

Manufacturer	HEWLETT-PACKARD	Calibration date	December 21 2018
Model Number	3458A	Ambient Temperature	27.78 °C
Serial	HP4	Relative Humidity	53.30 %
ID Number	3458A	Pressure	1011.66
Notes	Test front ports	Test type	Hulk

This note is test dummy text block for further use. It allow to include user information for further reference

Reference standard	Mfg	Model	Options	Serial / Unc	CEID	Calibration date	Due date
MFC	Fluke	5720A	03/HLK	E2E6	XC01	12/06/2018	03/06/2019
Amplifier	Fluke	5725A		5930005	XA01	12/06/2018	03/06/2019
DMM	HP	3458A	001,X02	X	XD3	07/25/2018	01/25/2019
DC STD	xDevs.com	792X[2]	9.9999854 VDC	±2.2 ppm	XD01	02/16/2018	02/16/2019
STDR	ESI	SR104	10000.0012 KΩ	±1.00 ppm	XR04	06/30/2018	06/30/2019
STDR	IET	SRL-1	1.00000542 Ω	±2.60 ppm	PR02	09/27/2018	09/27/2019

MFC last calibrated	1.0 days ago	MFC since DCV ZERO	1.0 days ago
MFC since WBFLAT	11311.0 days ago	MFC since WBGAIN	271.0 days ago
MFC Confidence level	24h 95% REL	MFC Calibrate date	2018-12-20 00:00:00
MFC Calibrate date Zero	2018-12-20 00:00:00	Calibrate date WB Flatness	1988-10-01 00:00:00
Calibrate date WB Gain	2018-03-25 00:00:00	CAL CONST 6.5V reference voltage	6.95748155945
CAL CONST 13V reference voltage	13.8552993516	CAL CONST 22V range positive zero	398.17946
CAL CONST 22V range negative zero	398.17905	CAL CONST DAC Linearity	0.0
CAL CONST 10KOHM true output resistance	9999.78663439	CAL CONST 10KOHM standard resistance	9998.74432676
CAL CONST, Zero calibration temperature	23.0	CAL CONST, All calibration temp	23.0
Booster type	VB5725,IB5725	Current output posts	IB5725
Calibrate date 5725A AMP	2018-12-20 00:00:00	Calibrated days ago	Debug
CAL CONST, Amp ACAL temperature	23.0	CAL CONST, Amp CalCheck temperature	23.0

This note is test MFC dummy text block for further use.
Calibrator was warmed up >8 hours.

Main DC Voltage ranges performance test.

Checks zero offset and +/-FS calibration on all ranges

The following test for the offset voltage specification using MFC 0V source in 4-wire ext sense mode as reference.

DCV gain range points verify gain of the DC voltage function, using uncorrected 24-hour MFC output. DC voltage offset of DUT is nulled before FS tests.

