

# **Calibration Procedure**

**Model : WENS33N**

**WENS Precision Co., Ltd.**

## WENS 33N Calibration procedure

### ● METER FUNCTION

#### 1, DC/V FUNCTION

- 1) Turn the rotary switch to the **V/dc** position.
- 2) Adjust voltage value to 2.000V by **VR5 ( Input voltage : DC 2V )**.
- 3) After finishing process 3), maintain meter on AUTO and input DC values of ( 300mV, 3V, 30V, 300V, 1000V ) in sequentially, and then confirm linearity.
- 4) Confirm "0" on displaying at DC 400mV range in the state of being shorted input terminals ( Tolerance : 5 dgts ).
- 5) Calibrator : Fluke 5500A.
- 6) Accuracy : Refer to spec sheet.

#### 2, AC/V FUNCTION

- 1) Turn the rotary switch to the **V/ac** position.
- 2) Adjust voltage value to 2.000V/500Hz by **VR1 ( Input voltage : AC 2V/500Hz )**.
- 3) After finishing process 2), maintain METER on AUTO, and input voltage and frequency values as ( 300mV, 3V, 30V, 300V, 700V / 500Hz, ) in sequentially, and then confirm linearity.
- 4) Calibrator : Fluke 5500A.
- 5) Accuracy : Refer to spec sheet.

#### 3, mV ac/dc FUNCTION.

- 1) Turn the rotary switch to the **mV(ac/dc)** position.
- 2) Calibration point : none.
- 3) Input voltage : 200mV dc, 200mV 500Hz ac.
- 4) Calibrator : Fluke 5500A.
- 5) Accuracy : Refer to spec sheet.

#### 4, OHM FUNCTION

- 1) Turn the rotary switch to the **OHM** position.
- 2) Adjust ohm value to 200k $\Omega$  by VR4.

- 3) Input the ohm values (300 $\Omega$ , 3k $\Omega$ , 30k $\Omega$ , 300k $\Omega$ , 3M $\Omega$ , 30M $\Omega$  ) in sequentially  
And confirm accuracy.
- 4) Press the F4 key (the **diode** symbol will change to white on black).
  - a) Confirm 0.4V ~ 0.7V on positive direction.
  - b) OVER** on reverse direction.( **Input : 1N4003 DIODE** ).
- 5) Press the F4 key (the **continuity** symbol will change to white on black).
  - a) Adjust ohm value to 200 $\Omega$  by **VR6**.
  - b) Confirm sound of buzzer ( Input : 20 $\Omega$  resistance ).
  - c) Confirm doing not sound of buzzer ( Input : 70 $\Omega$  resistance ).
- 6) Calibrator : Fluke 5500A.

#### **5, 400mA CURRENT ( ac/dc )**

- 1) Turn the rotary switch to the **CURRENT(mA)** function.
- 2) Calibration point : none.
- 3) Press the ac/dc key to change from AC to DC current.  
**Input : 300mA/dc, 300mA 500Hz/ac.**
- 4) Calibrator : Fluke 5500A.
- 5) Accuracy : Refer to spec sheet.

#### **6, 20A CURRENT ( ac/dc )**

- 1) Turn the rotary switch to the **CURRENT(20A)** function.
- 2) Press the ac/dc key to change from DC to AC current.
- 3) Adjust current value to 10A/dc by **VR2**.
- 4) Confirm the 20A 500Hz/ac.
- 5) Accuracy : Refer to spec sheet.

#### **7, SIGNAL OUT**

- 1) Turn the rotary switch to the **SIG.OUT** function.
- 2) Calibration point : none(Programmable generation).
- 3) Press F2( $\Delta$ ), F3( $\nabla$ ) keys to approach desired frequency.
- 4) Press F1 key to enter FINE adjustment.
- 5) Press F4 key (OUTPUT).
- 6) Insert proper Test Lead and confirm the output value.

