

Service Service Service



Service Manual

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3141 785 38960

Version 1.0



**CLASS 1
LASER PRODUCT**

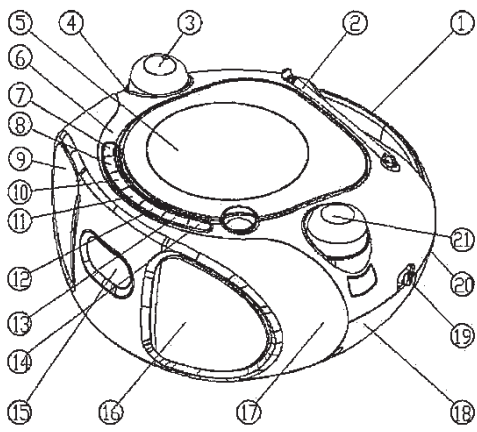
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Subscr.	



Description	Pos.	Description	Pos.
	1	HANDLE	
	2	ANTENNA	
	3	VOLUME KNOB	
	4	DBB KNOB	
	5	CD DOOR	
	6	TOP CABINET	
	7	SHUFFLE KEY	
	8	REPEAT KEY	
	9	SPEAKER GRILLE(L)	
	10	PREVIOUS KEY	
	11	PLAY/PAUSE KEY	
	12	STOP KEY	
	13	NEXT KEY	
	14	PROG KEY	
	15	FRONT LENS	
	16	SPEAKER GRILLE(R)	
	17	FRONT CABINET	
	18	BOTTOM CABINET	
	19	FUNCTION KNOB	
	20	AUX JACK	
	21	TUNING KNOB	

		CD/FM/AUX AZ105 ALL version	SET SPECIFICATION			
2012-08-01	ver1		 2012-8-2			
	ver2					
	3					
Prepare: CY QIN		Supers: Douglas	10	Sh. 190		A4
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Subscr.



REMARKS :											
General description:										1	
LIFETIME : 5 YEARS (ACC. TO UAN-D1611)										2	
PERFORMANCE CLASSES :											
	TUNER	SUPPLY, AMPLIFIER	SPEAKER BOXES	RECORDER	CLOCK	CD	DCC	TELEPHONE	REC. PLAYER		
I	x	x								3	
II						x				4	
III										5	
SAFETY REQUIREMENTS:										6	
EN 60065 (IEC 65) CE , UL approbation for version 37											
RADIATION, IMMUNITY REQUIREMENTS: (EMC/FCC)										7	
EN55013, EN55020 .FOR VERSION 05/12/79/98 FCC FOR /37 VERSION											
CLIMATIC REQUIREMENTS: (acc. to UAN-D1590)											
All climates: -10 °C till +50 °C (Functional); Set has to be pre-conditioned for 2 hour, except CD function										8	
For all measurements: 25 °C										9	
POWER SUPPLY:											
MAINS (AC) operation					DC (int. or ext.) operation / Backup Buffer						
Voltage selection:		See table below			Battery type: R14, UM2, C-cell x 6; nom.: 9V minimum operating voltage : 6.3V for CD 5.2V for TU						10
Selection:		See table below			Lifetime: CD ≥ 10 hours, TU ≥ 20 hours, (400mW, R14 金霸王 alkaline batteries)						11
Frequency:		See table below			External DC: No						12
POWER CONSUMPTION:											
Standby: < 0.5 W (power off mode)											13
Maximum: 15 W					Maximum:						14
General:											
Q and R according to production division rules :					Q ≤ 1% (Major), Q ≤ 4% (Minor)						
Measured according to:					R ≤ 3% (CE52)						
DERIVED VERSIONS:									APPROBATION		
Version	AC Voltage/ Frequency on typeplate		Safety Tolerance	Tuner							15
/05	230VAC/ 50HZ		+/-10%	FM,							
/12/	230VAC/ 50HZ		+/-10%	FM							
REMARKS:											16
For operation and thermal stability test : 220/230/240Vac setting : 198Vac to 264Vac 120Vac setting : 99Vac to 140Vac dual voltage ac setting (120Vac / 230Vac) : 99Vac to 140Vac and 196Vac to 264Vac											

