

Calibration Procedure

19501-K001

Range: Entire Set Date: 11/27/2017

1. Calibration Environment

- a. Temperature : 23°C±5°C
- b. Relative Humidity : 75% maximum
- c. Warm up : 30 minute minimum

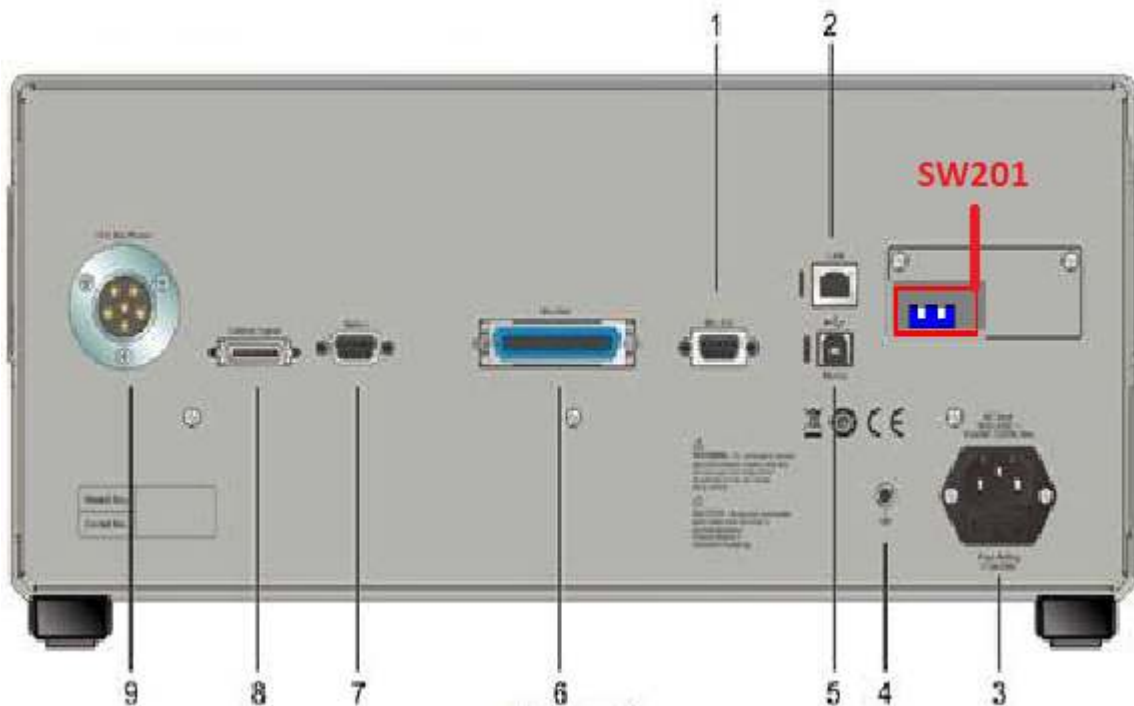
2. Hardware Requirement

Item	Quantity
19501-K001	1
19501-K001 HV Module	1
PD Calibration CAL1A	1
Kikusui Model 149-10A High Voltage Digitalmeter	1
Handheld electric meter Fluke	1
19501-K001 V Board	1

3. Calibration Procedure

Before performing the calibration procedure listed in this chapter, the Tester should be warmed up for at least 30 minutes.

- Please turn the two DIP switches of SW201 to ON before calibration.



Note: The calibration switch SW201 is inside the Analyzer. If calibration is required, please remove the plate or GPIB card first.

- Press **SYSTEM** in any screen and move the highlight to “CALIBRATION” and then press **ENTER** to go into the CALIBRATION setup screen.
- Use numeric keys to enter the PASSWORD [7] [9] [3] [1] and **ENTER** to get in the calibration procedure.

AC Voltage OFFSET/FULL Calibration (see Section 3.1)

ACV 10KV	OFFSET (0.1kV)	;AC Voltage 10kV offset Calibration
ACV 10KV	FULL (4kV)	;AC Voltage 10kV full Calibration

AC Current Calibration (see Section 3.2)

ACA 30uA	OFFSET (2uA)	;AC Current 30uA offset Calibration
ACA 30uA	FULL (20uA)	;AC Current 30uA full Calibration
ACA 300uA	OFFSET (20uA)	;AC Current 300uA offset Calibration
ACA 300uA	FULL (80uA)	;AC Current 300uA full Calibration