( **AMPLITUDE of output frequency : 9V P/P, SQUARE WAVE** )

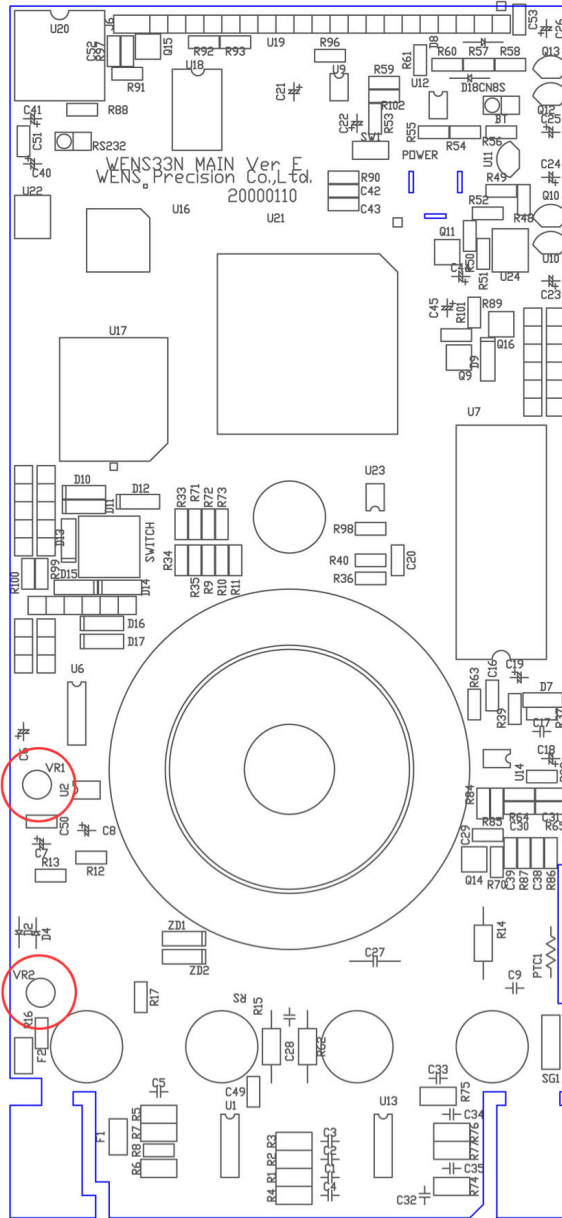
7) Accuracy : Refer to spec sheet.

## **8, CAPACITANCE(full autoranging)**

- 1) Turn the rotary switch to the **CAP** function.
- 2) Adjust capacitance by **VR3( INPUT : 1uF )**.  
( INPUT : 1nF, 10nF, 100nF, 1uF, 10uF, 100uF as capacitance values ).
- 3) calibrator : Fluke 5500A.
- 4) Accuracy : Refer to spec sheet.

## **9, SCOPE MODE**

- 1) Turn the rotary switch to the **V(ac/dc)** position.
- 2) Select **DC SCOPE MODE** function. ( **Accuracy :  $\pm ( 5\%+10\text{dgt}/\text{div} )$**  )
  - a) Short the SCOPE INPUT.
  - b) Adjust **CENTER LINE** of SCOPE by **VR7**.
  - c) DC Voltage Input :  $\pm(1.5\text{V})$ .
- 3) Select **AC SCOPE MODE** function.
  - a) Press the **AC/DC** key to change from DC to AC scope.
  - b) Select sine wave (1.5V/500Hz ) on output of Function generator.
  - c) Input sine wave ( 1.5V/500Hz ) to scope.
  - d) Confirm the display Value.
  - e) **Accuracy of scope function : (  $5\% \pm 0.05 \text{ range}/\text{div}$  )**