Test Description	Expected Value	Measured Value	Measurement Uncertainty	Lower Limit	Upper Limit	Deviation	DUT Spec	Test Status
Short 0 mVDC	0.000000E+00	-4.14 µV	0.75 µV	-0.910 µV	0.910 µV	N/A	0.16 µV	FAIL
Short 0.0 VDC	0.000000E+00	-4.07 µV	0.75 µV	-0.900 µV	0.900 µV	N/A	0.15 µV	FAIL
Short 00.0 VDC	0.000000E+00	-3.49 µV	0.75 µV	-1.070 µV	1.070 µV	N/A	0.32 µV	FAIL
Short 000.0 VDC	0.000000E+00	27.00 µV	0.75 µV	-14.750 µV	14.750 µV	N/A	14.00 µV	FAIL
Short 0000.0 VDC	0.000000E+00	49.40 µV	0.75 µV	-41.750 µV	41.750 µV	N/A	41.00 µV	FAIL
DCV Test	0.1V-1000V	DUT	Source unc.	Low Limit	Hi limit	Measured	24h spec	Result
0.1 VDC (0.10 Range)	0.1000000	0.10000029	7.27 ppm	0.099998723	0.10000128	2.915 ppm	5.50 ppm	PASS 22.82 %
-0.1 VDC (0.10 Range)	-0.1000000	-0.10000043	7.27 ppm	-0.10000128	-0.099998723	4.335 ppm	5.50 ppm	PASS 33.94 %
0.1 VDC (1.00 Range)	0.1000000	0.1000005	7.27 ppm	0.099999093	0.10000091	4.980 ppm	1.80 ppm	PASS 54.91 %
0.2 VDC (1.00 Range)	0.2000000	0.20000097	3.86 ppm	0.19999887	0.20000113	4.830 ppm	1.80 ppm	PASS 85.34 %
1.0 VDC (1.00 Range)	1.0000000	1.0000024	3.86 ppm	0.99999434	1.0000057	2.407 ppm	1.80 ppm	PASS 42.53 %
-0.1 VDC (1.00 Range)	-0.1000000	-0.10000036	7.27 ppm	-0.10000091	-0.099999093	3.627 ppm	1.80 ppm	PASS 39.99 %
-0.2 VDC (1.00 Range)	-0.2000000	-0.20000084	3.86 ppm	-0.20000113	-0.19999887	4.179 ppm	1.80 ppm	PASS 73.84 %
-1.0 VDC (1.00 Range)	-1.0000000	-1.0000022	3.86 ppm	-1.0000057	-0.99999434	2.241 ppm	1.80 ppm	PASS 39.58 %
1.0 VDC (10.00 Range)	1.0000000	1.000004	3.86 ppm	0.99999559	1.0000044	4.004 ppm	0.55 ppm	PASS 90.79 %
2.0 VDC (10.00 Range)	2.0000000	2.0000055	2.77 ppm	1.9999934	2.0000066	2.770 ppm	0.55 ppm	PASS 83.43 %
10.0 VDC (10.00 Range)	10.0000000	10.000019	2.73 ppm	9.9999672	10.000033	1.874 ppm	0.55 ppm	PASS 57.12 %
-1.0 VDC (10.00 Range)	-1.0000000	-1.0000013	3.86 ppm	-1.0000044	-0.99999559	1.284 ppm	0.55 ppm	PASS 29.10 %
-2.0 VDC (10.00 Range)	-2.0000000	-2.0000033	2.77 ppm	-2.0000066	-1.9999934	1.670 ppm	0.55 ppm	PASS 50.31 %
-10.0 VDC (10.00 Range)	-10.0000000	-10.000017	2.73 ppm	-10.000033	-9.9999672	1.731 ppm	0.55 ppm	PASS 52.77 %
10 VDC (100.00 Range)	10.0000000	10.000063	2.77 ppm	9.9999443	10.000056	6.269 ppm	2.80 ppm	FAIL 112.55 %
20 VDC (100.00 Range)	20.0000000	20.000057	3.73 ppm	19.999869	20.000131	2.868 ppm	2.80 ppm	PASS 43.92 %
100 VDC (100.00 Range)	100.0000000	100.00027	3.73 ppm	99.999347	100.00065	2.707 ppm	2.80 ppm	PASS 41.45 %
-10 VDC (100.00 Range)	-10.0000000	-9.9999873	2.77 ppm	-10.000056	-9.9999443	-1.265 ppm	2.80 ppm	PASS 22.71 %
-20 VDC (100.00 Range)	-20.0000000	-19.999987	3.73 ppm	-20.000131	-19.999869	-0.626 ppm	2.80 ppm	PASS 9.58 %
-100 VDC (100.00 Range)	-100.0000000	-100.00022	3.73 ppm	-100.00065	-99.999347	2.218 ppm	2.80 ppm	PASS 33.97 %
100 VDC (1000.00 Range)	100.0000000	100.00024	3.73 ppm	99.999367	100.00063	2.438 ppm	2.60 ppm	PASS 38.52 %
200 VDC (1000.00 Range)	200.0000000	200.00032	3.73 ppm	199.99873	200.00127	1.617 ppm	2.60 ppm	PASS 25.55 %
1000 VDC (1000.00 Range)	1000.0000000	1000.0024	5.45 ppm	999.97995	1000.02	2.442 ppm	2.60 ppm	PASS 12.18 %
-100 VDC (1000.00 Range)	-100.0000000	-100.00027	3.73 ppm	-100.00063	-99.999367	2.667 ppm	2.60 ppm	PASS 42.14 %
-200 VDC (1000.00 Range)	-200.0000000	-200.00027	3.73 ppm	-200.00127	-199.99873	1.340 ppm	2.60 ppm	PASS 21.17 %
-1000 VDC (1000.00 Range)	-1000.0000000	-1000.0025	5.45 ppm	-1000.02	-999.97995	2.463 ppm	2.60 ppm	PASS 62.37 %

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 tested using the external standard, as MFC unable to provide this range value.

OHM Test	1 Ohm to 1 GOhm	DUT	Source unc.	Low Limit	Hi limit	Measured	24h spec	Result
1 Ω	0.9998157	0.99978366	32.0 ppm	9.9977571E-01	9.9985569E-01	-32.049 ppm	8.0 ppm	PASS 80.12 %
1.9 Ω	1.8998952	1.8998118	25.0 ppm	1.8998325E+00	1.8999579E+00	-43.888 ppm	8.0 ppm	FAIL 132.99 %
10 Ω	10.0003	10.000278	5.0 ppm	1.0000170E+01	1.0000430E+01	-2.178 ppm	8.0 ppm	PASS 16.76 %
19 Ω	18.999954	18.999951	4.0 ppm	1.8999764E+01	1.9000144E+01	-0.151 ppm	6.0 ppm	PASS 1.51 %
100 Ω	100.00309	100.00309	1.7 ppm	1.0000232E+02	1.0000386E+02	0.016 ppm	6.0 ppm	PASS 0.21 %
190 Ω	189.99797	189.99818	1.7 ppm	1.8999723E+02	1.8999871E+02	1.095 ppm	2.2 ppm	PASS 28.08 %
1.0 kΩ	1000.0093	1000.0088	1.7 ppm	1.0000054E+03	1.0000132E+03	-0.544 ppm	2.2 ppm	PASS 13.96 %
1.9 kΩ	1900.023	1900.0218	1.7 ppm	1.9000156E+03	1.9000304E+03	-0.656 ppm	2.2 ppm	PASS 16.83 %
10 kΩ	9999.789	9999.7699	1.6 ppm	9.9997510E+03	9.9998270E+03	-1.913 ppm	2.2 ppm	PASS 50.35 %
19 kΩ	18999.392	18999.362	1.7 ppm	1.8999318E+04	1.8999466E+04	-1.560 ppm	2.2 ppm	PASS 39.99 %
100 kΩ	99994.69	99993.573	2.0 ppm	9.9994270E+04	9.9995110E+04	-11.171 ppm	2.2 ppm	FAIL 265.98 %
190 kΩ	189988.95	189989.99	2.0 ppm	1.8998648E+05	1.8999142E+05	5.487 ppm	11.0 ppm	PASS 42.20 %
1.0 MΩ	999980.1	999974.9	2.5 ppm	9.9996660E+05	9.9999360E+05	-5.199 ppm	11.0 ppm	PASS 38.51 %
1.9 MΩ	1899966.2	1899986	3.0 ppm	1.8998560E+06	1.9000764E+06	10.418 ppm	55.0 ppm	PASS 17.96 %
10 MΩ	9999009	9998658.6	10.0 ppm	9.9983591E+06	9.9996589E+06	-35.042 ppm	55.0 ppm	PASS 53.91 %
19 MΩ	18998419	18999710	20.0 ppm	1.8988350E+07	1.9008488E+07	67.966 ppm	510.0 ppm	PASS 12.82 %
100 MΩ	1.0000647E+08	1.0003266E+08	50.0 ppm	9.9950466E+07	1.0006247E+08	261.933 ppm	510.0 ppm	PASS 46.77 %

