Calibration Proceudre for K3105 Insulation Tester

Equipment required for calibration

(1) AC Voltage Generator(about 600V max. output. Frequency to be variable)

DC Voltage Power Supply(To be capable of voltage setting from 6.2V to 9V. 300mA minimum output current to be avaialable.)

Resistance Box(0 - 200 Megohm)

(4) Resistance Box(0 - 500 ohm)

(5) Digital Multimeter(To be used for monitoring current consumption. May not be required if the DC voltage power supply has this monitoring function.)

Digital Multimeter(To be used for monitoring output current of the K3105)

7) Digital Multimeter(To be used for monitoring 4.1V Vref).

Test Leads for K3105

9) Screwdriver for Zero Adjustment

2. Prepration

1 Remove the front label of the 3105.

(2 Remove the batteries from the instrument.

3) Connect the plus(+) and minus(-) terminals of the the DC voltage power supply to the plus(+) and minus(-) battery contacts of the K3105(connecting to the red and black wires respectively).

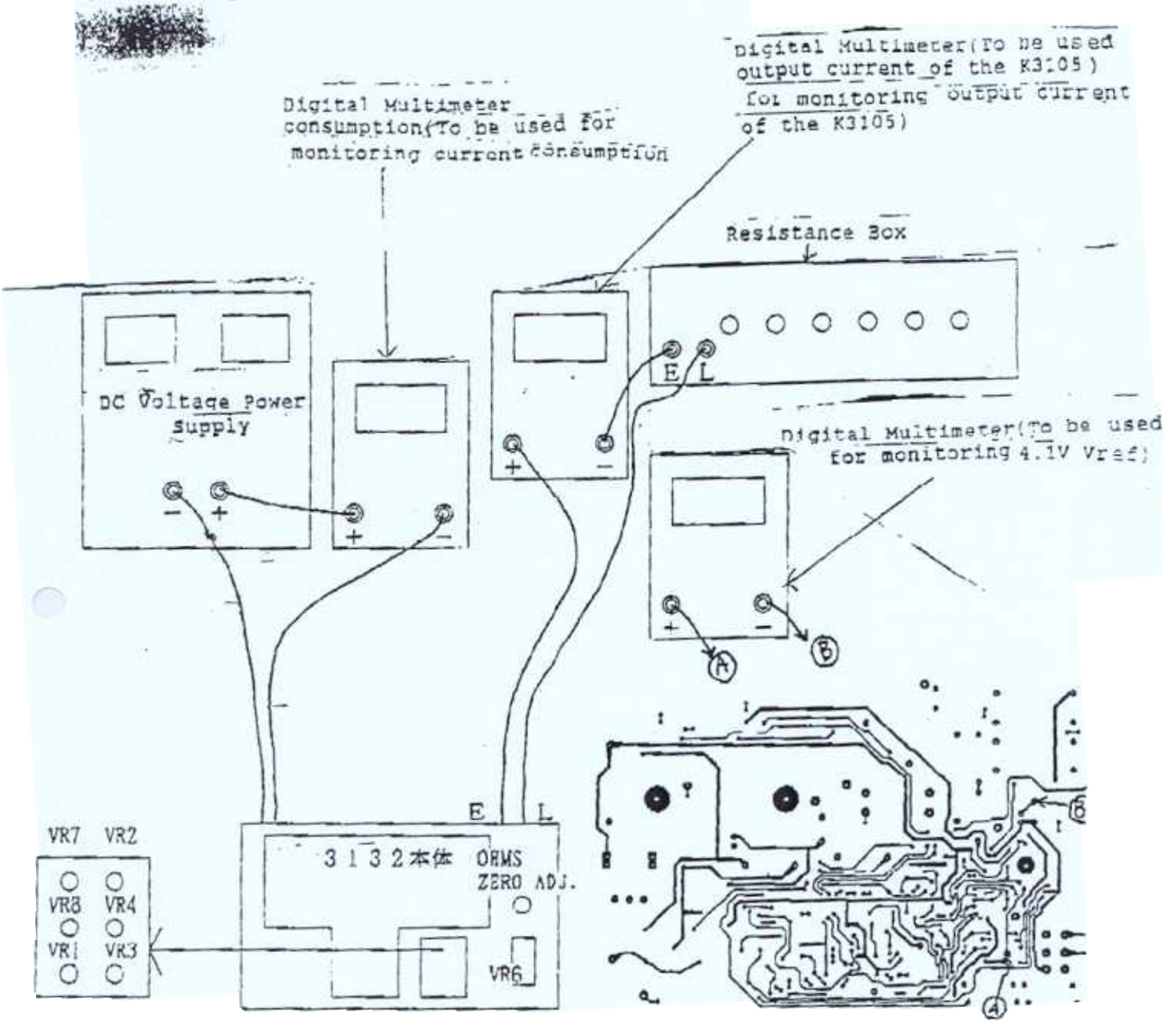
2.5	
3	"
oo (ohm)	Within +/-1.5% of scale length