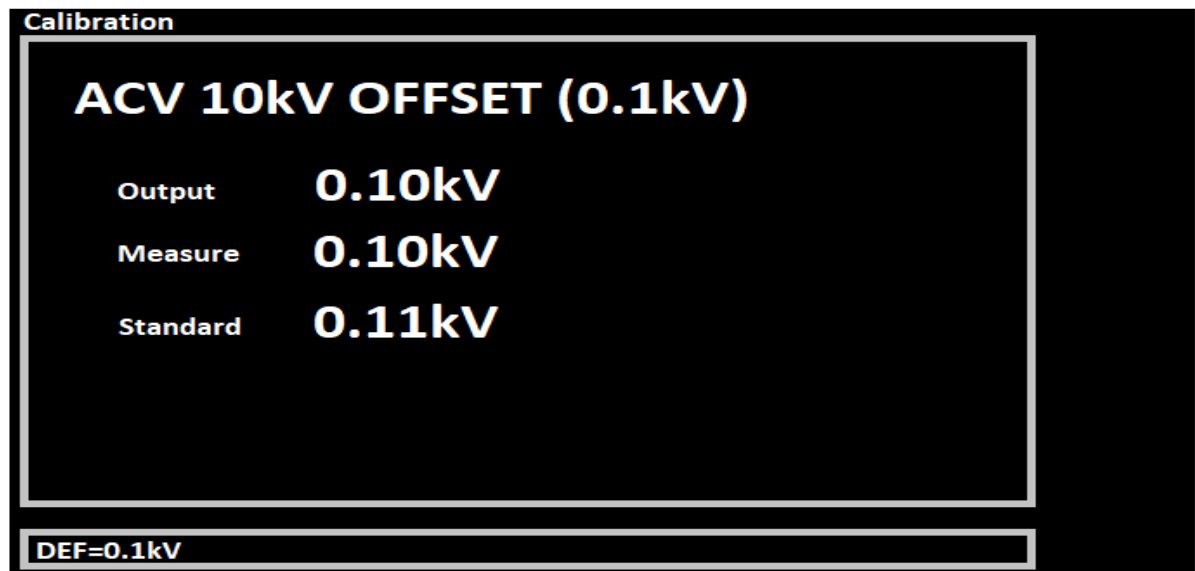
PD Calibration (see section 3.3)

PD 200pC	OFFSET(5pc)	;PD 200pC offset Calibration
PD 2000pC	OFFSET(50pc)	;PD 2000pC offset Calibration
PD 200pC	FULL(5pc)	;PD 200pC full Calibration
PD 2000pC	FULL(1000pc)	;PD 2000pC full Calibration

3.1 AC Voltage Calibration

- Test leads for HV Module HIGH and RTN are connected to Kikusui Model 149-10A High Voltage Digitalmeter.

ACV 10kV Offset calibration screen is shown below



1. Press **START** to ACV 10kV OFFSET calibration
2. Enter the voltage meter reading in the Standard field, for example "0.11" and press **ENTER** when done.
3. Press **↓** to go to ACV 10kV FULL calibration.

ACV 10kV FULL calibration screen is shown below

Calibration

ACV 10kV FULL (4kV)

Output	4.00kV
Measure	3.93kV
Standard	3.89kV

DEF=4kV

1. Press **START** to ACV 10kV FULL calibration
2. Enter the voltage meter reading in the Standard field, for example "3.89" and press **ENTER** when done.
3. Press **↓** to go to ACA 30uA FULL calibration.

3.2 AC Current Calibration

ACA 30uA OFFSET calibration screen is shown below:

Calibration

ACA 30uA OFFSET (2uA)