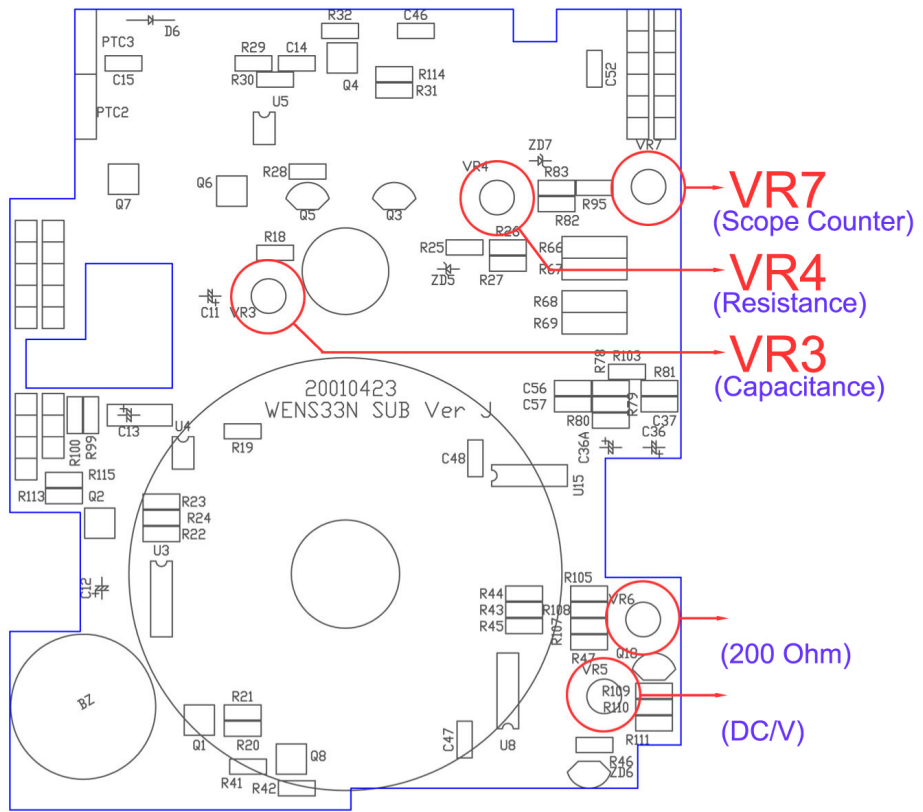


VR1  
(ACM)

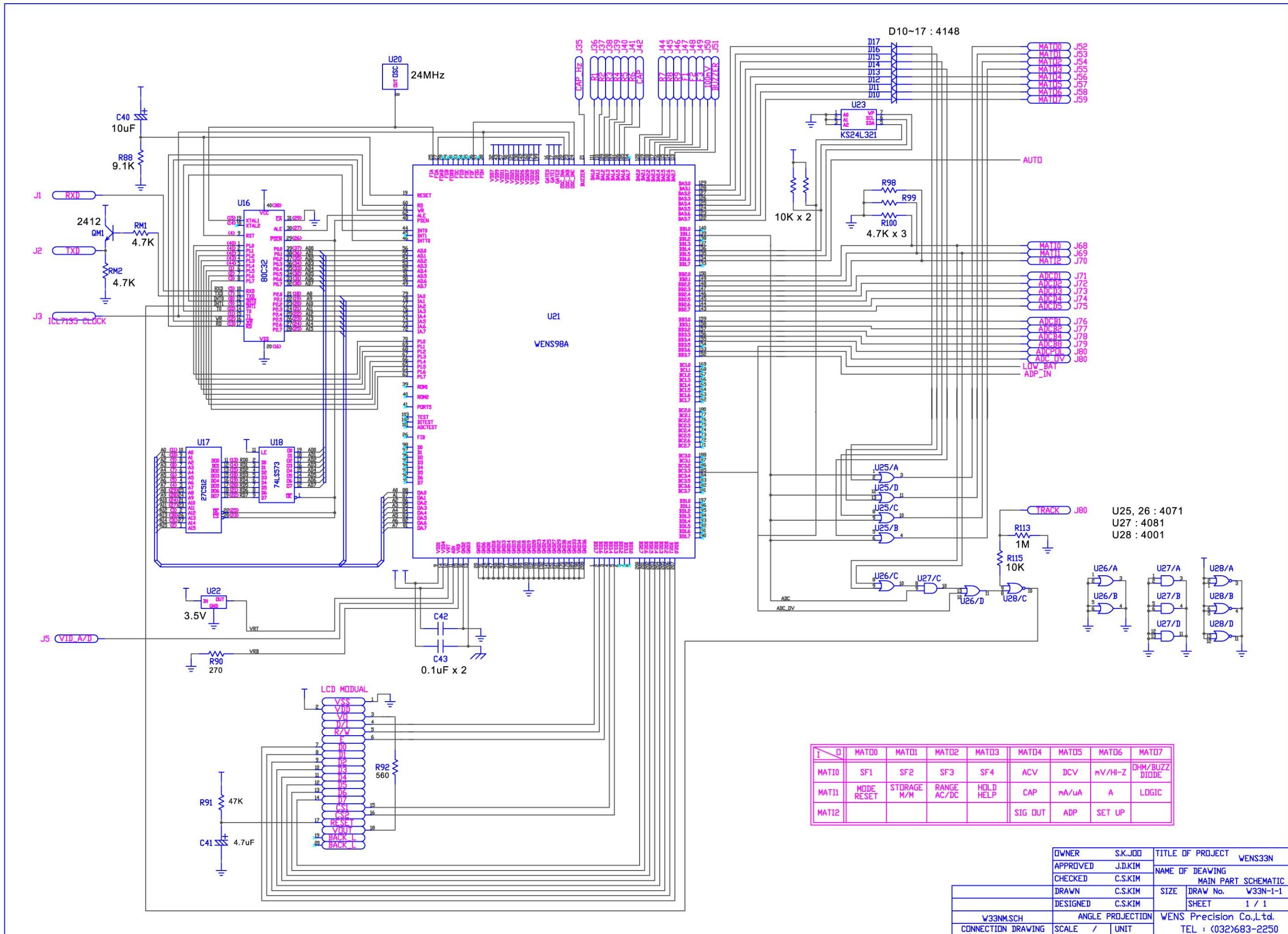
VR2  
(20A)