500 ohm Range	Accuracy
0	Within +/-1.5% of scale length
5	
10	
20	
50	
100	
500	"
oo	"

5. AC Voltage Check

Apply 300V and 600V from the AC voltage generator to the E(earth) and L(line) terminals of the K3105. Make certain that the instrument reads 300V and 600V(do not press the "Press to Test" button).

3. Megohm Calibration(see drawings below)



(1) Set the meter pointer to the mechanical zero adjust position.

2) Set the K3105 to the 500V range, the resistance box to the 10 Megohm and the output current monitor to the 200uA DC range.

Press the "Press to Test" button and check that the current consumption is 10 to 20 mA.

Adjust Potentiometer VR3 so that the reference voltage is set to 4.1V by observing the V ref. 4.1V voltage monitor(set at 20V).

Adjust Potentiometer VR1 so that the K3105 is set to 52.5uA by observing the output current monitor(set at 200uA DC).

(6) With the resistance box set to infinity(oo) adjust Potentiometer VR8 so that the K3105 reads infnity(oo)

7) With the resistance box set to 2 Megohm adjust VR4 so that the K3105 reads 2 Megohm.

(8) With the resistance box set to 0 Megohm adjust VR2 so that the K3105 reads 0 Megohm.

(9) Repeat steps (7) and (8) above until the K3105 reads insulation rsistance within accuracy (as specifed on the following table).

(10) Check accuracy at major scale divisions on the 1000V, 500V and 250V ranges, and also other req uirements as indicated below.

Ranges	Resistance Box	Reading of Output Current Monitor
250V	0.25 Megohm	Within 1.0 - 1.2mA
500V	0.5 Megohm	"
1000V	1 Megohm	"

The current consumption monitor should read 190 to 230mA at 1 Megohm load on the 1000V range.

If the K3105 is out of accuracy, calibrate each range by repeating steps (6) to (10) until it falls into accuracy.

Table of Instrumet Readings within Accuracy at Each Insulation Resistance Ranges

250V	500V	1000V	Accuracy
0	0	0	Within +/-0.7% of scale length
0.05	0.1	0.2	Within +/-10% of reading
0.1	0.2	0.4	Within +/-5% of reading
0.25	0.5	1	"
0.5	1	2	
1	2	4	
2.5	5	10	
5	10	20	
10	20	40	
25	50	100	Within +/-10% of reading
50	100	200	"
100	200	400	
∞ (Megohm)	∞ (Megohm)	∞ (Megohm)	Within +/-0.7% of scale length

. OHM Calibration

(1 With the K3105 at the 500 ohm range set the resistance box (0 - 500 ohm) to 0 ohm and the output current monitor to the 2000mA DC range. Press the "Press to Test" button and adjust the K3105 reading to 0 ohm by turnig the OHMS zero adjust. With the resistance box at 500 ohm adjust Potentiometer VR6 so that the K3105 reads 500 ohm.

(2) With the K3105 at the 3 ohm range set the resistance box (0 - 500 ohm) to 0 ohm. Press the "Press to Test" button and set the K3105 to 0 ohm by turning the OHMS Zero Adjust. With the resistance box at 3 ohm adjust Potentiometer VR7 so that the K3105 reads 3 ohm.