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 0.0000024 Ω	5.000e-05 Ω	-5e-05	5e-05	N/A	8.0000e-06 Ω	PASS
100 Ω	Range -0.0000325 Ω	5.500e-04 Ω	-0.00055	0.00055	N/A	2.2000e-06 Ω	PASS
1.0 kΩ	Range 0.0000090 Ω	5.500e-03 Ω	-0.0055	0.0055	N/A	2.2000e-06 Ω	PASS
10 kΩ	Range -0.0005758 Ω	5.500e-02 Ω	-0.055	0.055	N/A	2.2000e-06 Ω	PASS
100 kΩ	Range -0.0043145 Ω	5.500e-01 Ω	-0.55	0.55	N/A	2.2000e-06 Ω	PASS
1.0 MΩ	Range 0.9060242 Ω	5.500e+00 Ω	-5.5	5.5	N/A	2.2000e-06 Ω	PASS
10 MΩ	Range 9.2533687 Ω	5.500e+01 Ω	-55	55	N/A	2.2000e-06 Ω	PASS
100 MΩ	Range 8.7132964 Ω	5.500e+02 Ω	-550	550	N/A	2.2000e-06 Ω	PASS
1 GΩ	Range 7.9931886 Ω	5.500e+03 Ω	-5500	5500	N/A	2.2000e-06 Ω	PASS
OHM ZERO 2W	DUT	Source unc.	Low Limit	Hi limit	Measured	24h spec	Result
10 Ω	Range 0.2001185 Ω	3.000e-01 Ω	-0.3	0.3	N/A	8.0000e-06 Ω	PASS
100 Ω	Range 0.1982169 Ω	3.500e-01 Ω	-0.35	0.35	N/A	2.2000e-06 Ω	PASS
1.0 kΩ	Range 0.1971229 Ω	4.000e-01 Ω	-0.4	0.4	N/A	2.2000e-06 Ω	PASS
10 kΩ	Range 0.1732501 Ω	4.000e-01 Ω	-0.4	0.4	N/A	2.2000e-06 Ω	PASS
100 kΩ	Range 0.1528057 Ω	5.500e-01 Ω	-0.55	0.55	N/A	2.2000e-06 Ω	PASS
1.0 MΩ	Range -0.3127946 Ω	5.500e+00 Ω	-5.5	5.5	N/A	2.2000e-06 Ω	PASS
10 MΩ	Range -4.9327181 Ω	5.500e+01 Ω	-55	55	N/A	2.2000e-06 Ω	PASS
100 MΩ	Range -5.7608353 Ω	5.500e+02 Ω	-550	550	N/A	2.2000e-06 Ω	PASS
1 GΩ	Range -5.6528197 Ω	5.500e+03 Ω	-5500	5500	N/A	2.2000e-06 Ω	PASS

Procedure for all test points in the AC performance verification for ANAlog mode. 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 ANA Test	1V-10V	DUT	w/Guardband	Low Limit	Hi limit	Units	Measured	24h spec	Result
1.0 VAC @ 50.0 kHz	1.0	0.99991059	129.09	0.99955091	1.00044909	VAC	-89.409 ppm	320.0 ppm	PASS 19.91 %
1.0 VAC @ 1.0 MHz	1.0	1.0137181	0.2500 %	0.9874	1.0126	VAC	1.3718 %	1.0100 %	FAIL 108.87 %
10 VAC @ 40 Hz	10	10.001472	0.0073 %	9.8982682	10.1017318	VAC	0.0147 %	1.0100 %	PASS 1.45 %
10 VAC @ 200 Hz	10	10.000711	73.18	9.9983682	10.0016318	VAC	71.139 ppm	90.0 ppm	PASS 43.60 %
10 VAC @ 500 Hz	10	10.000699	73.18	9.9983682	10.0016318	VAC	69.910 ppm	90.0 ppm	PASS 42.84 %
10 VAC @ 50.0 kHz	10	9.9975397	129.09	9.9955091	10.0044909	VAC	-246.029 ppm	320.0 ppm	PASS 54.78 %
10 VAC @ 1.0 MHz	10	10.104118	0.3000 %	9.869	10.131	VAC	1.0412 %	1.0100 %	PASS 79.48 %