COMP' SIDE  
SILK LAYER

# COMPONENT SIDE

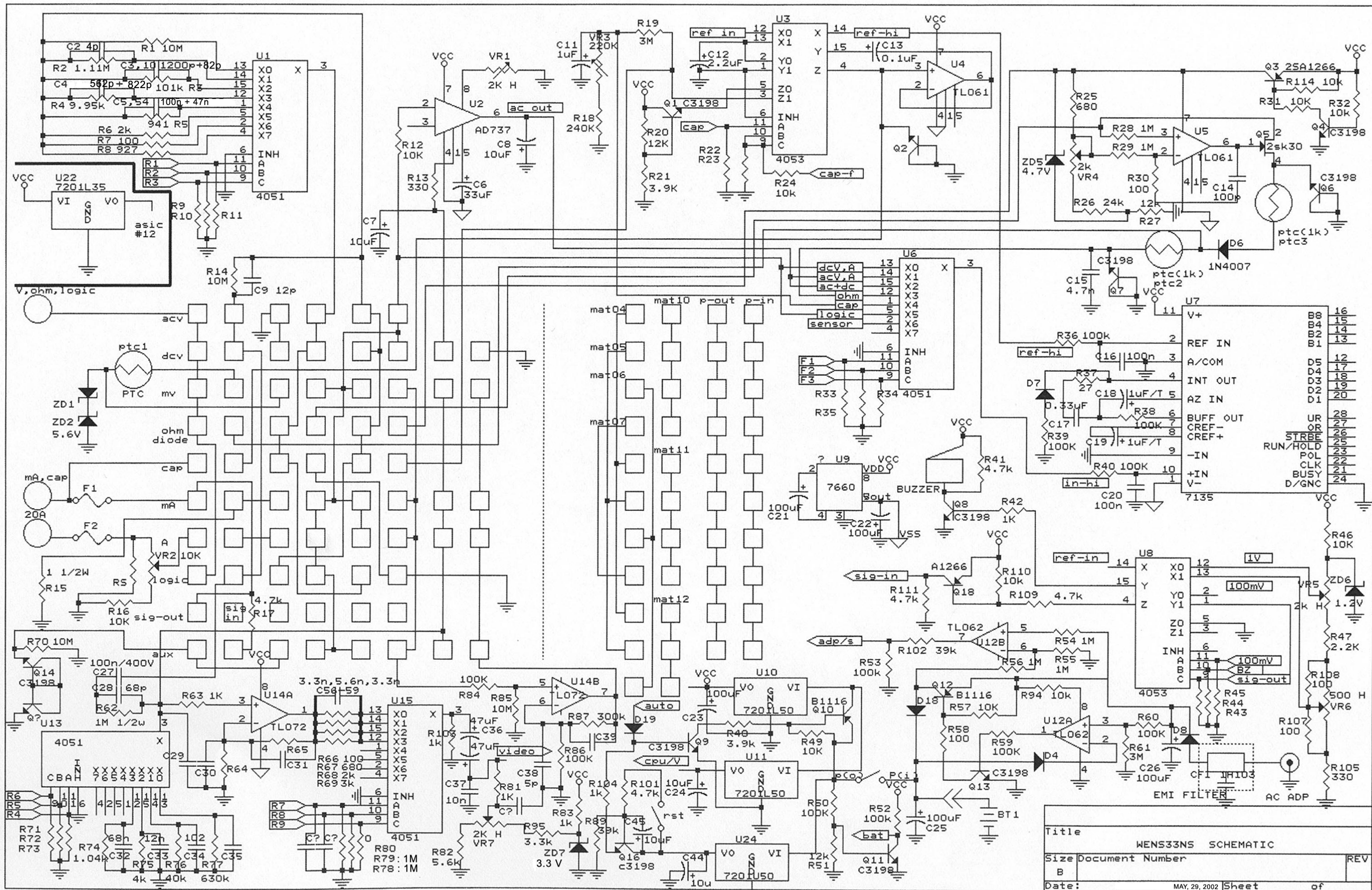


SILK LAYER



	MAT00	MAT01	MAT02	MAT03	MAT04	MAT05	MAT06	MAT07
MAT10	SF1	SF2	SF3	SF4	ACV	DCV	mV/Hi-Z	OHM/BUZZ DIODE
MAT11	MODE RESET	STORAGE M/M	RANGE AC/DC	HOLD HELP	CAP	mA/uA	A	LOGIC
MAT12					SIG OUT	ADP	SET UP	

OWNER	S.K.JOO	TITLE OF PROJECT	WENS33N
APPROVED	J.D.KIM	NAME OF DEAWING	MAIN PART SCHEMATIC
CHECKED	C.S.KIM	SIZE	DRAW No. V33N-1-1
DRAWN	C.S.KIM	SHEET	1 / 1
DESIGNED	C.S.KIM		
V33NM.SCH		ANGLE PROJECTION	WENS Precision Co.,Ltd.
CONNECTION DRAWING	SCALE / UNIT		TEL : (032)683-2250



Title	WENS33NS SCHEMATIC	
Size	Document Number	REV
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Date:	MAY, 29, 2002	Sheet of



# PARTLIST

COMPANY : WENS PRECISION CO.,LTD.

MODEL : WENS33N (MULTISCOPE)

NO.	DESCRIPTION	SPECIFICATION	Q'TY	UNIT	REF.NO.
1	IC	TS80C32X2-MCE	1	PCS	U16