2012-08-01		ver1	CD/FM/AUX AZ105 ALL version		SET SPECIFICATION		
		ver2			Dai Jun		
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TUNER PART					
TECHNICAL description:					
	AM	(circuitry)	FM/AM	(active components)	FM
RF				Si4831-B30	1
IF				Si4831-B30	2
Detector					3
Decoder					4
GENERAL part:					
WAVE RANGE			TOLERANCES	TUNING STEP(mm/10khz)	
					5
FM (12/05/79/98 version)	87 –108MHZ		LOW : +0.3/-0.3MHZ HIGH: +0.4/-0.4MHZ	0.025	6
MW (05/12/79 /98version)	/		/	/	8
FM (37 version)	87----108MHZ		LOW : +0.3/- 0.3MHZ HIGH : +0.4/ -0.4MHZ	0.54	9
AM (37 version)	/		LOW: +30/-30KHZ HIGH: +40/-40 KHZ	/	10
AERIAL:					
MW Ferrite Bar : /			FM telescope : 430 mm		11
FM wire : N/A			Execution - N/A		12
INDICATORS:					
Pointer stroke:			Execution pointer:		13
Knob indication over:			Field Strength:		14
ELECTRICAL DATA:					
AM:	Nom.	limit	FM:	nom.	limit
OUTPUT POWER 10%THD 80%MOD 120dB	/		AM Suppression	30	25 dB
			-3dB limiting point (LPF)	12	18 dBf
Amplification reserve	/	/	Amplification reserve	2	+/-2 dB
AGC figure of merit	/	/	/B/AFC holding range (average)		
Distortion (RF 74 to 94 dBuV/m, m=80%)	/	/	//Distortion (RF 32 to 72 dBuV, mono Δf 100kHz, Stereo : 90% + 9%)	5	7 %
			Stereo -46dB quieting (LPF)	40	44 dBuV
			Cross-talk (RF 1mV, Δf 40kHz, 400Hz / 1kHz / 5kHz)	21/25/18	18/20/15 dB
Strong S/N radio RF 94dBuV/m, m=80%	/	/	S/N radio (A-Weighted, RF 4mV)	53	50 dBA
Channel difference	/	/	Channel unbalance (250Hz to 6300Hz)	0	3 dB
Modulation hum (30% mod)	/	/	Modulation hum (22.5kHz dev) (A-Weighte)	44	40 dB
2, 3th IF harmonics rejection (RF 64 to 94dBuV/m)	/	/	8, 9, 10 th harmonics whistle	35	30 dB
Overall frequency response (-3dB)	/	/	Overall frequency response (+/- 3dB, 1kHz ref) - 50us	70 8k	80 Hz 10k Hz
Oscillator stop voltage 120V setting	/	/	Oscillator stop voltage 120V setting	90	96 Vac
230V setting	/	/	230V setting	190	192 Vac
Search tuning sensitivity	/	/	Search tuning sensitivity	/	N/A
Search tuning stop accuracy RF ≥ α26 to 1mV	/	N/A	Search tuning stop accuracy - 20uV ~ 20mV	/	N/A
RF ≥ 1V/m	/		- 20mV ~ 500mV with step size = 50kH	/	
	/		- 20mV ~ 500mV with step size > 50kHz	/	
Search time of total tuning range	/	N/A	Search time of total tuning range		N/A
IF	/	± 3kHz	IF	10.7MHZ	± 0.3MHZ

