141	-0.0565 %	0.0820 %	PASS 27.94 %
0.1 V AC+DC @ 300.0 kHz	0.099759804	0.0964 %	0.099594	0.100406	-0.2402 %	0.3100 %	PASS 37.00 %
0.1 V AC+DC @ 500.0 kHz	0.099637973	0.1500 %	0.098840	0.101160	-0.3620 %	1.0100 %	PASS 17.73 %
0.1 V AC+DC @ 1.0 MHz	0.099630094	0.3000 %	0.098690	0.101310	-0.3699 %	1.0100 %	PASS 17.55 %
0.3 V AC+DC @ 10 Hz	0.29997322	0.0050 %	0.299918	0.300082	-0.0089 %	0.0223 %	PASS 19.51 %
0.3 V AC+DC @ 20 Hz	0.29996479	0.0050 %	0.299918	0.300082	-0.0117 %	0.0223 %	PASS 25.66 %
0.3 V AC+DC @ 40 Hz	0.29996305	0.0050 %	0.299918	0.300082	-0.0123 %	0.0223 %	PASS 26.92 %
0.3 V AC+DC @ 100 Hz	0.29996362	0.0050 %	0.299944	0.300056	-0.0121 %	0.0137 %	PASS 41.71 %
0.3 V AC+DC @ 1.0 kHz	0.29996749	0.0050 %	0.299944	0.300056	-0.0108 %	0.0137 %	PASS 37.27 %
0.3 V AC+DC @ 10.0 kHz	0.29995044	0.0050 %	0.299923	0.300077	-0.0165 %	0.0207 %	PASS 38.86 %
0.3 V AC+DC @ 20.0 kHz	0.29993318	0.0050 %	0.299923	0.300077	-0.0223 %	0.0207 %	PASS 52.40 %
0.3 V AC+DC @ 50.0 kHz	0.29995865	0.0085 %	0.299864	0.300136	-0.0138 %	0.0367 %	PASS 18.31 %
0.3 V AC+DC @ 100.0 kHz	0.29999104	0.0138 %	0.299699	0.300301	-0.0030 %	0.0867 %	PASS 1.70 %
0.3 V AC+DC @ 300.0 kHz	0.30032972	0.0425 %	0.298872	0.301128	0.1099 %	0.3333 %	PASS 16.35 %
0.3 V AC+DC @ 500.0 kHz	0.3009836	0.1100 %	0.296570	0.303430	0.3279 %	1.0333 %	PASS 15.78 %
0.3 V AC+DC @ 1.0 MHz	0.30284675	0.1800 %	0.296360	0.303640	0.9489 %	1.0333 %	PASS 45.23 %
1.0 V AC+DC @ 10 Hz	0.99986703	0.0050 %	0.999820	1.000180	-0.0133 %	0.0130 %	PASS 47.79 %
1.0 V AC+DC @ 20 Hz	0.99984826	0.0050 %	0.999820	1.000180	-0.0152 %	0.0130 %	PASS 54.53 %
1.0 V AC+DC @ 40 Hz	0.99984011	0.0050 %	0.999820	1.000180	-0.0160 %	0.0130 %	PASS 57.47 %
1.0 V AC+DC @ 100 Hz	0.99983772	0.0050 %	0.999860	1.000140	-0.0162 %	0.0090 %	PASS 78.98 %
1.0 V AC+DC @ 1.0 kHz	0.99985582	0.0050 %	0.999860	1.000140	-0.0144 %	0.0090 %	PASS 70.17 %
1.0 V AC+DC @ 10.0 kHz	0.99978161	0.0050 %	0.999790	1.000210	-0.0218 %	0.0160 %	PASS 65.19 %
1.0 V AC+DC @ 20.0 kHz	0.99975544	0.0050 %	0.999790	1.000210	-0.0245 %	0.0160 %	PASS 73.00 %
1.0 V AC+DC @ 50.0 kHz	0.99982438	0.0085 %	0.999595	1.000405	-0.0176 %	0.0320 %	PASS 26.51 %
1.0 V AC+DC @ 100.0 kHz	0.99989008	0.0138 %	0.999042	1.000958	-0.0110 %	0.0820 %	PASS 6.61 %
1.0 V AC+DC @ 300.0 kHz	1.0011038	0.0425 %	0.996475	1.003525	0.1104 %	0.3100 %	PASS 17.64 %