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	0.010001833	0.0312 %	0.009991	0.010009	0.0183 %	0.0600 %	PASS 20.10 %
0.01 V AC+DC @ 20 Hz	0.01000145	0.0312 %	0.009991	0.010009	0.0145 %	0.0600 %	PASS 15.89 %
0.01 V AC+DC @ 40 Hz	0.010001506	0.0312 %	0.009991	0.010009	0.0151 %	0.0600 %	PASS 16.51 %
0.01 V AC+DC @ 100 Hz	0.01000149	0.0312 %	0.009994	0.010006	0.0149 %	0.0310 %	PASS 23.95 %
0.01 V AC+DC @ 1.0 kHz	0.010000408	0.0312 %	0.009994	0.010006	0.0041 %	0.0310 %	PASS 6.56 %
0.01 V AC+DC @ 10.0 kHz	0.0099983095	0.0312 %	0.009993	0.010007	-0.0169 %	0.0410 %	PASS 23.40 %
0.01 V AC+DC @ 20.0 kHz	0.0099978699	0.0312 %	0.009993	0.010007	-0.0213 %	0.0410 %	PASS 29.49 %
0.01 V AC+DC @ 50.0 kHz	0.0099874049	0.0447 %	0.009984	0.010016	-0.1260 %	0.1110 %	PASS 80.88 %
0.01 V AC+DC @ 100.0 kHz	0.0099566797	0.0773 %	0.009941	0.010059	-0.4332 %	0.5110 %	PASS 73.64 %
0.01 V AC+DC @ 300.0 kHz	0.010022783	0.1500 %	0.009583	0.010417	0.2278 %	4.0200 %	PASS 5.46 %
0.01 V AC+DC @ 500.0 kHz	0.0095768224	0.2500 %	0.006770	0.013230	-4.2318 %	32.0500 %	PASS 13.10 %
0.01 V AC+DC @ 1.0 MHz	0.0085626188	0.4000 %	0.006755	0.013245	-14.3738 %	32.0500 %	PASS 44.30 %
0.03 V AC+DC @ 10 Hz	0.030002121	0.0121 %	0.029993	0.030007	0.0071 %	0.0110 %	PASS 30.56 %
0.03 V AC+DC @ 20 Hz	0.030001884	0.0121 %	0.029993	0.030007	0.0063 %	0.0110 %	PASS 27.15 %
0.03 V AC+DC @ 40 Hz	0.030001346	0.0121 %	0.029993	0.030007	0.0045 %	0.0110 %	PASS 19.39 %
0.03 V AC+DC @ 100 Hz	0.030001336	0.0121 %	0.029994	0.030006	0.0045 %	0.0090 %	PASS 21.07 %
0.03 V AC+DC @ 1.0 kHz	0.030001946	0.0121 %	0.029994	0.030006	0.0065 %	0.0090 %	PASS 30.69 %
0.03 V AC+DC @ 10.0 kHz	0.030001272	0.0121 %	0.029992	0.030008	0.0042 %	0.0160 %	PASS 15.07 %
0.03 V AC+DC @ 20.0 kHz	0.029999018	0.0121 %	0.029992	0.030008	-0.0033 %	0.0160 %	PASS 11.64 %
0.03 V AC+DC @ 50.0 kHz	0.029996417	0.0256 %	0.029983	0.030017	-0.0119 %	0.0320 %	PASS 20.72 %
0.03 V AC+DC @ 100.0 kHz	0.029980079	0.0591 %	0.029958	0.030042	-0.0664 %	0.0820 %	PASS 47.06 %
0.03 V AC+DC @ 300.0 kHz	0.029995928	0.0964 %	0.029878	0.030122	-0.0136 %	0.3100 %	PASS 3.34 %
0.03 V AC+DC @ 500.0 kHz	0.02991944	0.1500 %	0.029652	0.030348	-0.2685 %	1.0100 %	PASS 23.15 %
0.03 V AC+DC @ 1.0 MHz	0.029997118	0.3000 %	0.029607	0.030393	-0.0096 %	1.0100 %	PASS 0.73 %
0.1 V AC+DC @ 10 Hz	0.099999859	0.0121 %	0.099977	0.100023	-0.0001 %	0.0110 %	PASS 0.61 %
0.1 V AC+DC @ 20 Hz	0.099999655	0.0121 %	0.099977	0.100023	-0.0003 %	0.0110 %	PASS 1.49 %
0.1 V AC+DC @ 40 Hz	0.099998896	0.0121 %	0.099977	0.100023	-0.0011 %	0.0110 %	PASS 4.77 %
0.1 V AC+DC @ 100 Hz	0.099999262	0.0121 %	0.099979	0.100021	-0.0007 %	0.0090 %	PASS 3.49 %
0.1 V AC+DC @ 1.0 kHz	0.099999925	0.0121 %	0.099979	0.100021	-0.0001 %	0.0090 %	PASS 0.36 %
0.1 V AC+DC @ 10.0 kHz	0.099997873	0.0121 %	0.099972	0.100028	-0.0021 %	0.0160 %	PASS 7.56 %
0.1 V AC+DC @ 20.0 kHz	0.099994538	0.0121 %	0.099972	0.100028	-0.0055 %	0.0160 %	PASS 19.41 %
0.1 V AC+DC @ 50.0 kHz	0.099985348	0.0256 %	0.099942	0.100058	-0.0147 %	0.0320 %	PASS 25.42 %
0.1 V AC+DC @ 100.0 kHz	0.099938315	0.0591 %	0.099859	0.100141	-0.0617 %	0.0820 %	PASS 43.72 %
0.1 V AC+DC @ 300.0 kHz	0.099814211	0.0964 %	0.099594	0.100406	-0.1858 %	0.3100 %	PASS 45.72 %