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2012-08-01		ver1		CD/FM/AUX		SET SPECIFICATION	
		ver2		AZ105 ALL version		Dai Jim	
		3					
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Frequency drift vs temp.				/		Frequency drift vs temp.				15KHZ/° C		32		
-10°C to 10°C										10KHZ/° C				
10°C to 30°C										15KHZ/° C				
30° to 50°C														
Dial calibration				/		/		Dial calibration				-1.2	+/- 1.5MHz	33
								Stereo On point (Pilot deviation : 6kHz)				14	15.5 dBuV	34
												Switching on – 6dB		35
wave range		Sensitivity for 50mW			noise limited sensitivity (26dB, LPF)			Image rejection	IF rejection	large signal	Selectivity S9/300kHz	bandwidthB+3 dB		
FM	nom.					19		21	55	126dBf	21		36	
	lim.					21		19	50	125dBf	19		37	
MW	nom.				68			35	28	1000	21	3.0	38	
	lim.				/			/	/	/	/	/	/	
unit		µV/m	µV	dBf	µV/m	dBf	dB	dB	dB	mV/m	dB	kHz		
REMARKS:														

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Short term maximum output power:	-2*1.2W	(acc. to IEC 60268-15)	21
Long term maximum output power:	-	(acc. to IEC 60268-15)	22
Headphone output voltage/power:	-		23
Bandwidth FTC - 1dB at:	n.a.	(acc. to FTC/16/1/D/432)	24
Bandwidth DIN - 3dB at:	-	(acc. to IEC 60268-15)	25
Frequency response at Vol. max - 20dB:	typ. 60Hz to 16kHz (±3dB)		26
DBB raise level	4+/-1 db at 125hz vol max-20db	Disc SBC429 Track 12	
LOUDSPEAKER (output):			
Low pass crossover frequency:	- kHz	tolerance: Hz	27
High pass crossover frequency:	- kHz	tolerance: Hz	28
Short term maximum output power:	- W (acc. to IEC 60268-15)		29
Long term maximum output power:	- W (acc. to IEC 60268-15)		30
Frequency response at:	- Hz	kHz	31
REMARKS:			32
27 : Measured in Tuner mode; 28: CD or LINE IN mode.			

CD-PART: (SANYO DA11VF CD MECHANISM) (BALL type)

Technical description:					
	Input	Output	Motor/control	Logic control	1
Active components			SA1465	SC9649	2
Passive components					3
	Signal processing	D/A converter	HF-preamplifier	Servo processor	4
Active components					5
Passive components					6
Indicators/Display/Keys:					
Display: LCD for Track No. display 2 Digit					7
Keys: Slide switches & tact switches					8
Playability: (acc. to AHR-82-Gbu-00-4201)					
	Limit	Typical	Testdisc		9
Wedge	600 μm	900 μm	TNO 7,9 of SBC 444A (7104 099 24990)		10
Eccentric	150 μm	200 μm	TNO 1,24 of 200μm disc (7104 099 24960)		11
Fingerprint	No audible defect		TNO 11 of Subchassis 8A		12
Black dot	500 μm	600 μm	TNO 13, 14 of SBC 444A (7104 099 24990)		13
Double black dot	No failure		TNO 9 of Subchassis 8A		14
Skew 0.6 deg, 8cm	No audible defect		TNO 1,6 of 0.6deg C, 8cm skew disc		15
Bad HF track	No audible defect		TNO 8 of Subchassis 8A		16
Heavy fingerprint	No track jumps/plops		TNO 10 of Subchassis 8A		17
Maximum diameter	No audio effect		Last TNO of Subchassis 8A		18
Thick disc	No failure		Thick test disc		19
Thin disc	No failure		Thin test disc		20
Vertical deviation disc	No failure		TNO 1,16 of ABEX TCD-732RA (VDD +/- 0.5mm)		21
Playback position	Horizontal, Normal position (Set is located on a flat surface, floor)				22
- Playback of above mentioned tracks possible without track loss or audible defects.					23
- This unit can playback CD-R or CD-RW discs.					
Shock resistance: (acc. to AR 13-A6-CD-068)					
± Z axis	5 G				24
± X or Y axis	5 G				25