2	IC	74HC573 SMD	1	PCS	U18
3	IC	S524LBOX91-SCBO	1	PCS	
4	IC	WENS98A	1	PCS	U21
5	IC	W27C512P-45	1	PCS	U17
6	IC	TL061CD	2	PCS	U4,5
7	IC	AD737JR	1	PCS	U2
8	IC	NJM062M	1	PCS	U12
9	IC	NJU7660M	1	PCS	U9
10	IC	NJM072BM	1	PCS	U14
11	IC	NJU4051BM	4	PCS	U1,6,13,15
12	IC	NJU4053BM	2	PCS	U3,8
13	IC	NJU7201U35-TE1	1	PCS	U22
14	IC	NJU7201U50-TE1	1	PCS	U24
15	CHIP TR NPN TYPE	2SC2412	10	PCS	Q1,2,4,6,7,8,9,11,14,16
16	CHIP DIODE	LL4148 MELF TYPE	9	PCS	D9,10,11,12,13,14,15,16,17
17	CHIP Z/DIODE	5.1V MELF TYPE	2	PCS	ZD1,2
18	CHIP CERAMIC	5 PF (2012)	1	PCS	C38
19	CHIP CERAMIC	101 PF (2012)	1	PCS	
20	CHIP CERAMIC	472 PF (2012)	1	PCS	C15
21	CHIP CERAMIC	104 PF (2012)	3	PCS	C14,37
22	CHIP CERAMIC	224 PF (2012)	8	PCS	
23	CHIP RESISTOR	0 (3216)	1	PCS	R7
24	CHIP RESISTOR	0 (2012)	2	PCS	R65
25	CHIP RESISTOR	27 (2012)	1	PCS	R37
26	CHIP RESISTOR	100 (2012)	4	PCS	R30,58,107,108
27	CHIP RESISTOR	270 (2012)	1	PCS	R90