0.1 V AC+DC @ 500.0 kHz	0.099744352	0.1500 %	0.098840	0.101160	-0.2556 %	1.0100 %	PASS 22.04 %
0.1 V AC+DC @ 1.0 MHz	0.099987701	0.3000 %	0.098690	0.101310	-0.0123 %	1.0100 %	PASS 0.94 %
0.3 V AC+DC @ 10 Hz	0.30000977	0.0050 %	0.299952	0.300048	0.0033 %	0.0110 %	PASS 20.41 %
0.3 V AC+DC @ 20 Hz	0.30000917	0.0050 %	0.299952	0.300048	0.0031 %	0.0110 %	PASS 19.15 %
0.3 V AC+DC @ 40 Hz	0.30000669	0.0050 %	0.299952	0.300048	0.0022 %	0.0110 %	PASS 13.97 %
0.3 V AC+DC @ 100 Hz	0.30000538	0.0050 %	0.299958	0.300042	0.0018 %	0.0090 %	PASS 12.84 %
0.3 V AC+DC @ 1.0 kHz	0.30001378	0.0050 %	0.299958	0.300042	0.0046 %	0.0090 %	PASS 32.92 %
0.3 V AC+DC @ 10.0 kHz	0.30000724	0.0050 %	0.299937	0.300063	0.0024 %	0.0160 %	PASS 11.52 %
0.3 V AC+DC @ 20.0 kHz	0.29999004	0.0050 %	0.299937	0.300063	-0.0033 %	0.0160 %	PASS 15.84 %
0.3 V AC+DC @ 50.0 kHz	0.30001608	0.0085 %	0.299878	0.300122	0.0054 %	0.0320 %	PASS 13.22 %
0.3 V AC+DC @ 100.0 kHz	0.30005609	0.0138 %	0.299713	0.300287	0.0187 %	0.0820 %	PASS 19.51 %
0.3 V AC+DC @ 300.0 kHz	0.3004268	0.0425 %	0.298942	0.301058	0.1423 %	0.3100 %	PASS 40.35 %
0.3 V AC+DC @ 500.0 kHz	0.30114386	0.1100 %	0.296640	0.303360	0.3813 %	1.0100 %	PASS 34.04 %
0.3 V AC+DC @ 1.0 MHz	0.30341881	0.1800 %	0.296430	0.303570	1.1396 %	1.0100 %	PASS 95.76 %
1.0 V AC+DC @ 10 Hz	1.0000513	0.0050 %	0.999840	1.000160	0.0051 %	0.0110 %	PASS 32.15 %
1.0 V AC+DC @ 20 Hz	1.0000351	0.0050 %	0.999840	1.000160	0.0035 %	0.0110 %	PASS 22.02 %
1.0 V AC+DC @ 40 Hz	1.0000326	0.0050 %	0.999840	1.000160	0.0033 %	0.0110 %	PASS 20.41 %
1.0 V AC+DC @ 100 Hz	1.0000333	0.0050 %	0.999860	1.000140	0.0033 %	0.0090 %	PASS 23.85 %
1.0 V AC+DC @ 1.0 kHz	1.0000529	0.0050 %	0.999860	1.000140	0.0053 %	0.0090 %	PASS 37.89 %
1.0 V AC+DC @ 10.0 kHz	1.000016	0.0050 %	0.999790	1.000210	0.0016 %	0.0160 %	PASS 7.65 %
1.0 V AC+DC @ 20.0 kHz	0.99998861	0.0050 %	0.999790	1.000210	-0.0011 %	0.0160 %	PASS 5.44 %
1.0 V AC+DC @ 50.0 kHz	1.0000506	0.0085 %	0.999595	1.000405	0.0051 %	0.0320 %	PASS 12.47 %
1.0 V AC+DC @ 100.0 kHz	1.0001302	0.0138 %	0.999042	1.000958	0.0130 %	0.0820 %	PASS 13.59 %
1.0 V AC+DC @ 300.0 kHz	1.0014299	0.0425 %	0.996475	1.003525	0.1430 %	0.3100 %	PASS 40.56 %
1.0 V AC+DC @ 500.0 kHz	1.0037904	0.1100 %	0.988800	1.011200	0.3790 %	1.0100 %	PASS 33.84 %
1.0 V AC+DC @ 1.0 MHz	1.0114424	0.1800 %	0.988100	1.011900	1.1442 %	1.0100 %	PASS 96.15 %
3.0 V AC+DC @ 10 Hz	3.0000842	0.0048 %	2.999525	3.000475	0.0028 %	0.0110 %	PASS 17.74 %
3.0 V AC+DC @ 20 Hz	3.0000416	0.0048 %	2.999525	3.000475	0.0014 %	0.0110 %	PASS 8.76 %
3.0 V AC+DC @ 40 Hz	3.000032	0.0048 %	2.999525	3.000475	0.0011 %	0.0110 %	PASS 6.75 %
3.0 V AC+DC @ 100 Hz	3.0000253	0.0048 %	2.999585	3.000415	0.0008 %	0.0090 %	PASS 6.09 %
3.0 V AC+DC @ 1.0 kHz	3.0000902	0.0048 %	2.999585	3.000415	0.0030 %	0.0090 %	PASS 21.75 %
3.0 V AC+DC @ 10.0 kHz	2.9999007	0.0048 %	2.999375	3.000625	-0.0033 %	0.0160 %	PASS 15.90 %
3.0 V AC+DC @ 20.0 kHz	2.9997475	0.0048 %	2.999375	3.000625	-0.0084 %	0.0160 %	PASS 40.44 %
3.0 V AC+DC @ 50.0 kHz	2.9995407	0.0085 %	2.998784	3.001216	-0.0153 %	0.0320 %	PASS 37.76 %
3.0 V AC+DC @ 100.0 kHz	2.9989795	0.0121 %	2.997176	3.002824	-0.0340 %	0.0820 %	PASS 36.13 %
3.0 V AC+DC @ 300.0 kHz	2.9974405	0.0336 %	2.989691	3.010309	-0.0853 %	0.3100 %	PASS 24.83 %

