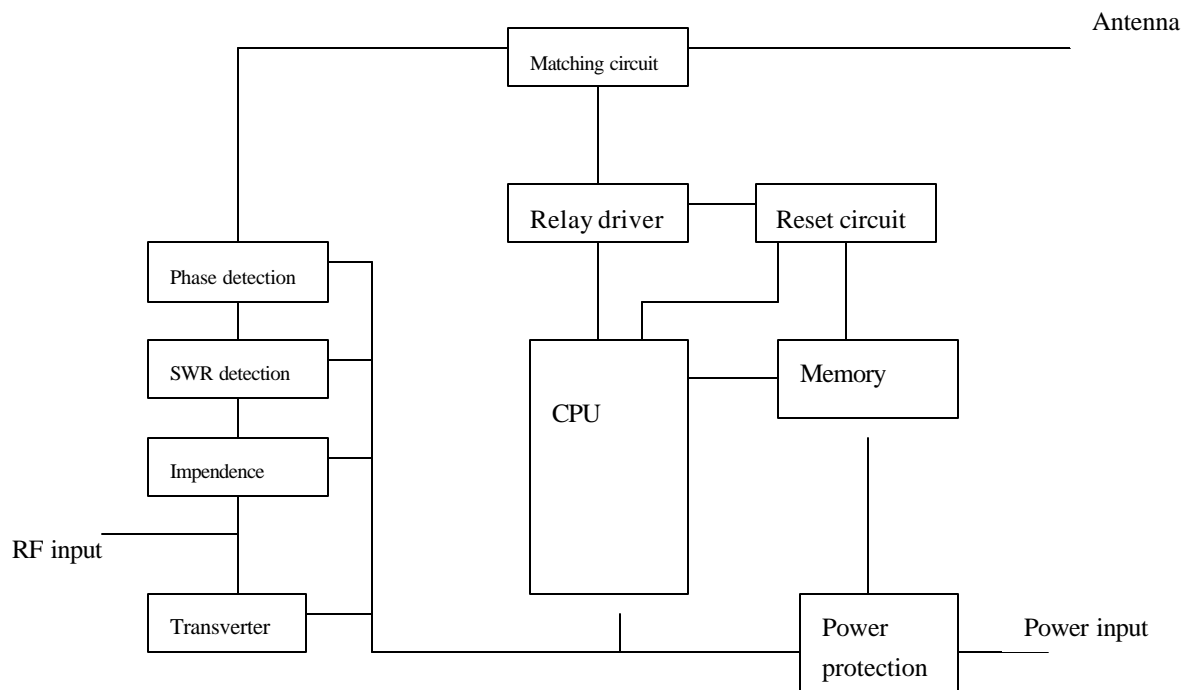


CG-3000 service manual

Overview

CG-3000 automatic antenna tuner consists by power protection circuit, power regulation circuit, relay driver circuit, SWR detection circuit, phase detection circuit, impedance detection circuit, main matching circuit, reset circuit, CPU and memory.

Block Diagram



Work flow

1. After power on, reset circuit sends signal to CPU to reset whole system.
2. System ready for RF input.
3. Transverter converts the RF signal to CPU, CPU try to find if there is record already exists in the memory for this frequency.

