



MICRO PRECISION CALIBRATION PTE LTD
BLOCK 5008 ANG MO KIO AVENUE 5 #07-02/03
TECHPLACE II SINGAPORE 569874
65 67484384



Certificate of Calibration

Date: April 28, 2020

Cert No. 551220083587387

Customer:

WATERS PACIFIC PTE LTD

1 SCIENCE PARK ROAD, #02-08 THE CAPRICORN
SINGAPORE SCIENCE PARK II
SINGAPORE 117528

Work Order #: SG-11014134

MPC Control #: 160B92C
Asset ID: 93190
Gage Type: SOURCE MEASURE UNIT
Manufacturer: NATIONAL INSTRUMENTS
Model Number: PXI-4130
Size: N/A
Temp/RH: 22°C / 50 %
Location: Calibration performed at MPC facility

Serial Number: 160B92C
Department: N/A
Performed By: DIVIEERNRAJ CHANDRAN
Received Condition: IN TOLERANCE
Returned Condition: IN TOLERANCE
Cal. Date: April 28, 2020
Cal. Interval: 12 MONTHS
Cal. Due Date: April 28, 2021

Calibration Notes:

Performance test passed. See attached data (11 Pages).

Calibration performed for PT Surya Teknologi.

Standards Used to Calibrate Equipment

I.D.	Description.	Model	Serial	Manufacturer	Cal. Due Date	Traceability #
DH3876	MULTI-FUNCTION CALIBRATOR	5700A/NAF	6020913	FLUKE	Apr 9, 2021	551220083583661
DC8376	DIGITAL MULTIMETER	PXI-4071	EC2663	NATIONAL INSTRUMENTS	Mar 21, 2021	551220082875809
CA8156	REGULATED DC POWER SUPPLY	HPD30-10	E00114193	XANTREX	Jul 3, 2020	551220083111531

Procedures Used in this Event

Procedure Name	Description
NI PXI-4130	Programmable and High-Power Source Measure Unit, National Instruments PXI-4130, Jul-01-2008

Calibrating Technician:

DIVIEERNRAJ CHANDRAN

QC Approval:

JUN CALIMAG

STATEMENTS OF PASS OR FAIL CONFORMANCE: The uncertainty of measurement has been taken into account when determining compliance with specification, as per ILAC-G8:03/2009. All measurements and test results guard banded to ensure the probability of false-accept does not exceed 2% in compliance with ANSI/NCCL Z540.3-2006 and in case without guard banded the probability of false-accept depending on test uncertainty ratio.

THE CALIBRATION REPORT STATUS:

PASS- Term used when compliance statement is given, and the measurement result is PASS.

PASS? Term used when compliance statement is given, and the measurement result is conditional passed or PASS?

FAIL- Term used when compliance statement is given, and the measurement result is FAIL.

FAIL? Term used when compliance statement is given, and the measurement result is conditional failed or FAIL?

REPORT OF VALUE - Term used when reported measurement is not requiring compliance statement in report.

ADJUSTED - When adjustments are made to an instrument which changes the value of measurement from what was measured as found to new value as left.

LIMITED - When an instrument fails calibration but is still functional in a limited manner.

The expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%, unless otherwise stated. This calibration report complies with ISO/IEC 17025:2017 and ANSI/NCCL Z540.3. Calibration cycles and resulting due dates were submitted/approved by the customer. Any number of factors may cause an instrument to drift out of tolerance before the next scheduled calibration. Recalibration cycles should be based on frequency of use, environmental conditions and customer's established systematic accuracy. All standards are traceable to SI through the National Institute of Standards and Technology (NIST) and/or recognized national or international standards laboratories. Services rendered include proper manufacturer's service instruction and are warranted for no less than thirty (30) days. The information on this report pertains only to the instrument identified, this may not be reproduced in part or in a whole without the prior written approval of the issuing MP Calibration Laboratory.

CALIBRATION PERFORMANCE TEST DATA

DUT Information		Operator Information		Customer Information	
Type	PXI-4130	Operator	Divleemraj Chandran	Name	Waters Pacific Pte Ltd
Tracking number	93190	Calibration Date	28 April 2020 17:17:44	Work Order	SG-11014134
Serial Number	160B92C	Notes		Address	1 Science Park Road, #02-08 The Caparicom Singapore Science Park II, Singapore 117528
Notes	Load/Line Regulation is dependent upon measurement accuracy. Any Voltage/Current Measurement Verification failure may result in a failure of Load/Line Regulation Verification. Verification and adjustment were performed.			Notes	In-Lab Calibration

Environmental Conditions	
Temperature	22.0 C
Humidity	50.0 %

Version Information	
Calibration Executive Version	3.6.1
Procedure Version	3.6.0.0
NI-DCPower	1.9.0