1.0 V AC+DC @ 500.0 kHz	1.0032986	0.1100 %	0.988800	1.011200	0.3299 %	1.0100 %	PASS 16.23 %
1.0 V AC+DC @ 1.0 MHz	1.0097572	0.1800 %	0.988100	1.011900	0.9757 %	1.0100 %	PASS 47.55 %
3.0 V AC+DC @ 10 Hz	2.9998159	0.0048 %	2.999245	3.000755	-0.0061 %	0.0203 %	PASS 14.69 %
3.0 V AC+DC @ 20 Hz	2.9997725	0.0048 %	2.999245	3.000755	-0.0076 %	0.0203 %	PASS 18.15 %
3.0 V AC+DC @ 40 Hz	2.9997742	0.0048 %	2.999245	3.000755	-0.0075 %	0.0203 %	PASS 18.01 %
3.0 V AC+DC @ 100 Hz	2.999791	0.0048 %	2.999445	3.000555	-0.0070 %	0.0137 %	PASS 24.03 %
3.0 V AC+DC @ 1.0 kHz	2.9998695	0.0048 %	2.999445	3.000555	-0.0044 %	0.0137 %	PASS 15.01 %
3.0 V AC+DC @ 10.0 kHz	2.9997335	0.0048 %	2.999235	3.000765	-0.0089 %	0.0207 %	PASS 20.93 %
3.0 V AC+DC @ 20.0 kHz	2.999676	0.0048 %	2.999235	3.000765	-0.0108 %	0.0207 %	PASS 25.45 %
3.0 V AC+DC @ 50.0 kHz	2.9996277	0.0085 %	2.998644	3.001356	-0.0124 %	0.0367 %	PASS 16.48 %
3.0 V AC+DC @ 100.0 kHz	2.9988382	0.0121 %	2.997036	3.002964	-0.0387 %	0.0867 %	PASS 22.13 %
3.0 V AC+DC @ 300.0 kHz	2.9955341	0.0336 %	2.988991	3.011009	-0.1489 %	0.3333 %	PASS 22.22 %
3.0 V AC+DC @ 500.0 kHz	2.9994172	0.1100 %	2.965700	3.034300	-0.0194 %	1.0333 %	PASS 0.93 %
3.0 V AC+DC @ 1.0 MHz	3.022594	0.1700 %	2.963900	3.036100	0.7531 %	1.0333 %	PASS 35.96 %
10.0 V AC+DC @ 10 Hz	9.9995793	0.0048 %	9.998418	10.001582	-0.0042 %	0.0110 %	PASS 17.52 %
10.0 V AC+DC @ 20 Hz	9.9994257	0.0048 %	9.998418	10.001582	-0.0057 %	0.0110 %	PASS 23.91 %
10.0 V AC+DC @ 40 Hz	9.9993981	0.0048 %	9.998418	10.001582	-0.0060 %	0.0110 %	PASS 25.06 %
10.0 V AC+DC @ 100 Hz	9.9993792	0.0048 %	9.998618	10.001382	-0.0062 %	0.0090 %	PASS 30.41 %
10.0 V AC+DC @ 1.0 kHz	9.9996543	0.0048 %	9.998618	10.001382	-0.0035 %	0.0090 %	PASS 16.93 %
10.0 V AC+DC @ 10.0 kHz	9.999107	0.0048 %	9.997918	10.002082	-0.0089 %	0.0160 %	PASS 26.72 %
10.0 V AC+DC @ 20.0 kHz	9.9989423	0.0048 %	9.997918	10.002082	-0.0106 %	0.0160 %	PASS 31.65 %
10.0 V AC+DC @ 50.0 kHz	9.9987092	0.0085 %	9.995946	10.004054	-0.0129 %	0.0320 %	PASS 19.49 %
10.0 V AC+DC @ 100.0 kHz	9.9954659	0.0121 %	9.990586	10.009414	-0.0453 %	0.0820 %	PASS 27.35 %
10.0 V AC+DC @ 300.0 kHz	9.9851043	0.0336 %	9.965636	10.034364	-0.1490 %	0.3100 %	PASS 23.89 %
10.0 V AC+DC @ 500.0 kHz	9.9977631	0.1100 %	9.888000	10.112000	-0.0224 %	1.0100 %	PASS 1.10 %
10.0 V AC+DC @ 1.0 MHz	10.075481	0.1700 %	9.882000	10.118000	0.7548 %	1.0100 %	PASS 36.85 %
30 V AC+DC @ 10 Hz	29.997265	0.0060 %	29.988195	30.011805	-0.0091 %	0.0333 %	PASS 13.46 %
30 V AC+DC @ 20 Hz	29.996862	0.0060 %	29.988195	30.011805	-0.0105 %	0.0333 %	PASS 15.44 %
30 V AC+DC @ 40 Hz	29.996694	0.0060 %	29.988195	30.011805	-0.0110 %	0.0333 %	PASS 16.26 %
30 V AC+DC @ 100 Hz	29.99678	0.0060 %	29.990195	30.009805	-0.0107 %	0.0267 %	PASS 19.63 %
30 V AC+DC @ 1.0 kHz	29.997322	0.0060 %	29.990195	30.009805	-0.0089 %	0.0267 %	PASS 16.33 %