(3) Check accuracy at major scale divisions on the 3 ohm and 500 ohm ranges, and other requirements as listd below

3 ohm Range	Output Current Monitor to Read	Current Consumption Monitor to Read
Resistance Box at 0 ohm	200 - 220mA DC	200 - 240mA DC

3 ohm Range	Accuracy
0	Within +/-1.5% of scale length
0.5	Within +/-5% of reading
1	
1.5	Within +/-1.5% of reading
2	"

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回路図用部品表

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確認	作成
共立 95.11.15 藤田	共立 7.6.-7 雪永

Part	Used	PartType	Designators
1	1	2SA1162Y/GR	TR3
2	2	2SB962-Z	TR1 TR2
3	1	3nF/3kV	C10
4	1	8R2022	SW1
5	1	16YK220	C1
6	1	47nF/1250V	C8
7	2	51k 3WJ	R22 R23
8	1	65-1181	T1
9	1	20 2WF	R34
10	2	270k 1WJ	R20 R63
11	1	520HF 0.5A/250V	F1
12	1	3132	SW2
13	1	AG20PC252F-L3N	GAP1
14	1	CB24PAC	B1
15	4	GRM40B103K50PT	C3 C14 C15 C16
16	1	GRM40B104K25PT	C11 C18
17	1	GRM40B223K50PT	C5
18	1	GRM40B473K50PT	C2
19	2	GRM40B471K50PT	C4 C6
20	1	HA17451AFP	U1
21	2	HZK15	D6 D19
22	1	MVR34HXBRN102	VR7
23	2	MVR34HXBRN103	VR3 VR6
24	1	MVR34HXBRN202	VR1
25	1	MVR34HXBRN502	VR4
26	2	MVR34HXBRN503	VR2 VR8
27	1	NE-1M	L1
28	1	NFM40R11C223	EMF1
29	1	LM324NS	U3
30	1	NJM2904M	U2
31	1	PTC YM120C15N182	R18
32	1	R6-6	BT1
33	1	REV1uF50V	C7
34	2	REV10uF35V	C12 C17
35	1	RK73H2A1.8MJ	R52
36	1	RK73H2A2.2kF	R58
37	1	RK73H2A2.4kF	R45
38	1	RK73H2A2.7kF	R17
39	1	RK73H2A6.8kF	R27
40	1	RK73H2A8.2kF	R26
41	1	RK73H2A10kF	R41
42	1	RK73H2A12kF	R3
43	1	RK73H2A15kF	R54

44	6	RK73H2A22kF	R33 R46 R48 R57 R59 RG1
45	3	RK73H2A27kF	R35 R42 R49
46	5	RK73H2A33kF	R8 R9 R10 R11 R15
47	3	RK73H2A43kF	R43 R44 R62
48	1	RK73H2A47kF	R60
49	1	RK73H2A51kF	R51
50	1	RK73H2A59kF	R4
51	10	RK73H2A100kF	R16 R24 R25 R28 R29 R31 R37 R38 R47 R50
52	1	RK73H2A150kF	R32
53	2	RK73H2A178kF	R2 R5
54	1	RK73H2A180kF	R36
55	2	RK73H2A200kF	R6 R7
56	2	RK73H2A240kF	R19 R30
57	1	RK73K2A1kJ	R12
58	2	RK73K2A100kJ	R21 R55
59	2	RK73K2A470J	R13 R39
60	1	RK73K2B1kJ	R40
61	6	RLR4003TE-23	D7 D8 D9 D10 D11 D17
62	7	RLS4448	D1 D4 D5 D13 D14 D15 D16
63	2	RM1/2TA10MF	R1 R14
64	2	RN1/2P620kF	R53 R56
65	3	UO5TH44	D2 D3 D19
66	1	VO12LPV30KSB-1k(O ADJ)	VR5
67	1	VRO Z2015U	D12
68	1	uPD4052BG	U4

TOP SILKSCREEN