28	CHIP RESISTOR	330 (2012)	2	PCS	R13,105
29	CHIP RESISTOR	560 (2012)	1	PCS	R92
30	CHIP RESISTOR	680 (2012)	1	PCS	R25
31	CHIP RESISTOR	1K (2012)	6	PCS	R42,63,81,83,103,104
32	CHIP RESISTOR	2.2K (2012)	1	PCS	R47
33	CHIP RESISTOR	3.3K (2012)	1	PCS	R95
34	CHIP RESISTOR	3.9K (2012)	2	PCS	R21,48
35	CHIP RESISTOR	4.7K (2012)	8	PCS	R17,41,98,99,100,101,109,111
36	CHIP RESISTOR	5.6K (2012)	1	PCS	R82
37	CHIP RESISTOR	9.1K (2012)	1	PCS	R88
38	CHIP RESISTOR	10K (2012)	12	PCS	R12,16,24,31,32,46,49,57,94,110,114,115
39	CHIP RESISTOR	12K (2012)	3	PCS	R20,51
40	CHIP RESISTOR	24K (2012)	1	PCS	R26
41	CHIP RESISTOR	39K (2012)	2	PCS	R89,102
42	CHIP RESISTOR	47K (2012)	1	PCS	R91
43	CHIP RESISTOR	100K (2012)	10	PCS	R36,38,39,40,50,52,53,59,60,84,86
44	CHIP RESISTOR	240K (2012)	1	PCS	R18
45	CHIP RESISTOR	300K (2012)	1	PCS	R87
46	CHIP RESISTOR	510K (2012)	1	PCS	
47	CHIP RESISTOR	1M (2012)	23	PCS	R9,10,11,22,23,28,29,33,34,35,43,44,45,54,55,56,71,72,73,79,80,113
48	CHIP RESISTOR	3M (2012)	2	PCS	R19,61
49	CHIP RESISTOR	10M (2012)	2	PCS	R70,85
50	IC SOCKET	32PLCC SMD TYPE	1	PCS	
51	PCB	(for 33N) MAIN (for USA)	1	PCS	
52	PCB	(for 33N) SUB	1	PCS	
53	WENS 33N SWITCH SMD	33N SWITCH SMD	1	PCS	
54	IC	4001 SMD	1	PCS	U28
55	IC	4071 SMD	2	PCS	U25,26
56	IC	4081 SMD	1	PCS	U27
57	CHIP DIODE	LL4148 MELF TYPE	1	PCS	D4
58	PCB	(for 33N) SWITCH	1	PCS	
59	WENS 33N MAIN ASSY	33N MAIN ASSY	1	PCS	
60	IC	ICL7135CPI	1	PCS	U7
61	IC	NJU7201L50	2	PCS	