30 V AC+DC @ 10.0 kHz	29.995966	0.0060 %	29.990195	30.009805	-0.0134 %	0.0267 %	PASS 24.59 %
30 V AC+DC @ 20.0 kHz	29.993762	0.0060 %	29.990195	30.009805	-0.0208 %	0.0267 %	PASS 38.03 %
30 V AC+DC @ 50.0 kHz	29.988138	0.0060 %	29.985695	30.014305	-0.0395 %	0.0417 %	PASS 46.96 %
30 V AC+DC @ 100.0 kHz	29.960088	0.0174 %	29.956791	30.043209	-0.1330 %	0.1267 %	PASS 52.03 %
30 V AC+DC @ 300.0 kHz	29.747009	0.0991 %	29.840273	30.159727	-0.8433 %	0.4333 %	PASS 94.86 %
30 V AC+DC @ 500.0 kHz	29.502128	0.5200 %	29.384000	30.616000	-1.6596 %	1.5333 %	PASS 51.25 %
100.0 V AC+DC @ 10 Hz	99.989149	0.0060 %	99.969982	100.030018	-0.0109 %	0.0240 %	PASS 21.93 %
100.0 V AC+DC @ 20 Hz	99.987763	0.0060 %	99.969982	100.030018	-0.0122 %	0.0240 %	PASS 24.73 %
100.0 V AC+DC @ 40 Hz	99.987176	0.0060 %	99.969982	100.030018	-0.0128 %	0.0240 %	PASS 25.91 %
100.0 V AC+DC @ 100 Hz	99.986827	0.0060 %	99.971982	100.028018	-0.0132 %	0.0220 %	PASS 28.88 %
100.0 V AC+DC @ 1.0 kHz	99.988858	0.0060 %	99.971982	100.028018	-0.0111 %	0.0220 %	PASS 24.42 %
100.0 V AC+DC @ 10.0 kHz	99.985078	0.0060 %	99.971982	100.028018	-0.0149 %	0.0220 %	PASS 32.71 %
100.0 V AC+DC @ 20.0 kHz	99.978336	0.0060 %	99.971982	100.028018	-0.0217 %	0.0220 %	PASS 47.49 %
100.0 V AC+DC @ 50.0 kHz	99.956852	0.0095 %	99.953455	100.046545	-0.0431 %	0.0370 %	PASS 56.46 %
100.0 V AC+DC @ 100.0 kHz	99.858331	0.0174 %	99.860636	100.139364	-0.1417 %	0.1220 %	PASS 57.48 %
300.0 V AC+DC @ 40 Hz	299.91756	0.0079 %	299.056408	300.943592	-0.0275 %	0.3067 %	PASS 4.48 %
300.0 V AC+DC @ 100 Hz	299.91883	0.0079 %	299.836408	300.163592	-0.0271 %	0.0467 %	PASS 28.59 %
300.0 V AC+DC @ 1.0 kHz	299.92101	0.0079 %	299.836408	300.163592	-0.0263 %	0.0467 %	PASS 27.82 %
300.0 V AC+DC @ 10.0 kHz	299.90511	0.0110 %	299.766865	300.233135	-0.0316 %	0.0667 %	PASS 23.40 %
300.0 V AC+DC @ 20.0 kHz	299.88231	0.0110 %	299.766865	300.233135	-0.0392 %	0.0667 %	PASS 29.03 %
300.0 V AC+DC @ 50.0 kHz	299.97015	0.0245 %	299.546599	300.453401	-0.0099 %	0.1267 %	PASS 3.86 %
300.0 V AC+DC @ 100.0 kHz	300.1072	0.0660 %	298.882000	301.118000	0.0357 %	0.3067 %	PASS 5.70 %
750.0 V AC+DC @ 40 Hz	749.85996	0.0079 %	747.671020	752.328980	-0.0187 %	0.3027 %	PASS 3.08 %
750.0 V AC+DC @ 100 Hz	749.85717	0.0079 %	749.621020	750.378980	-0.0190 %	0.0427 %	PASS 21.95 %
750.0 V AC+DC @ 1.0 kHz	749.86463	0.0079 %	749.621020	750.378980	-0.0180 %	0.0427 %	PASS 20.80 %
750.0 V AC+DC @ 10.0 kHz	749.77865	0.0110 %	749.447162	750.552838	-0.0295 %	0.0627 %	PASS 23.19 %
750.0 V AC+DC @ 20.0 kHz	749.68822	0.0110 %	749.447162	750.552838	-0.0416 %	0.0627 %	PASS 32.66 %
750.0 V AC+DC @ 50.0 kHz	749.85036	0.0245 %	748.896498	751.103503	-0.0200 %	0.1227 %	PASS 7.98 %
750.0 V AC+DC @ 45.0 kHz	749.78074	0.0660 %	748.585000	751.415000	-0.0292 %	0.1227 %	PASS 10.49 %