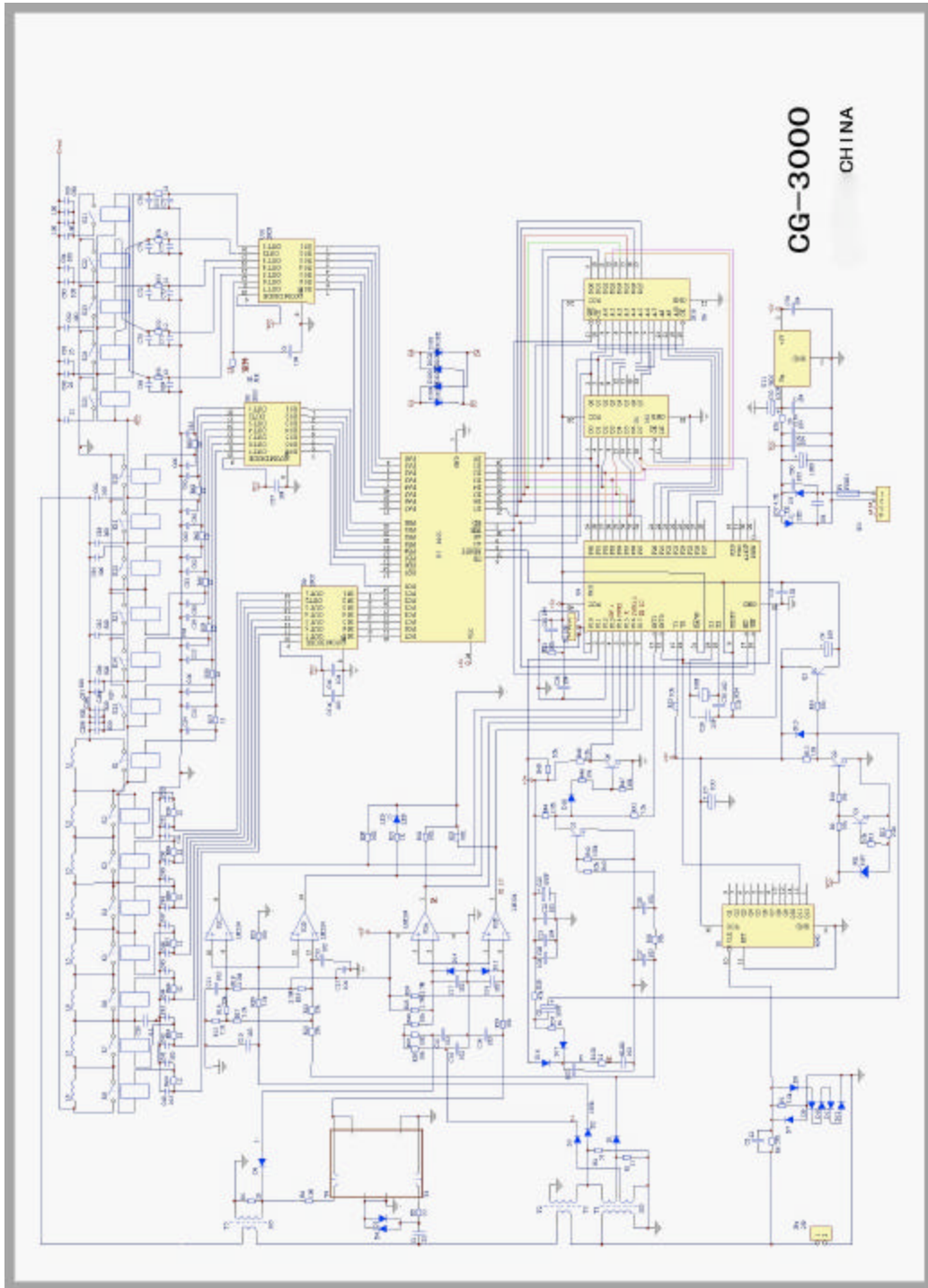
If there is record for it, it will load the parameter directly to relay driver to quick tune. Normally it takes less than 20ms.

If CPU doesn't find record in memory, then SWR detection circuit, phase detection circuit and impedance detection circuit starts to calculate the L/C configuration and send command to relay driver to tuning. Normally it takes less than 2 seconds. After tuning(SWR<1:2), CPU stores the parameter into the memory for next quick tuning