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Acoustical noise:			
Mode: Play/Pause	35 dBA max. (45 dbA in Search mode)		26
Mode: Jump (Next)	45 dBA max.		27
Acoustic feedback:	Acoustical feedback is not allowed.	Test disc TNO 2,6,11,18,19,20 of SBC444 , 10% THD o/p , DBB on	
AUDIO part: (Measured with Audio Signals Disc-1, 7104 078 04911 on Speakers or Headphone socket with nom. load)			
	Typ.	Limit	
Output level (TNO1)	NA	NA	28
SNR unwt'd.	NA	NA	29
SNR wtd. dBA	62 dBA	57 dBA	30
Crosstalk (1kHz)	35 dB	30 dB	31
TNO 67, 71			
Crosstalk (other range)	35 dB	30 dB	32
TNO 66 – 73 (16 TO 16kHz)			
Frequency response	-1.5dB	±2dB at 100Hz	33
Vol.max.-20dB (DBB on)	-1dB	±2dB at 10kHz	
Frequency response at DBB off (+/- 3dB)	100	80 Hz	34
	10k	12.5 kHz	
THD (1kHz, 0 dB)	1%	1.5 %	35
THD (overall frequency response range, 0dB)	2 %	3 %	36
Channel difference	0.5 dB	2 dB	37
Frequency accuracy	-	+/-0.5 %	38
De-emphasis	15µs / 50µs Switchable via Subcode information		39
REMARKS:			
- Amplification reserve for CD = +2dB (±2dB); Ref. Level for CD is a 1kHz, -6dB (Audio signal disc 1, track 35)			40
-			

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[illegible]

CD-RW Test discs :							
(A)	Audio signal disc 1		(N)				
(B)	SBC444A		(O)				
(G)	Burn-in SBC 442		(P)				
(K)	Printed CD-RW		(Q)				
(L)	Low reflect CD-RW		(R)				
(M)	High reflected CD-RW		(S)				
			(T)				

	Description	condition (test disc)	Noraml		limit		

CD-RW playability							
1	Fingerprint	"K" TNO 18		No audible disturbance			
2	Black dot	"K" 13, 17	um	800	400		
3	Low reflection	"L"		No audible disturbance			
4	High reflection	"M"		Startup			



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Type /Versions: Board in used:	Service policy	AZ105							
	/05								
Main BOARD	M+C								
Key BOARD	M+C								
Power BOARD	M+C								
Type /Versions: Features	Feature difference	AZ105							
	/05								
RDS									
VOLTAGE SELECTOR									
ECO STANDBY - DARK									
*TIPS :C -- Component Lever Repair. M -- Module Lever Repair √ -- Used									

GB WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD) . Careless handling during repair can reduce life drastically .
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance . Keep components and tools also at this potential .

ESD



NL WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen . Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat .
Houd componenten en hulpmiddelen ook op hetzelfde potentiaal .

F ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD) . Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation .
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet muni d'une résistance de sécurité .
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel .

D WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD) .
Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren .
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes .
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten .

I AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridotta in caso di non osservazione della più grande cautela alla loro manipolazione .
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza .
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale .

GB

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified , be used .

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne" .

NL

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen , identiek aan de gespecificeerde, worden toegepast .



F

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées .

GB Warning !

Invisible laser radiation when open .
Avoid direct exposure to beam .

D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten . Der Originalzustand des Geräts darf nicht verändert werden ; für Reparaturen sind Original-Ersatzteile zu verwenden .

S Varning !

Osynlig laserstrålning när apparaten är öppnad och spärrad är urkopplad . Betrakta ej strålen .

I

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati .

SF Varoitus !