62	TR	B1116 (Y TYPE) DIP TYPE	2	PCS	Q10,12
63	TR	2SC3198 (Y TYPE) DIP TYPE	1	PCS	Q13
64	DIODE	1N4148	1	PCS	D7
65	DIODE	1N4007	2	PCS	D6,8,18
66	OSCILLATOR	24 MHZ (Perfect Square Type)	1	PCS	U20
67	ELECTRIC CAPACITOR	4.7 uF 16V SMALL TYPE(4*7MM)	1	PCS	C41
68	ELECTRIC CAPACITOR	10 uF 16V SMALL TYPE(4*7MM)	6	PCS	C7,8,24,40,44,45
69	ELECTRIC CAPACITOR	33 uF 10V SMALL TYPE (4*7MM)	1	PCS	C6
70	ELECTRIC CAPACITOR	100 uF 16V SMALL TYPE (6*7MM)	5	PCS	C21,22,23,25,26
71	METAL CAPACITOR	334 /63V	1	PCS	C17
72	METAL FILM CAPACITOR	104 / 400V (Thickness : 5mm)	1	PCS	C13
73	TANTAL CAPACITOR	1 uF / 35V (VENDOR : AVX)	2	PCS	C11,18,19
74	CERAMIC	4 PF / 50V (for Compensation Temp.)	1	PCS	
75	CERAMIC	68 PF / 1KV	1	PCS	
76	MONO	2 PF J	1	PCS	
77	MONO	10 PF J	1	PCS	
78	MONO	30 PF J	1	PCS	C10
79	MONO	122 PF J	1	PCS	C3
80	MONO	152 PF J	1	PCS	C34
81	MONO	562 PF J	1	PCS	
82	MONO	822 PF J	1	PCS	C1
83	MONO	153 PF J	1	PCS	C33
84	MONO	473 PF J	1	PCS	
85	MONO	683 PF J	1	PCS	C32
86	MONO	104 PF J	1	PCS	
87	PTC	8mA 1K 250V	1	PCS	PTC1
88	SEMI-VOLUME	2K (V-TYPE)	1	PCS	VR1
89	SEMI-VOLUME	10K (V-TYPE)	1	PCS	VR2
90	CONNECTOR	5268-2P (2PIN FEMALE)	2	PCS	
91	PIN HEADER	2 PIN	1	PCS	
92	PCB SOCKET	3 PIN 3.6MM	1	PCS	
93	PCB SOCKET	4 PIN 3.6MM	1	PCS	
94	PCB SOCKET	5 PIN 3.6MM	2	PCS	
95	PCB SOCKET	6 PIN 3.6MM	2	PCS	
96	PCB SOCKET	6 PIN 8.5MM	2	PCS	

97	PCB SOCKET	20 PIN 5.7MM	1	PCS	
98	RESISTOR	1/2W C 10M METAL GRAZE	1	PCS	R14
99	RESISTOR	1/4W C 941	1	PCS	R5
100	RESISTOR	1/4W C 9.95K	1	PCS	R4
101	RESISTOR	1/4W C 101K	1	PCS	R3
102	RESISTOR	1/4W C 10M	1	PCS	R1
103	RESISTOR	1/4W B 1.11M	1	PCS	R2
104	WIRE WOUND	1/2W D 1	1	PCS	R15
105	RESISTOR	1/2W D 1M	1	PCS	R62
106	RESISTOR	1/4W D 920	1	PCS	
107	RESISTOR	1/4W D 1.04K	1	PCS	R74
108	RESISTOR	1/4W D 3.9K	1	PCS	R75
109	RESISTOR	1/4W D 40K	1	PCS	R76
110	RESISTOR	1/4W D 630K	1	PCS	R77
111	RESISTOR	1/4W F 108	1	PCS	
112	RESISTOR	1/4W F 2.05K	1	PCS	
113	SHUNT	(for 9300)	1	PCS	RS
114	INPUT SOCKET	4.5 X 17MM NICKEL	4	PCS	
115	PUSH SWITCH	8.5X8.5MM NON-LOCK (PUSH/PUSH)	1	PCS	
116	WENS 33N/704 SUB ASSY	33N/704 SUB ASSY	1	PCS	
117	IC	LM385BZ-1.2V	1	PCS	
118	TR	2SA1266 (Y TYPE) DIP TYPE	2	PCS	
119	FET	2SK30A (Y TYPE) DIP TYPE	1	PCS	
120	DIODE	1N4007	1	PCS	
121	Z/DIODE	4.7V 1/4W(1/2W) VENDOR : MOTORO	2	PCS	
122	ELECTRIC CAPACITOR	2.2 uF 16V SMALL TYPE(4*7MM)	1	PCS	C12
123	ELECTRIC CAPACITOR	47 uF 16V SMALL TYPE(4*7MM)	2	PCS	
124	METAL CAPACITOR	104 / 63V	1	PCS	
125	TANTAL CAPACITOR	1 uF / 35V (VENDOR : AVX )	1	PCS	
126	PTC	8mA 1K 250V	2	PCS	
127	SEMI-VOLUME	500 (V-TYPE)	2	PCS	VR4,6
128	SEMI-VOLUME	2K (V-TYPE)	2	PCS	VR5,VR7
129	SEMI-VOLUME	200K (V-TYPE)	1	PCS	VR3
130	PIN HEADER	3 PIN	1	PCS	
131	PIN HEADER	4 PIN	1	PCS	