3.0 V AC+DC @ 500.0 kHz	2.9999823	0.1100 %	2.966400	3.033600	-0.0006 %	1.0100 %	PASS 0.05 %
3.0 V AC+DC @ 1.0 MHz	3.0242223	0.1700 %	2.964600	3.035400	0.8074 %	1.0100 %	PASS 68.42 %
10.0 V AC+DC @ 10 Hz	10.000498	0.0048 %	9.998418	10.001582	0.0050 %	0.0110 %	PASS 31.49 %
10.0 V AC+DC @ 20 Hz	10.000363	0.0048 %	9.998418	10.001582	0.0036 %	0.0110 %	PASS 22.95 %
10.0 V AC+DC @ 40 Hz	10.000322	0.0048 %	9.998418	10.001582	0.0032 %	0.0110 %	PASS 20.37 %
10.0 V AC+DC @ 100 Hz	10.000308	0.0048 %	9.998618	10.001382	0.0031 %	0.0090 %	PASS 22.26 %
10.0 V AC+DC @ 1.0 kHz	10.000536	0.0048 %	9.998618	10.001382	0.0054 %	0.0090 %	PASS 38.80 %
10.0 V AC+DC @ 10.0 kHz	9.9999146	0.0048 %	9.997918	10.002082	-0.0009 %	0.0160 %	PASS 4.10 %
10.0 V AC+DC @ 20.0 kHz	9.9997317	0.0048 %	9.997918	10.002082	-0.0027 %	0.0160 %	PASS 12.89 %
10.0 V AC+DC @ 50.0 kHz	9.9995387	0.0085 %	9.995945	10.004054	-0.0046 %	0.0320 %	PASS 11.38 %
10.0 V AC+DC @ 100.0 kHz	9.9963965	0.0121 %	9.990586	10.009414	-0.0360 %	0.0820 %	PASS 38.28 %
10.0 V AC+DC @ 300.0 kHz	9.9865549	0.0336 %	9.965636	10.034364	-0.1345 %	0.3100 %	PASS 39.13 %
10.0 V AC+DC @ 500.0 kHz	9.9998981	0.1100 %	9.888000	10.112000	-0.0010 %	1.0100 %	PASS 0.09 %
10.0 V AC+DC @ 1.0 MHz	10.08128	0.1700 %	9.882000	10.118000	0.8128 %	1.0100 %	PASS 68.88 %
30 V AC+DC @ 10 Hz	29.999923	0.0060 %	29.990995	30.009005	-0.0003 %	0.0240 %	PASS 0.85 %
30 V AC+DC @ 20 Hz	29.999695	0.0060 %	29.990995	30.009005	-0.0010 %	0.0240 %	PASS 3.39 %
30 V AC+DC @ 40 Hz	29.999504	0.0060 %	29.990995	30.009005	-0.0017 %	0.0240 %	PASS 5.51 %
30 V AC+DC @ 100 Hz	29.999453	0.0060 %	29.991595	30.008405	-0.0018 %	0.0220 %	PASS 6.51 %
30 V AC+DC @ 1.0 kHz	30.000076	0.0060 %	29.991595	30.008405	0.0003 %	0.0220 %	PASS 0.90 %
30 V AC+DC @ 10.0 kHz	29.999175	0.0060 %	29.991595	30.008405	-0.0028 %	0.0220 %	PASS 9.82 %
30 V AC+DC @ 20.0 kHz	29.996827	0.0060 %	29.991595	30.008405	-0.0106 %	0.0220 %	PASS 37.74 %
30 V AC+DC @ 50.0 kHz	29.98946	0.0060 %	29.987095	30.012905	-0.0351 %	0.0370 %	PASS 81.67 %
30 V AC+DC @ 100.0 kHz	29.95599	0.0174 %	29.958191	30.041809	-0.1467 %	0.1220 %	FAIL 105.26 %
30 V AC+DC @ 300.0 kHz	29.693161	0.0991 %	29.847273	30.152727	-1.0228 %	0.4100 %	FAIL 200.91 %
30 V AC+DC @ 500.0 kHz	29.363851	0.5200 %	29.391000	30.609000	-2.1205 %	1.5100 %	FAIL 104.46 %
100.0 V AC+DC @ 10 Hz	100.00289	0.0060 %	99.969982	100.030018	0.0029 %	0.0240 %	PASS 9.59 %
100.0 V AC+DC @ 20 Hz	100.00174	0.0060 %	99.969982	100.030018	0.0017 %	0.0240 %	PASS 5.78 %
100.0 V AC+DC @ 40 Hz	100.00132	0.0060 %	99.969982	100.030018	0.0013 %	0.0240 %	PASS 4.39 %
100.0 V AC+DC @ 100 Hz	100.00125	0.0060 %	99.971982	100.028018	0.0012 %	0.0220 %	PASS 4.43 %
100.0 V AC+DC @ 1.0 kHz	100.00338	0.0060 %	99.971982	100.028018	0.0034 %	0.0220 %	PASS 12.03 %
100.0 V AC+DC @ 10.0 kHz	100.0015	0.0060 %	99.971982	100.028018	0.0015 %	0.0220 %	PASS 5.31 %
100.0 V AC+DC @ 20.0 kHz	99.994446	0.0060 %	99.971982	100.028018	-0.0056 %	0.0220 %	PASS 19.82 %
100.0 V AC+DC @ 50.0 kHz	99.967503	0.0095 %	99.953455	100.046545	-0.0325 %	0.0370 %	PASS 69.82 %
100.0 V AC+DC @ 100.0 kHz	99.850596	0.0174 %	99.860636	100.139364	-0.1494 %	0.1220 %	FAIL 107.20 %
300.0 V AC+DC @ 40 Hz	299.93689	0.0079 %	299.070408	300.929592	-0.0210 %	0.3020 %	PASS 6.78 %
300.0 V AC+DC @ 100 Hz	299.9368	0.0079 %	299.850408	300.149592	-0.0211 %	0.0420 %	PASS 41.94 %
300.0 V AC+DC @ 1.0 kHz	299.94116	0.0079 %	299.850408	300.149592	-0.0196 %	0.0420 %	PASS 39.05 %
300.0 V AC+DC @ 10.0 kHz	299.9277	0.0110 %	299.780865	300.219135	-0.0241 %	0.0620 %	PASS 32.83 %
300.0 V AC+DC @ 20.0 kHz	299.90258	0.0110 %	299.780865	300.219135	-0.0325 %	0.0620 %	PASS 44.24 %
300.0 V AC+DC @ 50.0 kHz	299.92549	0.0245 %	299.560599	300.439401	-0.0248 %	0.1220 %	PASS 16.91 %
300.0 V AC+DC @ 100.0 kHz	299.90855	0.0660 %	298.896000	301.104000	-0.0305 %	0.3020 %	PASS 8.28 %
750.0 V AC+DC @ 40 Hz	749.9335	0.0079 %	747.676020	752.323980	-0.0089 %	0.3020 %	PASS 2.85 %
750.0 V AC+DC @ 100 Hz	749.93116	0.0079 %	749.626020	750.373980	-0.0092 %	0.0420 %	PASS 18.08 %
750.0 V AC+DC @ 1.0 kHz	749.94207	0.0079 %	749.626020	750.373980	-0.0077 %	0.0420 %	PASS 15.22 %
750.0 V AC+DC @ 10.0 kHz	749.86206	0.0110 %	749.452162	750.547838	-0.0184 %	0.0620 %	PASS 24.87 %
750.0 V AC+DC @ 20.0 kHz	749.76859	0.0110 %	749.452162	750.547838	-0.0309 %	0.0620 %	PASS 41.73 %
750.0 V AC+DC @ 50.0 kHz	749.78402	0.0245 %	748.901498	751.098502	-0.0288 %	0.1220 %	PASS 19.54 %
750.0 V AC+DC @ 90.0 kHz	699.8003	0.0660 %	747.240000	752.760000	-6.6933 %	0.3020 %	FAIL 1814.39 %