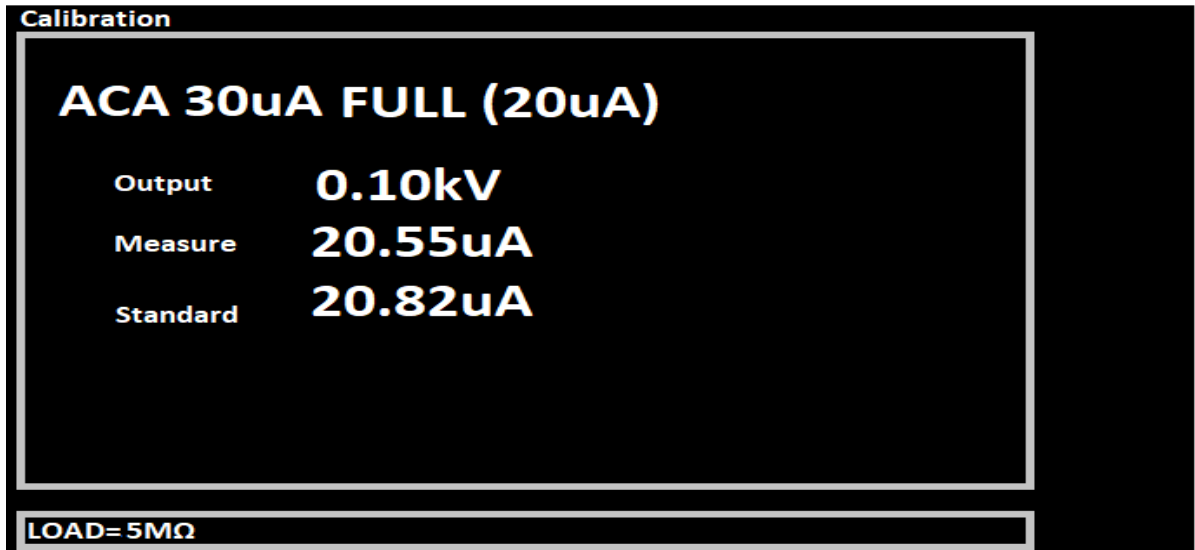
Output	0.10kV
Measure	2.10uA
Standard	2.15uA

LOAD=50MΩ

1. Use 19501-K001 V board and HV output connects to TP103 (0.1kV, 1.88uA), RTN connects to TP102.
2. When calibrating, use a palmtop meter with twisted wire less than 30cm for connection.

3. Use a palmtop meter connecting to TP101, TP102.
4. Press **START** to output voltage.
5. Divide the voltage reading on the palmtop meter by 10k, then key in the value.
6. Press **ENTER** to confirm the input.
7. Press **STOP** to stop the voltage output.
8. Press **↓** to go to ACA 30uA FULL calibration.

ACA 30uA FULL calibration screen is shown below



1. Use 19501-K001 V board and HV output connects to TP104 (0.1kV, 18.8uA), RTN connects to TP102.
2. When calibrating, use a palmtop meter with twisted wire less than 30cm for connection.
3. Use a palmtop meter connecting to TP101, TP102.
4. Press **START** to output voltage.
5. Divide the voltage reading on the palmtop meter by 10k, then key in the value.
6. Press **ENTER** to confirm the input.
7. Press **STOP** to stop the voltage output.
8. Press **↓** to go to ACA 300uA OFFSET calibration.

ACA 300uA OFFSET calibration screen is shown below:

Calibration

ACA 300uA OFFSET (20uA)

Output	0.10kV
Measure	20.5uA
Standard	20.8uA

LOAD= 5M Ω

1. Use 19501-K001 V board and HV output connects to TP104 (0.1kV, 18.8uA), RTN connects to TP102.
2. When calibrating, use a palmtop meter with twisted wire less than 30cm for connection.
3. Use a palmtop meter connecting to TP101, TP102.
4. Press **START** to output voltage.
5. Divide the voltage reading on the palmtop meter by 10k, then key in the value.
6. Press **ENTER** to confirm the input.
7. Press **STOP** to stop the voltage output.
8. Press **↓** to go to ACA 300uA FULL calibration.

ACA 300uA FULL calibration screen is shown below:

Calibration

ACA 300uA FULL (80uA)

Output	0.10kV
Measure	96.4uA
Standard	97.5uA

LOAD= 1.25M Ω

1. Use 19501-K001 V board and HV output connects to TP105 (0.1kV, 83.33uA), RTN connects to TP102.
2. When calibrating, use a palmtop meter with twisted wire less than 30cm for connection.
3. Use a palmtop meter connecting to TP101, TP102.
4. Press **START** to output voltage.
5. Divide the voltage reading on the palmtop meter by 10k, then key in the value.
6. Press **ENTER** to confirm the input.
7. Press **STOP** to stop the voltage output.
8. Press **↓** to go to PD 200pC OFFSET calibration.

3.3 PD Calibration

PD 200pC OFFSET calibration screen is shown below:



1. Use PD Calibration CAL1A +Termination to HV module RTN, -Termination to HV module Ground Terminal.
2. Set the Standard PD value, for example, enter 5 for 5pC calibration.
3. Press **START** key output; the machine will automatically correct after the completion of the display PASS light.
4. Press **↓** to go to PD 2000pC OFFSET calibration.