Standard Information

Type	Tracking Number	Calibration Due Date	Notes
Fluke 5700A Multifunction Calibrator	DH3876	4/9/2021	
National Instruments PXI-4071 Digital Multimeter	DC8376	3/21/2021	
Xantrex HPD30-10 Regulated DC Power Supply	GA8156	7/3/2020	

Calibration Results

Current Line Regulation

Calibration			As Found				As Left				Uncertainty (±)
Channel	Current Range	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
1	0.2 mA	0.200 mA	-0.270 uA	-0.006 uA	0.270 uA	Passed	-0.270 uA	0.000 uA	0.270 uA	Passed	0.00060 mA
1	2 mA	2.000 mA	-2.699 uA	-0.041 uA	2.699 uA	Passed	-2.701 uA	-0.098 uA	2.701 uA	Passed	0.00060 mA
1	20 mA	20.000 mA	-26.991 uA	-1.304 uA	26.991 uA	Passed	-26.994 uA	-0.630 uA	26.994 uA	Passed	0.0013 mA
1	200 mA	200.000 mA	-269.969 uA	-9.656 uA	269.969 uA	Passed	-270.131 uA	-7.629 uA	270.131 uA	Passed	0.034 mA
1	2000 mA	2000.000 mA	-2.698 mA	-0.001 mA	2.698 mA	Passed	-2.700 mA	-0.003 mA	2.700 mA	Passed	0.28 mA

Current Load Regulation

Calibration			As Found				As Left				Uncertainty (±)
Channel	Current Range	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
0	1000 mA	500.000 mA	-0.610 mA	0.504 mA	0.610 mA	Passed	-0.610 mA	0.509 mA	0.610 mA	Passed	0.070 mA
1	0.2 mA	0.100 mA	-0.340 uA	-0.005 uA	0.340 uA	Passed	-0.320 uA	-0.010 uA	0.320 uA	Passed	0.00060 mA
1	2 mA	1.000 mA	-3.184 uA	0.005 uA	3.184 uA	Passed	-3.186 uA	0.027 uA	3.186 uA	Passed	0.00060 mA
1	20 mA	10.000 mA	-32.031 uA	-0.249 uA	32.031 uA	Passed	-32.042 uA	0.280 uA	32.042 uA	Passed	0.00090 mA
1	200 mA	100.000 mA	-0.319 mA	-0.007 mA	0.319 mA	Passed	-0.319 mA	0.002 mA	0.319 mA	Passed	0.022 mA
1	2000 mA	1000.000 mA	-3.191 mA	0.027 mA	3.191 mA	Passed	-3.196 mA	-0.006 mA	3.196 mA	Passed	0.13 mA

Current Meas Accuracy - Part 1. (1A Range)

Calibration			As Found					As Left				Uncertainty (±)
Channel	As Found DMM Reading	As Left DMM Reading	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
0	0 A	0 A	0.000000 A	-0.004000 A	0.000004 A	0.004000 A	Passed	-0.004000 A	0.000000 A	0.004000 A	Passed	0.0000057 A
0	0.350021 A	0.350445 A	0.350000 A	0.345496 A	0.349989 A	0.354546 A	Passed	0.345920 A	0.349948 A	0.354971 A	Passed	0.000042 A
0	0.698952 A	0.699957 A	0.700000 A	0.693205 A	0.700072 A	0.704699 A	Passed	0.694207 A	0.699909 A	0.705707 A	Passed	0.000070 A

Current Meas Accuracy - Part 2. (200uA Range)

Calibration			As Found					As Left				Uncertainty (±)
Channel	As Found DMM Reading	As Left DMM Reading	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
1	0 uA	0 uA	0.00000 uA	-0.02000 uA	0.00996 uA	0.02000 uA	Passed	-0.02000 uA	-0.00134 uA	0.02000 uA	Passed	0.0070 uA
1	49.988523 uA	49.99656 uA	50.0000 uA	49.9535 uA	49.9932 uA	50.0235 uA	Passed	49.9616 uA	49.9968 uA	50.0316 uA	Passed	0.0091 uA
1	99.969513 uA	100.000222 uA	100.0000 uA	99.9195 uA	99.9731 uA	100.0195 uA	Passed	99.9502 uA	100.0005 uA	100.0502 uA	Passed	0.011 uA
1	149.95826 uA	150.005935 uA	150.0000 uA	149.8933 uA	149.9553 uA	150.0232 uA	Passed	149.9409 uA	150.0068 uA	150.0709 uA	Passed	0.013 uA
1	199.934944 uA	200.009798 uA	200.0000 uA	199.8550 uA	199.9324 uA	200.0149 uA	Passed	199.9298 uA	200.0090 uA	200.0898 uA	Passed	0.015 uA
1	-50.005021 uA	-49.996942 uA	-50.0000 uA	-50.0400 uA	-49.9929 uA	-49.9700 uA	Passed	-50.0319 uA	-49.9976 uA	-49.9619 uA	Passed	0.0091 uA
1	-100.018529 uA	-99.998199 uA	-100.0000 uA	-100.0685 uA	-100.0021 uA	-99.9685 uA	Passed	-100.0482 uA	-100.0002 uA	-99.9482 uA	Passed	0.011 uA
1	-150.026914 uA	-149.99588 uA	-150.0000 uA	-150.0919 uA	-150.0063 uA	-149.9619 uA	Passed	-150.0609 uA	-149.9969 uA	-149.9309 uA	Passed	0.013 uA
1	-200.033033 uA	-199.997635 uA	-200.0000 uA	-200.1130 uA	-200.0105 uA	-199.9530 uA	Passed	-200.0776 uA	-199.9980 uA	-199.9176 uA	Passed	0.015 uA