Procedure for all test points that verify Gain of the DC current DCI function. Both +/-FS points are tested.
 2-wire connection at LO and DCI is used between DMM and MFC.
 DCI gain range points verify gain of the DC current function, using corrected 24-hour MFC output.

DCI Test	100nA-1A	DUT	Source unc.	Low Limit	Hi limit	Measured	24h spec	Result
Zero µADC	0	-6.6264108E-11						INFO
50 nADC	5E-08	4.9905867E-08						INFO
100 nADC	1.00000E-07 A	9.9961862E-08 A	71.82 ppm	9.995182E-08	1.000482E-07	-381.382 ppm	410 ppm	PASS 45.81 %
-100 nADC	-1.00000E-07 A	-1.0003860E-07 A	71.82 ppm	-1.000482E-07	-9.995182E-08	385.963 ppm	410 ppm	PASS 46.36 %
-50 nADC	-5E-08	-5.0083485E-08						INFO
Zero µADC	0	-1.6275051E-11						INFO
0.5 µADC	5.00000E-07 A	5.0000910E-07 A	71.82 ppm	4.999191E-07	5.000809E-07	18.200 ppm	90 ppm	PASS 7.90 %
1.0 µADC	1.00000E-06 A	9.9997657E-07 A	71.82 ppm	9.998782E-07	1.000122E-06	-23.425 ppm	50 ppm	PASS 13.38 %
-1.0 µADC	-1.00000E-06 A	-9.9996977E-07 A	71.82 ppm	-1.000122E-06	-9.998782E-07	-30.232 ppm	50 ppm	PASS 17.27 %
-0.5 µADC	-5.00000E-07 A	-4.9999870E-07 A	71.82 ppm	-5.000809E-07	-4.999191E-07	-2.604 ppm	90 ppm	PASS 1.13 %
Zero 00 µADC	0	8.4660996E-12						INFO
5 µADC	5.00000E-06 A	4.9999663E-06 A	71.82 ppm	4.999521E-06	5.000479E-06	-6.735 ppm	24 ppm	PASS 4.45 %
10 µADC	1.00000E-05 A	9.9999444E-06 A	71.82 ppm	9.999112E-06	1.000089E-05	-5.564 ppm	17 ppm	PASS 3.77 %
-10 µADC	-1.00000E-05 A	-1.0000009E-05 A	71.82 ppm	-1.000089E-05	-9.999112E-06	0.917 ppm	17 ppm	PASS 0.62 %
-5 µADC	-5.00000E-06 A	-5.0000104E-06 A	71.82 ppm	-5.000479E-06	-4.999521E-06	2.087 ppm	24 ppm	PASS 1.38 %
Zero 000 µADC	0	-3.5502366E-11						INFO
50 µADC	5.00000E-05 A	4.9999905E-05 A	71.82 ppm	4.999531E-05	5.000469E-05	-1.906 ppm	22 ppm	PASS 1.27 %
100 µADC	1.00000E-04 A	9.9999742E-05 A	71.82 ppm	9.999122E-05	0.0001000088	-2.584 ppm	16 ppm	PASS 1.76 %
-100 µADC	-1.00000E-04 A	-9.9999607E-05 A	71.82 ppm	-0.0001000088	-9.999122E-05	-3.932 ppm	16 ppm	PASS 2.67 %