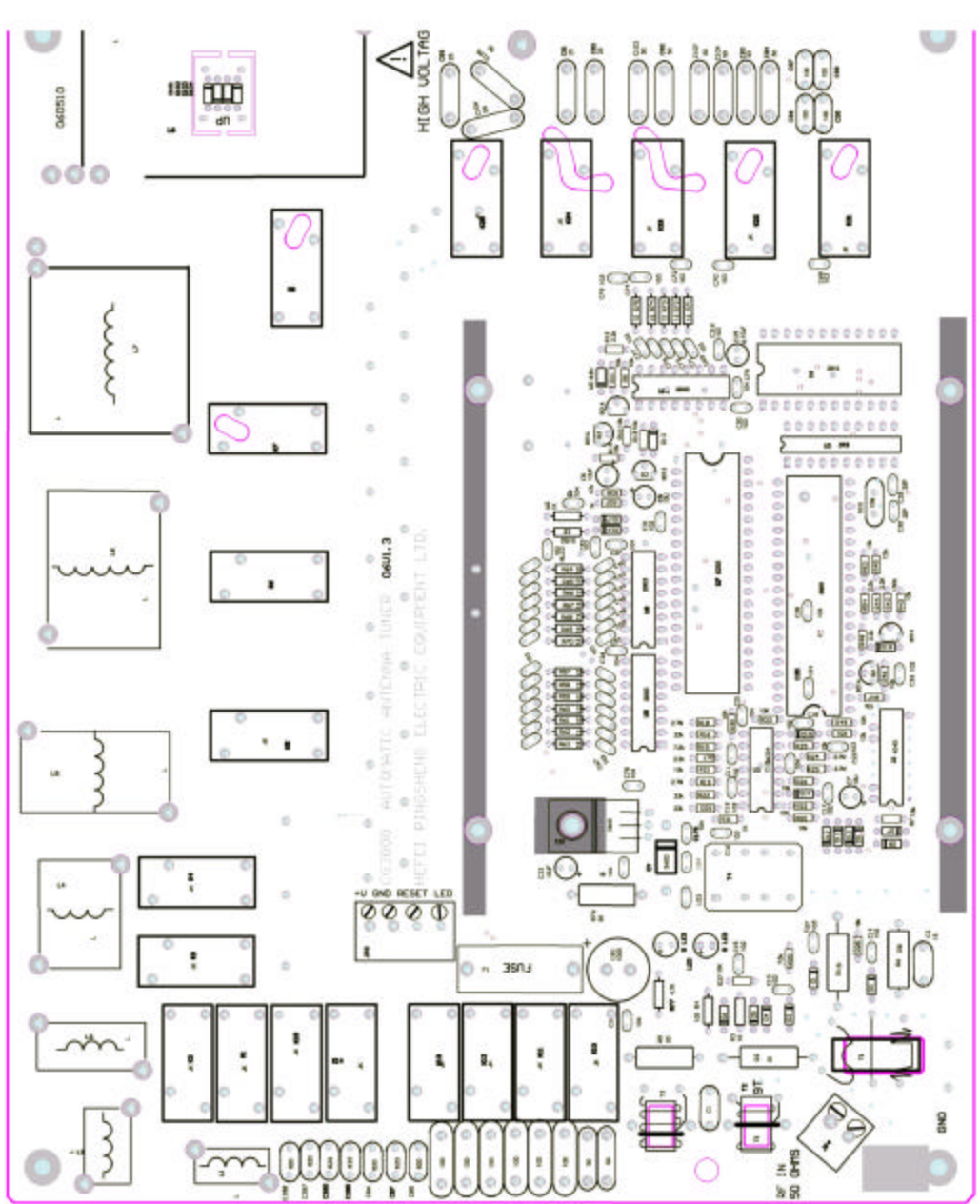
Specifications

Tunable frequency:	1.8 – 30 Mhz with long wire antenna from 8 meters
Input impedance:	50 ohms
Input power:	10 – 200W PEP
SWR:	<2:1
Power supply voltage:	12V +/- 10%
Current consumption:	<0.8A
Auto tuning time:	Approx. 2 seconds (first time tuning)
	Less than 20 milli second (return to memory frequency)
Number of memory channel:	200
Weight:	1.8 KG without accessories
Size:	310mm X 240mm X 72mm (L – W – H)

Schematic



PCB Layout



Parts list

Designator	Part Type	Footprint
C39	0.1	C102
ext. R	1K	R1/4
R31	1K	R1/8
R37	1k	R1/8
R44	2.2K	R1/8
R54	2.2k	R1/8
R12	2.2k	R1/8
R17	2.2k	R1/8
R48	2.2k	R1/8
R24	2.7M	R1/8
R25	2.7M	R1/8
R19	2.7M	R1/8
R18	2.7M	R1/8
JP4	2JP	JP2
JP2	3JP	JP
R77	4.7K	R1/4
JP3	4 HEADER	JP4
WD	6.8V	4148
R7	7.5k	R1/8
R20	7.5k	R1/8
R15	7.5k	R1/8
R45	7.5k	R1/8
R3	10	R1/5
R33	10K	R1/8
R32	10K	R1/8
R27	10K	R1/8
R30	10K	R1/8
SCO	10M	OSC
C9	10U	CD1
C7	10U	CD1

C25	10UF	CD1
C8	10UF	CD1
C33	10UF	CD1
R21	10k	R1/8
R9	10k	R1/8
R53	10k	R1/8
R51	10k	R1/8
R43	10k	R1/8
R11	10k	R1/8
R29	10k	R1/8
R26	10k	R1/8
R47	10k	R1/8
R50	10k	R1/8
R46	10k	R1/8
R49	10k	R1/8
R10	10k	R1/8
R13	10k	R1/8
R14	10k	R1/8
R69	12	R1/4
R150	12	R1/4
R67	12	R1/4
R68	12	R1/4
R70	12	R1/4
R74	12	R1/4
R75	12	R1/4
R72	12	R1/4
R73	12	R1/4
R60	12	R1/4
R59	12	R1/4
R58	12	R1/4
R61	12	R1/4
R71	12	R1/4