Current Meas Accuracy - Part 3. (2mA Range)

Calibration			As Found				As Left				Uncertainty (±)	
Channel	As Found DMM Reading	As Left DMM Reading	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit		Pass/Fail
1	0 mA	0 mA	0.000000 mA	-0.000200 mA	0.000056 mA	0.000200 mA	Passed	-0.000200 mA	-0.000013 mA	0.000200 mA	Passed	0.0000080 mA
1	0.499901 mA	0.499986 mA	0.500000 mA	0.499551 mA	0.499922 mA	0.500251 mA	Passed	0.499636 mA	0.499965 mA	0.500336 mA	Passed	0.0000025 mA
1	0.999752 mA	1.000009 mA	1.000000 mA	0.999252 mA	0.999761 mA	1.000252 mA	Passed	0.999509 mA	1.000010 mA	1.000509 mA	Passed	0.0000042 mA
1	1.499639 mA	1.500076 mA	1.500000 mA	1.498990 mA	1.499632 mA	1.500289 mA	Passed	1.499426 mA	1.500072 mA	1.500726 mA	Passed	0.0000059 mA
1	1.999512 mA	2.000096 mA	2.000000 mA	1.998713 mA	1.999503 mA	2.000312 mA	Passed	1.999296 mA	2.000115 mA	2.000896 mA	Passed	0.0000076 mA
1	-0.500062 mA	-0.499999 mA	-0.500000 mA	-0.500412 mA	-0.499980 mA	-0.499712 mA	Passed	-0.500340 mA	-0.500003 mA	-0.499640 mA	Passed	0.0000025 mA
1	-1.00015 mA	-0.999978 mA	-1.000000 mA	-1.000650 mA	-1.000039 mA	-0.999650 mA	Passed	-1.000478 mA	-0.999986 mA	-0.999478 mA	Passed	0.0000042 mA
1	-1.500221 mA	-1.499955 mA	-1.500000 mA	-1.500871 mA	-1.500093 mA	-1.499571 mA	Passed	-1.500605 mA	-1.499956 mA	-1.499305 mA	Passed	0.0000059 mA
1	-2.000318 mA	-1.999973 mA	-2.000000 mA	-2.001118 mA	-2.000152 mA	-1.999518 mA	Passed	-2.000773 mA	-1.999964 mA	-1.999173 mA	Passed	0.0000076 mA

Current Meas Accuracy - Part 4. (20mA Range)

Calibration			As Found				As Left				Uncertainty (±)	
Channel	As Found DMM Reading	As Left DMM Reading	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	Uncertainty (±)
1	0 mA	0 mA	0.000000 mA	-0.002000 mA	0.000519 mA	0.002000 mA	Passed	-0.002000 mA	-0.000042 mA	0.002000 mA	Passed	0.000045 mA
1	4.998736 mA	4.998755 mA	5.000000 mA	4.99524 mA	4.99932 mA	5.00224 mA	Passed	4.99626 mA	4.99973 mA	5.00326 mA	Passed	0.000022 mA
1	9.996737 mA	9.996744 mA	10.000000 mA	9.99174 mA	9.99741 mA	10.00174 mA	Passed	9.99474 mA	9.99967 mA	10.00474 mA	Passed	0.000040 mA
1	14.994847 mA	15.000436 mA	15.000000 mA	14.98835 mA	14.99571 mA	15.00135 mA	Passed	14.99394 mA	15.00055 mA	15.00694 mA	Passed	0.000057 mA
1	19.993137 mA	20.001155 mA	20.000000 mA	19.98514 mA	19.99397 mA	20.00113 mA	Passed	19.99315 mA	20.00133 mA	20.00916 mA	Passed	0.000075 mA
1	-4.999984 mA	-4.999638 mA	-5.000000 mA	-5.00348 mA	-4.99957 mA	-4.99648 mA	Passed	-5.00314 mA	-4.99977 mA	-4.99614 mA	Passed	0.000022 mA
1	-10.000071 mA	-9.999377 mA	-10.000000 mA	-10.00507 mA	-9.99980 mA	-9.99507 mA	Passed	-10.00438 mA	-9.99938 mA	-9.99438 mA	Passed	0.000040 mA
1	-15.000091 mA	-14.999167 mA	-15.000000 mA	-15.00659 mA	-15.00003 mA	-14.99359 mA	Passed	-15.00567 mA	-14.99915 mA	-14.99267 mA	Passed	0.000057 mA
1	-20.000502 mA	-19.999377 mA	-20.000000 mA	-20.00850 mA	-20.00048 mA	-19.99250 mA	Passed	-20.00738 mA	-19.99936 mA	-19.99138 mA	Passed	0.000075 mA