PD 2000pC OFFSET calibration screen is shown below:

Calibration

PD 2000pC OFFSET

Standard 50

2000pC 1152

Standard-50pC

1. Use PD Calibration CAL1A +Termination to HV module RTN, -Termination to HV module Ground Terminal.
2. Set the Standard PD value, for example, enter 20 for 20pC calibration.
3. Press **START** key output; the machine will automatically correct after the completion of the display PASS light.
4. Press **↓** to go to PD 200pC FULL calibration.

Press **START** key output; the machine will automatically correct after the completion of the display PASS light.

PD 200pC FULL calibration screen is shown below:

Calibration

PD 200 pC OFFSET

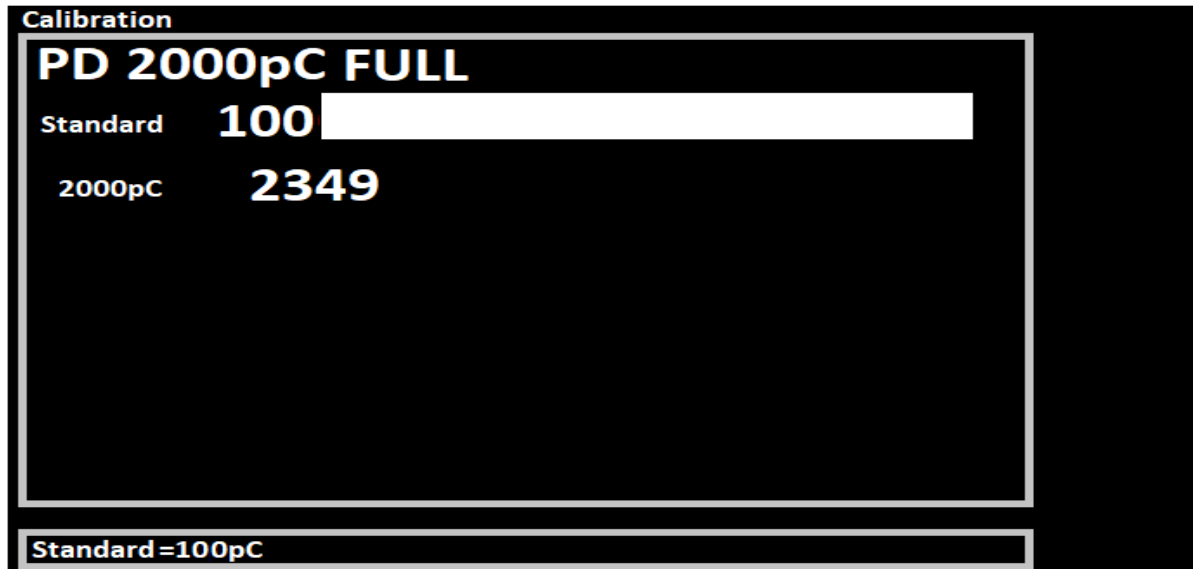
Standard 10

200pC 2275

Standard =10pC

1. Use PD Calibration CAL1A +Termination to HV module RTN, -Termination to HV module Ground Terminal.
2. Set the Standard PD value, for example, enter 100 for 100pC calibration.
3. Press **START** key output; the machine will automatically correct after the completion of the display PASS light.
4. Press **↓** to go to PD 2000pC FULL calibration.

PD 2000pC FULL calibration screen is shown below:



1. Use PD Calibration CAL1A +Termination to HV module RTN, -Termination to HV module Ground Terminal.
2. Set the Standard PD value, for example, enter 100 for 100pC calibration.
3. Press **START** key output; the machine will automatically correct after the completion of the display PASS light.
4. Press **SYSTEM** to go to PD Verification.

3.4 Use Function Generator to Calibrate 2000pC

1. Use the same BNC wire and + Termination to HV module RTN, - Termination to HV module Ground Terminal.
2. Function generator setting:
 - a. Wave: exp rise
 - b. Frequency: 60 Hz
3. Press **SYSTEM** into **PD Verification** 2000pC.
4. Adjust amplitude (Vpp) when PD Verification shows 20pC, record this amplitude.
5. Adjust amplitude (Vpp) when PD Verification shows 2000pC, record this amplitude.
6. Back **SYSTEM** **Calibration** and use function generator and the 20pC/2000pC amplitude to calibrate the 2000pC again.

3.5 Calibration Completed

1. Press **SYSTEM** to exit the calibration screen.
2. After the calibration is done, please turn the two DIP switches on the calibration switch SW201 to off.