R63	12	R1/4
R62	12	R1/4
R57	12	R1/4
R65	12	R1/4
R64	12	R1/4
R66	12	R1/4
R28	18k	R1/8
R5	20	R1W
R76	20	R1W
C2	22	C15
C1	22	C16
C89	25	CT1
C90	25	CT1
C91	25	CT1
C29	25P	C102
C30	25P	C102
R6	33K	R1W
R16	33k	R1/8
R22	33k	R1/8
R23	33k	R1/8
R38	47k	R1/8
R2	51	R2W
R1	51	R2W
C96	100	CC100
C98	100	CC100
C97	100	CC100
C95	100	CC100
C94	100	CT1
C93	100	CT1
C92	100	CT1
C82	100	CY200
R4	100	R1/4

C11	102	C102
C18	102	C102
C17	102	C102
C12	102	C102
C31	102	C102
C14	102	C102
C26	102	C102
C15	102	C102
D1	103	4148
D2	103	4148
D5	103	4148
D4	103	4148
D3	103	4148
D6	103	4148
C41	103	C102
C58	103	C102
C42	103	C102
C53	103	C102
C57	103	C102
C56	103	C102
C54	103	C102
C55	103	C102
C52	103	C102
C47	103	C102
C44	103	C102
C46	103	C102
C45	103	C102
C48	103	C102
C50	103	C102
C49	103	C102
C43	103	C102
C51	103	C102

C74	103	C102
C75	103	C102
C76	103	C102
C71	103	C102
C72	103	C102
C73	103	C102
C316	103	C102
NLED	103	C102
C10	103	C102
C77	103	C102
C20	103	C102
rec	103	C102
C65	103	C102
C66	103	C102
C67	103	C102
C62	103	C102
C63	103	C102
C60	103	C102
C68	103	C102
C69	103	C102
C70	103	C102
C59	103	C102
C61	103	C102
C64	103	C102
C16	103	C102
C22	103	C102
C27	103	C102
C40	103	C102
K8	103	JK
K7	103	JK
K6	103	JK
T1	103	T1

T3	103	T2
C78	104	C102
C21	104	C102
C179	104	C102
C79	104	C102
C36	104	C102
C13	104	C102
C37	104	C102
C	104	C102
C35	104	C102
Ct	104	C102
C28	104	C102
R42	150k	R1/8
C83	200	CY200
U5	373	DIP-20
C84	390	CY200
C86	820	C82
C287	820	C82
C87	820	C82
C285	820	C82
C280	820	C82
C85	820	CC100
C288	820	c82
C80	1000	CD2
U8	2003	DIP-16
U10	2003	DIP-16
U9	2003	DIP-16
U6	2816	DIP-24
U1	4040	DIP-16
D15	4148	4148
D17	4148	4148
D14	4148	4148

D16	4148	4148
D18	4148	4148
D13	4148	4148
D10	4148	4148
D12	4148	4148
D11	4148	4148
D9	4148	4148
D7	4148	4148
D8	4148	4148
DY	5403	D1
U11	7805	TO220H
U7	8255	DIP-40
U4	8951	DIP-40
Q3	9012	TO92
Q5	9014	TO92
Q1	9014	TO92
Q2	9014	TO92
Q6	9014	TO92
D103	DIODE	4148
D102	DIODE	4148
D101	DIODE	4148
D104	DIODE	4148
F1	FUSE1	fuse
K10	JK	JK
K4	JK	JK
K11	JK	JK
K15	JK	JK
K2	JK	JK
K3	JK	JK
K25	JK	JK
K5	JK	JK
K13	JK	JK

K24	JK	JK
K12	JK	JK
K1	JK	JK
K21	JK	JK
K23	JK	JK
K14	JK	JK
K22	JK	JK
L1	L	L1
L2	L	L2
L3	L	L3
L4	L	L4
L5	L	L5
L6	L	L6
L7	L	L7
L8	L	L9
LE	LED	LED
LED	LED	LED
U2	LM324	DIP-14
T2	T2	T3
T4	T3	LC

CG Antenna

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