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	-3.0162835E-11						INFO
50 nADC	5E-08	4.9968881E-08						INFO
100 nADC	1E-07	9.9949199E-08	71.82 ppm	9.995182E-08	1.000482E-07	-508.006 ppm	410 ppm	FAIL 105.43 %
-100 nADC	-1E-07	-9.9965365E-08	71.82 ppm	-1.000482E-07	-9.995182E-08	-346.346 ppm	410 ppm	PASS 71.88 %
-50 nADC	-5E-08	-4.9975554E-08						INFO
Zero µADC	0	2.313848E-11						INFO
0.5 µADC	5E-07	4.9995317E-07	71.82 ppm	4.999391E-07	5.000609E-07	-93.651 ppm	50 ppm	PASS 76.88 %
1.0 µADC	1E-06	9.9996692E-07	71.82 ppm	9.998782E-07	1.000122E-06	-33.081 ppm	50 ppm	PASS 27.16 %
-1.0 µADC	-1E-06	-9.9995651E-07	71.82 ppm	-1.000122E-06	-9.998782E-07	-43.489 ppm	50 ppm	PASS 35.70 %
-0.5 µADC	-5E-07	-4.9998695E-07	71.82 ppm	-5.000609E-07	-4.999391E-07	-26.106 ppm	50 ppm	PASS 21.43 %
Zero 00 µADC	0	-5.3835056E-11						INFO
5 µADC	5E-06	4.9999613E-06	71.82 ppm	4.999556E-06	5.000444E-06	-7.742 ppm	17 ppm	PASS 8.72 %
10 µADC	1E-05	9.9999129E-06	71.82 ppm	9.999112E-06	1.000089E-05	-8.707 ppm	17 ppm	PASS 9.80 %
-10 µADC	-1E-05	-1.000007E-05	71.82 ppm	-1.000089E-05	-9.999112E-06	7.005 ppm	17 ppm	PASS 7.89 %
-5 µADC	-5E-06	-5.0000642E-06	71.82 ppm	-5.000444E-06	-4.999556E-06	12.841 ppm	17 ppm	PASS 14.46 %
Zero 000 µADC	0	-8.1240229E-11						INFO
50 µADC	5E-05	5.0000276E-05	71.82 ppm	4.999561E-05	5.000439E-05	5.514 ppm	16 ppm	PASS 6.28 %
100 µADC	0.0001	0.00010000044	71.82 ppm	9.999122E-05	0.0001000088	4.440 ppm	16 ppm	PASS 5.06 %
-100 µADC	-0.0001	-0.00010000045	71.82 ppm	-0.0001000088	-9.999122E-05	4.545 ppm	16 ppm	PASS 5.17 %
-50 µADC	-5E-05	-5.000014E-05	71.82 ppm	-5.000439E-05	-4.999561E-05	2.792 ppm	16 ppm	PASS 3.18 %
Zero mADC	0	-5.572741E-11						INFO
0.5 mADC	0.0005	0.0005000019	33.64 ppm	0.0004999762	0.0005000238	3.795 ppm	14 ppm	PASS 7.97 %
1.0 mADC	0.001	0.0010000019	33.64 ppm	0.0009999524	0.001000048	1.931 ppm	14 ppm	PASS 4.05 %
-1.0 mADC	-0.001	-0.00099999941	33.64 ppm	-0.001000048	-0.0009999524	-0.592 ppm	14 ppm	PASS 1.24 %
-0.5 mADC	-0.0005	-0.00049999859	33.64 ppm	-0.0005000238	-0.0004999762	-2.817 ppm	14 ppm	PASS 5.91 %
Zero 00 mADC	0	1.4136049E-12						INFO
5 mADC	0.005	0.0049999924	32.27 ppm	0.004999769	0.005000231	-1.529 ppm	14 ppm	PASS 3.30 %
10 mADC	0.01	0.0099999871	32.27 ppm	0.009999537	0.01000046	-1.287 ppm	14 ppm	PASS 2.78 %
-10 mADC	-0.01	-0.010000009	32.27 ppm	-0.01000046	-0.009999537	0.926 ppm	14 ppm	PASS 2.00 %
-5 mADC	-0.005	-0.0050000058	32.27 ppm	-0.005000231	-0.004999769	1.161 ppm	14 ppm	PASS 2.51 %
Zero 000 mADC	0	-1.5612732E-11						INFO
50 mADC	0.05	0.050000046	53.32 ppm	0.04999588	0.05000412	0.930 ppm	29 ppm	PASS 1.13 %
100 mADC	0.1	0.1000002	53.32 ppm	0.09999177	0.1000082	1.961 ppm	29 ppm	PASS 2.38 %
-100 mADC	-0.1	-0.10000128	53.32 ppm	-0.1000082	-0.09999177	12.793 ppm	29 ppm	PASS 15.54 %
-50 mADC	-0.05	-0.05000062	53.32 ppm	-0.05000412	-0.04999588	12.406 ppm	29 ppm	PASS 15.07 %
Zero ADC	0	8.4004361E-11						INFO
0.5 ADC	0.5	0.49997928	115.22 ppm	0.4998874	0.5001126	-41.448 ppm	110 ppm	PASS 18.40 %
1.0 ADC	1	0.99991349	115.22 ppm	0.9997748	1.000225	-86.505 ppm	110 ppm	PASS 38.41 %
-1.0 ADC	-1	-0.99993412	115.22 ppm	-1.000225	-0.9997748	-65.882 ppm	110 ppm	PASS 29.25 %
-0.5 ADC	-0.5	-0.49998148	115.22 ppm	-0.5001126	-0.4998874	-37.044 ppm	110 ppm	PASS 16.45 %