-50 µADC	-5.00000E-05 A	-4.9999668E-05 A	71.82 ppm	-5.000469E-05	-4.999531E-05	-6.633 ppm	22 ppm	PASS 4.42 %
Zero mADC	0	-6.4243621E-12						INFO
0.5 mADC	5.00000E-04 A	4.9999971E-04 A	33.64 ppm	0.0004999742	0.0005000258	-0.575 ppm	18 ppm	PASS 0.75 %
1.0 mADC	1.00000E-03 A	9.9999682E-04 A	33.64 ppm	0.0009999524	0.001000048	-3.176 ppm	14 ppm	PASS 4.36 %
-1.0 mADC	-1.00000E-03 A	-9.9999175E-04 A	33.64 ppm	-0.001000048	-0.0009999524	-8.254 ppm	14 ppm	PASS 11.33 %
-0.5 mADC	-5.00000E-04 A	-4.9999458E-04 A	33.64 ppm	-0.0005000258	-0.0004999742	-10.844 ppm	18 ppm	PASS 14.21 %
Zero 00 mADC	0	1.5340004E-11						INFO
5 mADC	5.00000E-03 A	4.9999926E-03 A	32.27 ppm	0.004999749	0.005000251	-1.489 ppm	18 ppm	PASS 2.01 %
10 mADC	1.00000E-02 A	9.9999721E-03 A	32.27 ppm	0.009999537	0.01000046	-2.791 ppm	14 ppm	PASS 3.97 %
-10 mADC	-1.00000E-02 A	-9.9999692E-03 A	32.27 ppm	-0.01000046	-0.009999537	-3.076 ppm	14 ppm	PASS 4.37 %
-5 mADC	-5.00000E-03 A	-4.9999813E-03 A	32.27 ppm	-0.005000251	-0.004999749	-3.739 ppm	18 ppm	PASS 5.06 %
Zero 000 mADC	0	-2.5728508E-11						INFO
50 mADC	5.00000E-02 A	5.0000212E-02 A	53.32 ppm	0.04999568	0.05000432	4.244 ppm	33 ppm	PASS 3.38 %
100 mADC	1.00000E-01 A	1.0000027E-01 A	53.32 ppm	0.09999177	0.1000082	2.691 ppm	29 ppm	PASS 2.22 %
-100 mADC	-1.00000E-01 A	-1.0000082E-01 A	53.32 ppm	-0.1000082	-0.09999177	8.243 ppm	29 ppm	PASS 6.79 %
-50 mADC	-5.00000E-02 A	-5.0000331E-02 A	53.32 ppm	-0.05000432	-0.04999568	6.616 ppm	33 ppm	PASS 5.28 %
Zero ADC	0	6.4434881E-11						INFO
0.5 ADC	5.00000E-01 A	4.9998951E-01 A	115.22 ppm	0.4998824	0.5001176	-20.986 ppm	120 ppm	PASS 6.31 %
1.0 ADC	1.00000E+00 A	9.9992939E-01 A	115.22 ppm	0.9997748	1.000225	-70.607 ppm	110 ppm	PASS 22.16 %
-1.0 ADC	-1.00000E+00 A	-9.9994936E-01 A	115.22 ppm	-1.000225	-0.9997748	-50.644 ppm	110 ppm	PASS 15.90 %
-0.5 ADC	-5.00000E-01 A	-4.9998597E-01 A	115.22 ppm	-0.5001176	-0.4998824	-28.064 ppm	120 ppm	PASS 8.43 %