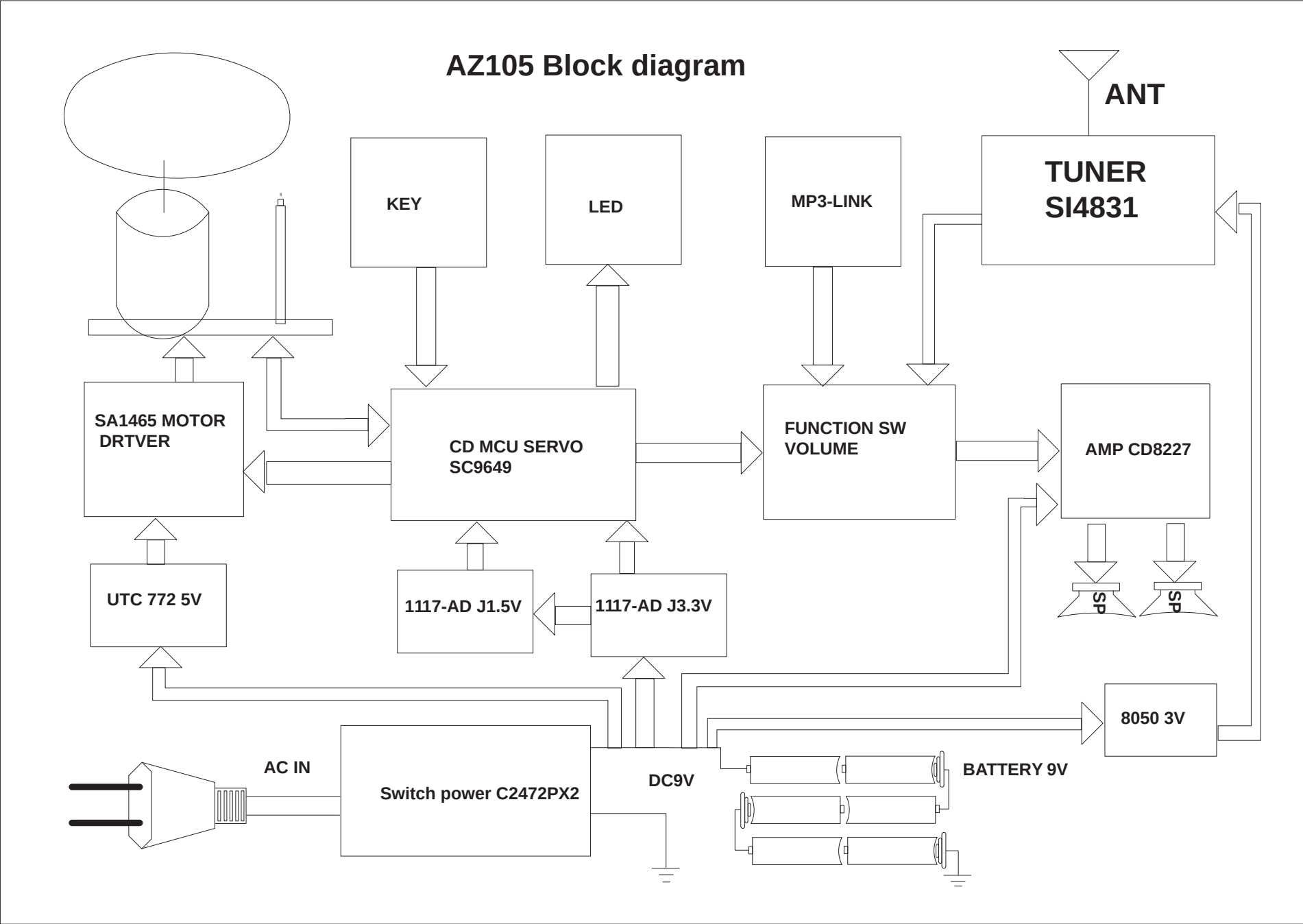
Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle . Älä katso säteeseen !

DK Advarsel !