Current Meas Accuracy - Part 5. (200mA Range)

Calibration			As Found				As Left				Uncertainty (±)	
Channel	As Found DMM Reading	As Left DMM Reading	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit		Pass/Fail
1	0 mA	0 mA	0.00000 mA	-0.04000 mA	0.00454 mA	0.04000 mA	Passed	-0.04000 mA	-0.00102 mA	0.04000 mA	Passed	0.00080 mA
1	49.98103 mA	50.000116 mA	50.00000 mA	49.9260 mA	49.9892 mA	50.0360 mA	Passed	49.9451 mA	49.9991 mA	50.0551 mA	Passed	0.0031 mA
1	99.963999 mA	100.005742 mA	100.00000 mA	99.8940 mA	99.9740 mA	100.0340 mA	Passed	99.9357 mA	100.0038 mA	100.0757 mA	Passed	0.0054 mA
1	149.946931 mA	150.010741 mA	150.00000 mA	149.8619 mA	149.9605 mA	150.0319 mA	Passed	149.9257 mA	150.0074 mA	150.0957 mA	Passed	0.0077 mA
1	199.936946 mA	200.027504 mA	200.00000 mA	199.8370 mA	199.9505 mA	200.0369 mA	Passed	199.9275 mA	200.0257 mA	200.1275 mA	Passed	0.010 mA
1	-49.995456 mA	-49.995426 mA	-50.00000 mA	-50.0505 mA	-49.9927 mA	-49.9405 mA	Passed	-50.0504 mA	-49.9952 mA	-49.9404 mA	Passed	0.0031 mA
1	-99.998978 mA	-99.99208 mA	-100.00000 mA	-100.0690 mA	-99.9982 mA	-99.9290 mA	Passed	-100.0621 mA	-99.9916 mA	-99.9221 mA	Passed	0.0054 mA
1	-150.0034 mA	-149.993571 mA	-150.00000 mA	-150.0884 mA	-150.0057 mA	-149.9184 mA	Passed	-150.0786 mA	-149.9922 mA	-149.9086 mA	Passed	0.0077 mA
1	-200.009488 mA	-200.003089 mA	-200.00000 mA	-200.1095 mA	-200.0139 mA	-199.9095 mA	Passed	-200.1031 mA	-200.0030 mA	-199.9031 mA	Passed	0.010 mA

Current Meas Accuracy - Part 6. (2A Range)

Calibration			As Found				As Left				Uncertainty (±)	
Channel	As Found DMM Reading	As Left DMM Reading	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit		Pass/Fail
1	0 A	0 A	0.000000 A	-0.000200 A	0.000050 A	0.000200 A	Passed	-0.000200 A	-0.000005 A	0.000200 A	Passed	0.000013 A
1	0.499305 A	0.500048 A	0.500000 A	0.49851 A	0.49987 A	0.50010 A	Passed	0.49925 A	0.49998 A	0.50085 A	Passed	0.000054 A
1	0.99855 A	1.000027 A	1.000000 A	0.99665 A	0.99973 A	1.00045 A	Passed	0.99813 A	0.99997 A	1.00193 A	Passed	0.000095 A
1	1.497907 A	1.500171 A	1.500000 A	1.49404 A	1.49977 A	1.50178 A	Passed	1.49630 A	1.50018 A	1.50405 A	Passed	0.00014 A
1	1.99732 A	2.000033 A	2.000000 A	1.98973 A	1.99991 A	2.00491 A	Passed	1.99273 A	2.00043 A	2.00793 A	Passed	0.00018 A
1	-0.499464 A	-0.499985 A	-0.500000 A	-0.50026 A	-0.49996 A	-0.49866 A	Passed	-0.50079 A	-0.49997 A	-0.49919 A	Passed	0.000054 A
1	-0.998971 A	-0.99995 A	-1.000000 A	-1.00087 A	-1.00009 A	-0.99707 A	Passed	-1.00185 A	-1.00001 A	-0.99805 A	Passed	0.000095 A
1	-1.498496 A	-1.499972 A	-1.500000 A	-1.50237 A	-1.50031 A	-1.49462 A	Passed	-1.50385 A	-1.50020 A	-1.49610 A	Passed	0.00014 A
1	-1.998106 A	-2.000012 A	-2.000000 A	-2.00570 A	-2.00075 A	-1.99051 A	Passed	-2.00761 A	-2.00055 A	-1.99241 A	Passed	0.00018 A

Current Prog Accuracy - Part 1. (1A Range)