Procedure for all test points that verify Gain of the AC Current ACI function. Three frequency band points are tested, 50 Hz, 60 Hz and 1 kHz. 2-wire connection at LO and DCI is used between DMM and MFC.

ACI Test	200µA-2A	DUT	Source unc.	Low Limit	Hi limit	Measured	24h spec	Result, % spec
10 µA AC @ 50 Hz	1e-05	1.0180613E-05 A	0.0160 %	9.9623955e-06	1.00376045e-05	1.8061 %	0.3600 %	INFO
100 µA AC @ 50 Hz	0.0001	1.0000757E-04 A	0.0160 %	9.9893955e-05	0.000100106045	0.0076 %	0.0900 %	PASS 4.14 %
1.0 mA AC @ 50 Hz	0.001	1.0000652E-03 A	0.0160 %	0.00099903955	0.00100096045	0.0065 %	0.0800 %	PASS 3.99 %
10 mA AC @ 50 Hz	0.01	1.0000431E-02 A	0.0160 %	0.0099903955	0.0100096045	0.0043 %	0.0800 %	PASS 2.64 %
100 mA AC @ 50 Hz	0.1	1.0000884E-01 A	0.0133 %	0.099906682	0.100093318	0.0088 %	0.0800 %	PASS 5.45 %
1.0 A AC @ 50 Hz	1.0	9.9994678E-01 A	0.0133 %	0.99886682	1.00113318	-0.0053 %	0.1000 %	PASS 2.64 %
10 µA AC @ 60 Hz	1e-05	1.0185813E-05 A	0.0133 %	9.9626682e-06	1.00373318e-05	1.8581 %	0.3600 %	INFO
100 µA AC @ 60 Hz	0.0001	1.0001418E-04 A	0.0133 %	9.9896682e-05	0.000100103318	0.0142 %	0.0900 %	PASS 7.79 %
1.0 mA AC @ 60 Hz	0.001	1.0000987E-03 A	0.0129 %	0.00099907136	0.00100092864	0.0099 %	0.0800 %	PASS 6.09 %
10 mA AC @ 60 Hz	0.01	1.0000761E-02 A	0.0129 %	0.0099907136	0.0100092864	0.0076 %	0.0800 %	PASS 4.70 %
100 mA AC @ 60 Hz	0.1	1.0001254E-01 A	0.0288 %	0.099891182	0.100108818	0.0125 %	0.0800 %	PASS 7.37 %
1.0 A AC @ 60 Hz	1.0	9.9998512E-01 A	0.0288 %	0.99871182	1.00128818	-0.0015 %	0.1000 %	PASS 0.71 %
10 µA AC @ 1.0 kHz	1e-05	1.0181641E-05 A	0.0160 %	9.9623955e-06	1.00376045e-05	1.8164 %	0.3600 %	INFO
100 µA AC @ 1.0 kHz	0.0001	1.0001267E-04 A	0.0160 %	9.9893955e-05	0.000100106045	0.0127 %	0.0900 %	PASS 6.93 %
1.0 mA AC @ 1.0 kHz	0.001	1.0001536E-03 A	0.0160 %	0.00099933955	0.00100066045	0.0154 %	0.0500 %	PASS 14.63 %
10 mA AC @ 1.0 kHz	0.01	1.0001302E-02 A	0.0160 %	0.0099933955	0.0100066045	0.0130 %	0.0500 %	PASS 12.40 %
100 mA AC @ 1.0 kHz	0.1	1.0001793E-01 A	0.0133 %	0.099936682	0.100063318	0.0179 %	0.0500 %	PASS 17.33 %
1.0 A AC @ 1.0 kHz	1.0	1.0001856E+00 A	0.0133 %	0.99866682	1.00133318	0.0186 %	0.1200 %	PASS 7.69 %

Test completed

Test date	28 August 2019 21:05
UUT Internal TEMP?	36.9

Lab temperature maintained +23°C ±2°C

Internal use only

Not validated

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