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	1.0017449E-05	0.0160 %	9.9893955e-06	1.00106045e-05	1744.932 ppm	0.0900 %	INFO
100 µA AC @ 50 Hz	0.0001	0.00010001461	0.0160 %	9.9893955e-05	0.000100106045	146.138 ppm	0.0900 %	PASS 13.78 %
1.0 mA AC @ 50 Hz	0.001	0.0010000874	0.0160 %	0.00099903955	0.00100096045	87.379 ppm	0.0800 %	PASS 9.10 %
10 mA AC @ 50 Hz	0.01	0.010000934	0.0160 %	0.0099903955	0.0100096045	93.431 ppm	0.0800 %	PASS 9.73 %
100 mA AC @ 50 Hz	0.1	0.10001375	0.0133 %	0.099906682	0.100093318	137.482 ppm	0.0800 %	PASS 14.73 %
1.0 A AC @ 50 Hz	1.0	1.0002167	0.0133 %	0.99886682	1.00113318	0.0217 %	0.1000 %	PASS 19.12 %
10 µA AC @ 60 Hz	1e-05	1.0019367E-05	0.0133 %	9.9896682e-06	1.00103318e-05	1936.688 ppm	0.0900 %	INFO
100 µA AC @ 60 Hz	0.0001	0.00010001582	0.0133 %	9.9896682e-05	0.000100103318	158.223 ppm	0.0900 %	PASS 15.31 %
1.0 mA AC @ 60 Hz	0.001	0.0010001185	0.0129 %	0.00099907136	0.00100092864	118.542 ppm	0.0800 %	PASS 12.77 %
10 mA AC @ 60 Hz	0.01	0.010001194	0.0129 %	0.0099907136	0.0100092864	119.364 ppm	0.0800 %	PASS 12.85 %
100 mA AC @ 60 Hz	0.1	0.10001645	0.0288 %	0.099891182	0.100108818	164.528 ppm	0.0800 %	PASS 15.12 %
1.0 A AC @ 60 Hz	1.0	1.0002331	0.0288 %	0.99871182	1.00128818	0.0233 %	0.1000 %	PASS 18.10 %
10 µA AC @ 1.0 kHz	1e-05	1.0020833E-05	0.0160 %	9.9893955e-06	1.00106045e-05	2083.275 ppm	0.0900 %	INFO
100 µA AC @ 1.0 kHz	0.0001	0.00010003804	0.0160 %	9.9893955e-05	0.000100106045	380.392 ppm	0.0900 %	PASS 35.87 %
1.0 mA AC @ 1.0 kHz	0.001	0.0010002153	0.0160 %	0.00099933955	0.00100066045	215.287 ppm	0.0500 %	PASS 32.60 %
10 mA AC @ 1.0 kHz	0.01	0.010001808	0.0160 %	0.0099933955	0.0100066045	180.836 ppm	0.0500 %	PASS 27.38 %
100 mA AC @ 1.0 kHz	0.1	0.10002363	0.0133 %	0.099936682	0.100063318	236.265 ppm	0.0500 %	PASS 37.31 %
1.0 A AC @ 1.0 kHz	1.0	1.0002096	0.0133 %	0.99866682	1.00133318	0.0210 %	0.1200 %	PASS 15.72 %

Test completed

Test date	21 December 2018 20:53
UUT Internal TEMP?	37.6
Destructive overloads?	174, DESTRUCTIVE OVERLOADS valid 2941

Lab temperature maintained +24°C ±2°C

Internal use only

Not validated

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