Calibration		As Found				As Left				Uncertainty ($\pm$)
Channel	Voltage Level	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail
0	6 V	0.050000 A	0.045920 A	0.050501 A	0.054080 A	Passed	0.045920 A	0.050510 A	0.054080 A	Passed
0	6 V	0.350000 A	0.345470 A	0.349601 A	0.354530 A	Passed	0.345470 A	0.350005 A	0.354530 A	Passed
0	6 V	0.700000 A	0.694250 A	0.698970 A	0.705750 A	Passed	0.694250 A	0.699945 A	0.705750 A	Passed

Current Prog Accuracy - Part 2. (200uA Range)

Calibration		As Found				As Left				Uncertainty ($\pm$)
Channel	Voltage Level	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail
1	20 V	4.000 uA	3.899 uA	4.008 uA	4.101 uA	Passed	3.899 uA	3.996 uA	4.101 uA	Passed
1	20 V	50.000 uA	49.885 uA	49.987 uA	50.115 uA	Passed	49.885 uA	49.996 uA	50.115 uA	Passed
1	20 V	100.000 uA	99.870 uA	99.975 uA	100.130 uA	Passed	99.870 uA	99.999 uA	100.130 uA	Passed
1	20 V	150.000 uA	149.855 uA	149.964 uA	150.145 uA	Passed	149.855 uA	150.007 uA	150.145 uA	Passed
1	20 V	200.000 uA	199.840 uA	199.947 uA	200.160 uA	Passed	199.840 uA	200.012 uA	200.160 uA	Passed
1	-20 V	-4.000 uA	-4.101 uA	-3.997 uA	-3.899 uA	Passed	-4.101 uA	-4.003 uA	-3.899 uA	Passed
1	-20 V	-50.000 uA	-50.115 uA	-50.005 uA	-49.885 uA	Passed	-50.115 uA	-49.999 uA	-49.885 uA	Passed
1	-20 V	-100.000 uA	-100.130 uA	-100.018 uA	-99.870 uA	Passed	-100.130 uA	-100.002 uA	-99.870 uA	Passed
1	-20 V	-150.000 uA	-150.145 uA	-150.024 uA	-149.855 uA	Passed	-150.145 uA	-149.997 uA	-149.855 uA	Passed
1	-20 V	-200.000 uA	-200.160 uA	-200.034 uA	-199.840 uA	Passed	-200.160 uA	-200.000 uA	-199.840 uA	Passed

Current Prog Accuracy - Part 3. (2mA Range)

Calibration			As Found					As Left				Uncertainty (±)
Channel	Voltage Level	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail		
1	20 V	0.04000 mA	0.03899 mA	0.04009 mA	0.04101 mA	Passed	0.03899 mA	0.03996 mA	0.04101 mA	Passed	0.0050 mA	
1	20 V	0.50000 mA	0.49885 mA	0.49989 mA	0.50115 mA	Passed	0.49885 mA	0.49997 mA	0.50115 mA	Passed	0.0050 mA	
1	20 V	1.00000 mA	0.99870 mA	0.99977 mA	1.00130 mA	Passed	0.99870 mA	1.00001 mA	1.00130 mA	Passed	0.0050 mA	
1	20 V	1.50000 mA	1.49855 mA	1.49965 mA	1.50145 mA	Passed	1.49855 mA	1.50010 mA	1.50145 mA	Passed	0.0050 mA	
1	20 V	2.00000 mA	1.99840 mA	1.99951 mA	2.00160 mA	Passed	1.99840 mA	2.00016 mA	2.00160 mA	Passed	0.0051 mA	
1	-20 V	-0.04000 mA	-0.04101 mA	-0.03997 mA	-0.03899 mA	Passed	-0.04101 mA	-0.04004 mA	-0.03899 mA	Passed	0.0050 mA	
1	-20 V	-0.50000 mA	-0.50115 mA	-0.50006 mA	-0.49885 mA	Passed	-0.50115 mA	-0.50000 mA	-0.49885 mA	Passed	0.0050 mA	
1	-20 V	-1.00000 mA	-1.00130 mA	-1.00016 mA	-0.99870 mA	Passed	-1.00130 mA	-0.99998 mA	-0.99870 mA	Passed	0.0050 mA	
1	-20 V	-1.50000 mA	-1.50145 mA	-1.50023 mA	-1.49855 mA	Passed	-1.50145 mA	-1.49997 mA	-1.49855 mA	Passed	0.0050 mA	
1	-20 V	-2.00000 mA	-2.00160 mA	-2.00031 mA	-1.99840 mA	Passed	-2.00160 mA	-1.99999 mA	-1.99840 mA	Passed	0.0051 mA	

Current Prog Accuracy - Part 4. (20mA Range)