132	PIN HEADER	5 PIN	2	PCS	
133	PIN HEADER	6 PIN	2	PCS	
134	RESISTOR	1/8W F 100	1	PCS	R66
135	RESISTOR	1/8W F 680	1	PCS	
136	RESISTOR	1/8W F 2K	1	PCS	R68
137	RESISTOR	1/8W F 3K	1	PCS	R69
138	WENS 33N RS232 ASSY	33N RS232 ASSY	1	PCS	
139	PHOTO COUPLER	TLP731GB DIP	1	PCS	
140	RESISTOR	1/8W F 1K	1	PCS	R67
141	RESISTOR	1/8W F 1M	1	PCS	
142	RESISTOR	1/8W J 680	1	PCS	
143	D-SUB CONNECTOR	9PIN FEMALE (YC-3002.09F))	1	PCS	
144	2PIN WIRE	70MM (Wire No.12)	1	PCS	
145	PCB	(for 33N) RS232	1	PCS	
146	PVC	9PIN	1	PCS	
147	WENS 33N ASSY	33N ASSY	1	PCS	
148	FUSE CLIP	5.2 PIE (Higher Type)	2	PCS	
149	FUSE CLIP	6.3 PIE (for 20)	2	PCS	
150	JUMP WIRE	(Wire No.12) 50MM	1	PCS	
151	JUMP WIRE	(Wire No.12) 110MM	1	PCS	
152	WIRE	20A 29MM (for 33N)	1	PCS	
153	WIRE	20A 37MM (for 33N)	1	PCS	
154	2PIN WIRE	70MM, Wire No.12	2	PCS	
155	PCB	(for 33N) FUSE	1	PCS	
156	BATTERY HOLDER	(for +)	3	PCS	
157	BATTERY HOLDER	(for -)	3	PCS	
158	PVC PLATE	(for 704)	1	PCS	
159	PLASTIC CASE	703 (33N) INNER COVER	1	PCS	
160	CHIP VOLUME	100K (EVM3ESX50B15)	1	PCS	
161	PIN HEADER	6 PIN	2	PCS	
162	DC JACK	DC-005 DC JACK	1	PCS	
163	FUSE	500mA 250V UL 51NM	2	PCS	
164	CERAMIC FUSE	20A 250V UL	1	PCS	
165	BUZZER	17PI CASE	1	PCS	
166	LCD MODULE	ITM-12864K3SR	1	PCS	

167	SHIELD PLATE	33N MAIN	1	PCS	
168	KEY PAD	703 (for 33N)	1	PCS	
169	PCB POLE	(for 9300) HEX 2.3*5	4	PCS	
170	INSERT	4.5*18(M3*0.5P)	3	PCS	
171	INSERT	M3*3*4.5pi	1	PCS	
172	BALL BEARING	4.0 PIE	2	PCS	
173	KNOB SPRING	(for 33N) 17MM	2	PCS	
174	SCREW	T2.6*5	2	PCS	
175	SCREW	BM2.6*4	8	PCS	
176	SCREW	M3*9*5 BLACK	4	PCS	
177	E-RING	6 PI	1	PCS	
178	SLIDE CONTACT	0.12T	8	PCS	
179	SPONGE	15T	1	PCS	
180	PLASTIC CASE	703 (33N) TOP	1	PCS	
181	PLASTIC CASE	703 (33N) BOTTOM	1	PCS	
182	PLASTIC CASE	703 (33N) S/KNOB	1	PCS	
183	PLASTIC CASE	20/50/33N STAND	1	PCS	
184	PLASTIC CASE	(for 20/50/33N) INPUT SOCKET(RED)	3	PCS	
185	PLASTIC CASE	(for 20/50/33N) INPUT SOCKET(BLACK)	1	PCS	
186	ACETAL R/KNOB	9300 (Thin Type)	1	PCS	
187	WINDOW	703 (33N)	1	PCS	
188	WINDOW PROTECTION TAPE	(for WENS 33N)	1	PCS	
189	SILCA GAL	SILCA GAL	1	PCS	
190	POLY BAG	15*27CM	1	PCS	
191	SERIAL NUMBER	(for 50)	1	PCS	
192	STICKER	CE BATTERY(for 33N,704)	1	PCS	
193	STICKER	CAUTION(RISK OF FIRE)	1	PCS	
194	PAD	(for 20,50)	1	PCS	