Calibration			As Found				As Left				Uncertainty (±)
Channel	Voltage Level	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
1	20 V	0.4000 mA	0.3899 mA	0.4008 mA	0.4101 mA	Passed	0.3899 mA	0.3996 mA	0.4101 mA	Passed	0.0050 mA
1	20 V	5.0000 mA	4.9885 mA	4.9988 mA	5.0115 mA	Passed	4.9885 mA	4.9997 mA	5.0115 mA	Passed	0.0051 mA
1	20 V	10.0000 mA	9.9870 mA	9.9968 mA	10.0130 mA	Passed	9.9870 mA	9.9999 mA	10.0130 mA	Passed	0.0053 mA
1	20 V	15.0000 mA	14.9855 mA	14.9948 mA	15.0145 mA	Passed	14.9855 mA	15.0009 mA	15.0145 mA	Passed	0.0056 mA
1	20 V	20.0000 mA	19.9840 mA	19.9931 mA	20.0160 mA	Passed	19.9840 mA	20.0016 mA	20.0160 mA	Passed	0.0058 mA
1	-20 V	-0.4000 mA	-0.4101 mA	-0.3997 mA	-0.3899 mA	Passed	-0.4101 mA	-0.4005 mA	-0.3899 mA	Passed	0.0050 mA
1	-20 V	-5.0000 mA	-5.0115 mA	-5.0002 mA	-4.9885 mA	Passed	-5.0115 mA	-4.9998 mA	-4.9885 mA	Passed	0.0051 mA
1	-20 V	-10.0000 mA	-10.0130 mA	-10.0003 mA	-9.9870 mA	Passed	-10.0130 mA	-9.9995 mA	-9.9870 mA	Passed	0.0053 mA
1	-20 V	-15.0000 mA	-15.0145 mA	-15.0003 mA	-14.9855 mA	Passed	-15.0145 mA	-14.9991 mA	-14.9855 mA	Passed	0.0056 mA
1	-20 V	-20.0000 mA	-20.0160 mA	-20.0007 mA	-19.9840 mA	Passed	-20.0160 mA	-19.9992 mA	-19.9840 mA	Passed	0.0058 mA

Current Prog Accuracy - Part 5. (200mA Range)

Calibration			As Found				As Left				Uncertainty (±)
Channel	Voltage Level	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	Uncertainty (±)
1	20 V	4.000 mA	3.899 mA	4.005 mA	4.101 mA	Passed	3.899 mA	3.997 mA	4.101 mA	Passed	0.0051 mA
1	20 V	50.000 mA	49.885 mA	49.977 mA	50.115 mA	Passed	49.885 mA	49.999 mA	50.115 mA	Passed	0.0063 mA
1	20 V	100.000 mA	99.870 mA	99.961 mA	100.130 mA	Passed	99.870 mA	100.003 mA	100.130 mA	Passed	0.0090 mA
1	20 V	150.000 mA	149.855 mA	149.941 mA	150.145 mA	Passed	149.855 mA	150.010 mA	150.145 mA	Passed	0.028 mA
1	20 V	200.000 mA	199.840 mA	199.927 mA	200.160 mA	Passed	199.840 mA	200.027 mA	200.160 mA	Passed	0.034 mA
1	-20 V	-4.000 mA	-4.101 mA	-4.001 mA	-3.899 mA	Passed	-4.101 mA	-4.005 mA	-3.899 mA	Passed	0.0051 mA
1	-20 V	-50.000 mA	-50.115 mA	-50.000 mA	-49.885 mA	Passed	-50.115 mA	-49.996 mA	-49.885 mA	Passed	0.0063 mA
1	-20 V	-100.000 mA	-100.130 mA	-100.004 mA	-99.870 mA	Passed	-100.130 mA	-99.991 mA	-99.870 mA	Passed	0.0090 mA
1	-20 V	-150.000 mA	-150.145 mA	-150.007 mA	-149.855 mA	Passed	-150.145 mA	-149.992 mA	-149.855 mA	Passed	0.028 mA
1	-20 V	-200.000 mA	-200.160 mA	-200.014 mA	-199.840 mA	Passed	-200.160 mA	-199.999 mA	-199.840 mA	Passed	0.034 mA

Current Prog Accuracy - Part 6. (2A Range)

Calibration			As Found				As Left				Uncertainty (±)
Channel	Voltage Level	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	Uncertainty (±)
1	20 V	0.04000 A	0.03895 A	0.04000 A	0.04105 A	Passed	0.03895 A	0.04001 A	0.04105 A	Passed	0.000015 A
1	20 V	0.50000 A	0.49840 A	0.49924 A	0.50160 A	Passed	0.49840 A	0.49999 A	0.50160 A	Passed	0.000070 A
1	20 V	1.00000 A	0.99730 A	0.99850 A	1.00270 A	Passed	0.99730 A	1.00004 A	1.00270 A	Passed	0.00013 A
1	20 V	1.50000 A	1.49532 A	1.49778 A	1.50468 A	Passed	1.49532 A	1.50021 A	1.50468 A	Passed	0.00021 A
1	20 V	2.00000 A	1.99160 A	1.99712 A	2.00840 A	Passed	1.99160 A	2.00033 A	2.00840 A	Passed	0.00028 A
1	-20 V	-0.04000 A	-0.04105 A	-0.03996 A	-0.03895 A	Passed	-0.04105 A	-0.04002 A	-0.03895 A	Passed	0.000015 A
1	-20 V	-0.50000 A	-0.50160 A	-0.49949 A	-0.49840 A	Passed	-0.50160 A	-0.50003 A	-0.49840 A	Passed	0.000070 A
1	-20 V	-1.00000 A	-1.00270 A	-0.99900 A	-0.99730 A	Passed	-1.00270 A	-0.99998 A	-0.99730 A	Passed	0.00013 A
1	-20 V	-1.50000 A	-1.50468 A	-1.49850 A	-1.49532 A	Passed	-1.50468 A	-1.49998 A	-1.49532 A	Passed	0.00021 A
1	-20 V	-2.00000 A	-2.00840 A	-1.99811 A	-1.99160 A	Passed	-2.00840 A	-1.99999 A	-1.99160 A	Passed	0.00028 A

Remote Sense Output

Calibration				As Found				As Left				Uncertainty (±)
Voltage Range	Current Range	Current Limit	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
20 V	200 mA	100 mA	10.00000 V	9.99468 V	9.99967 V	10.00532 V	Passed	9.99468 V	9.99958 V	10.00532 V	Passed	0.000051 V

Voltage Line Regulation

Calibration			As Found				As Left				Uncertainty ($\pm$)
Channel	Voltage Range	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
1	20 V	10.000 V	-9.000 mV	-0.020 mV	9.000 mV	Passed	-8.998 mV	0.032 mV	8.998 mV	Passed	0.00057 V

Voltage Load Regulation

Calibration			As Found				As Left				Uncertainty (±)
Channel	Voltage Range	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
0	6 V	6.0 V	-12.9 mV	5.7 mV	12.9 mV	Passed	-1.1 mV	0.8 mV	1.1 mV	Passed	0.057 V
1	20 V	10.0 V	-21.6 mV	11.3 mV	21.6 mV	Passed	-20.8 mV	8.1 mV	20.8 mV	Passed	0.057 V

Voltage Measurement Accuracy

Calibration			As Found				As Left				Uncertainty (±)	
Channel	As Found DMM Reading	As Left DMM Reading	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit		Pass/Fail
0	-0.000034 V	0.000103 V	0.00000 V	-0.00403 V	0.00003 V	0.00397 V	Passed	-0.00390 V	0.00011 V	0.00410 V	Passed	0.0000057 V
0	1.49999 V	1.499907 V	1.50000 V	1.49524 V	1.50003 V	1.50474 V	Passed	1.49516 V	1.49994 V	1.50466 V	Passed	0.000010 V
0	3.000029 V	2.999934 V	3.00000 V	2.99453 V	3.00012 V	3.00553 V	Passed	2.99443 V	3.00008 V	3.00543 V	Passed	0.000015 V
0	4.499746 V	4.499637 V	4.50000 V	4.49350 V	4.49985 V	4.50600 V	Passed	4.49339 V	4.49984 V	4.50589 V	Passed	0.000021 V
0	5.999631 V	5.999325 V	6.00000 V	5.99263 V	5.99988 V	6.00663 V	Passed	5.99233 V	5.99974 V	6.00632 V	Passed	0.000027 V
1	-0.000313 V	-0.000042 V	0.00000 V	-0.00181 V	-0.00101 V	0.00119 V	Passed	-0.00154 V	0.00014 V	0.00146 V	Passed	0.0000057 V
1	4.999723 V	4.999759 V	5.00000 V	4.99672 V	4.99871 V	5.00272 V	Passed	4.99676 V	4.99988 V	5.00276 V	Passed	0.000023 V
1	9.999848 V	9.99974 V	10.00000 V	9.99535 V	9.99859 V	10.00435 V	Passed	9.99524 V	10.00008 V	10.00424 V	Passed	0.000043 V
1	14.99984 V	14.999714 V	15.00000 V	14.99384 V	14.99826 V	15.00584 V	Passed	14.99371 V	15.00014 V	15.00571 V	Passed	0.000065 V
1	20.000072 V	19.999506 V	20.00000 V	19.99257 V	19.99830 V	20.00757 V	Passed	19.99201 V	20.00012 V	20.00701 V	Passed	0.000085 V
1	-4.999488 V	-4.999537 V	-5.00000 V	-5.00249 V	-4.99984 V	-4.99649 V	Passed	-5.00254 V	-4.99944 V	-4.99654 V	Passed	0.000023 V
1	-9.999511 V	-9.99989 V	-10.00000 V	-10.00401 V	-9.99964 V	-9.99501 V	Passed	-10.00439 V	-9.99987 V	-9.99539 V	Passed	0.000043 V
1	-14.999448 V	-14.999681 V	-15.00000 V	-15.00545 V	-14.99924 V	-14.99345 V	Passed	-15.00568 V	-14.99980 V	-14.99368 V	Passed	0.000065 V
1	-19.999547 V	-19.999806 V	-20.00000 V	-20.00705 V	-19.99912 V	-19.99205 V	Passed	-20.00731 V	-19.99993 V	-19.99231 V	Passed	0.000085 V

Voltage Programming Accuracy

Channel	Calibration		As Found				As Left				Uncertainty (±)
	Voltage Level Range	Test Value	Low Limit	Reading	High Limit	Pass/Fail	Low Limit	Reading	High Limit	Pass/Fail	
0	6 V	0.00000 V	-0.00400 V	-0.00002 V	0.00400 V	Passed	-0.00400 V	0.00011 V	0.00400 V	Passed	0.0000057 V
0	6 V	1.50000 V	1.49525 V	1.50000 V	1.50475 V	Passed	1.49525 V	1.49990 V	1.50475 V	Passed	0.0000080 V
0	6 V	3.00000 V	2.99450 V	3.00004 V	3.00550 V	Passed	2.99450 V	2.99983 V	3.00550 V	Passed	0.0000016 V
0	6 V	4.50000 V	4.49375 V	4.49974 V	4.50625 V	Passed	4.49375 V	4.49963 V	4.50625 V	Passed	0.0000023 V
0	6 V	6.00000 V	5.99300 V	5.99964 V	6.00700 V	Passed	5.99300 V	5.99930 V	6.00700 V	Passed	0.0000031 V
1	6 V	0.00000 V	-0.00150 V	-0.00036 V	0.00150 V	Passed	-0.00150 V	-0.00003 V	0.00150 V	Passed	0.0000057 V
1	6 V	1.50000 V	1.49799 V	1.49987 V	1.50201 V	Passed	1.49799 V	1.49986 V	1.50201 V	Passed	0.0000080 V
1	6 V	3.00000 V	2.99748 V	3.00005 V	3.00252 V	Passed	2.99748 V	2.99993 V	3.00252 V	Passed	0.0000016 V
1	6 V	4.50000 V	4.49697 V	4.50029 V	4.50303 V	Passed	4.49697 V	4.49993 V	4.50303 V	Passed	0.0000023 V
1	6 V	6.00000 V	5.99646 V	6.00039 V	6.00354 V	Passed	5.99646 V	5.99990 V	6.00354 V	Passed	0.0000031 V
1	6 V	-1.50000 V	-1.50201 V	-1.49961 V	-1.49799 V	Passed	-1.50201 V	-1.49985 V	-1.49799 V	Passed	0.0000080 V
1	6 V	-3.00000 V	-3.00252 V	-2.99986 V	-2.99748 V	Passed	-3.00252 V	-2.99987 V	-2.99748 V	Passed	0.0000016 V
1	6 V	-4.50000 V	-4.50303 V	-4.49997 V	-4.49697 V	Passed	-4.50303 V	-4.49983 V	-4.49697 V	Passed	0.0000023 V
1	6 V	-6.00000 V	-6.00354 V	-6.00015 V	-5.99646 V	Passed	-6.00354 V	-5.99978 V	-5.99646 V	Passed	0.0000031 V
1	20 V	0.00000 V	-0.00180 V	-0.00036 V	0.00180 V	Passed	-0.00180 V	-0.00002 V	0.00180 V	Passed	0.0000057 V
1	20 V	5.00000 V	4.99650 V	4.99965 V	5.00350 V	Passed	4.99650 V	4.99966 V	5.00350 V	Passed	0.0000026 V
1	20 V	10.00000 V	9.99480 V	9.99978 V	10.00520 V	Passed	9.99480 V	9.99972 V	10.00520 V	Passed	0.0000051 V
1	20 V	15.00000 V	14.99310 V	14.99978 V	15.00690 V	Passed	14.99310 V	14.99972 V	15.00690 V	Passed	0.0000076 V
1	20 V	20.00000 V	19.99140 V	20.00007 V	20.00860 V	Passed	19.99140 V	19.99954 V	20.00860 V	Passed	0.000010 V
1	20 V	-5.00000 V	-5.00350 V	-4.99946 V	-4.99650 V	Passed	-5.00350 V	-4.99962 V	-4.99650 V	Passed	0.0000026 V
1	20 V	-10.00000 V	-10.00520 V	-9.99950 V	-9.99480 V	Passed	-10.00520 V	-9.99983 V	-9.99480 V	Passed	0.0000051 V
1	20 V	-15.00000 V	-15.00690 V	-14.99942 V	-14.99310 V	Passed	-15.00690 V	-14.99970 V	-14.99310 V	Passed	0.0000076 V
1	20 V	-20.00000 V	-20.00860 V	-19.99955 V	-19.99140 V	Passed	-20.00860 V	-19.99976 V	-19.99140 V	Passed	0.000010 V