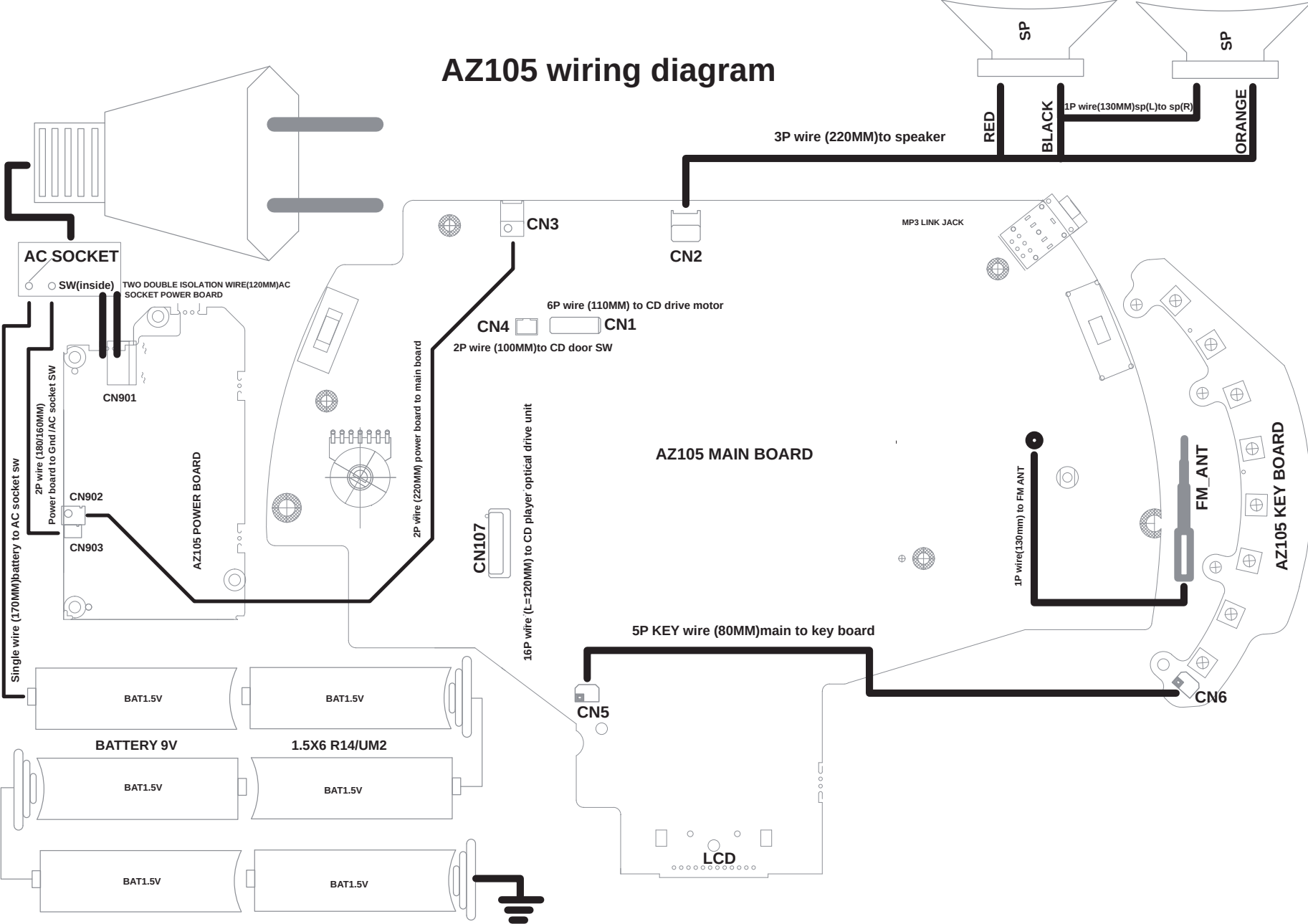
Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion . Undgå udsættelse for stråling .

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist . The leakage current must not exceed 0.5mA."

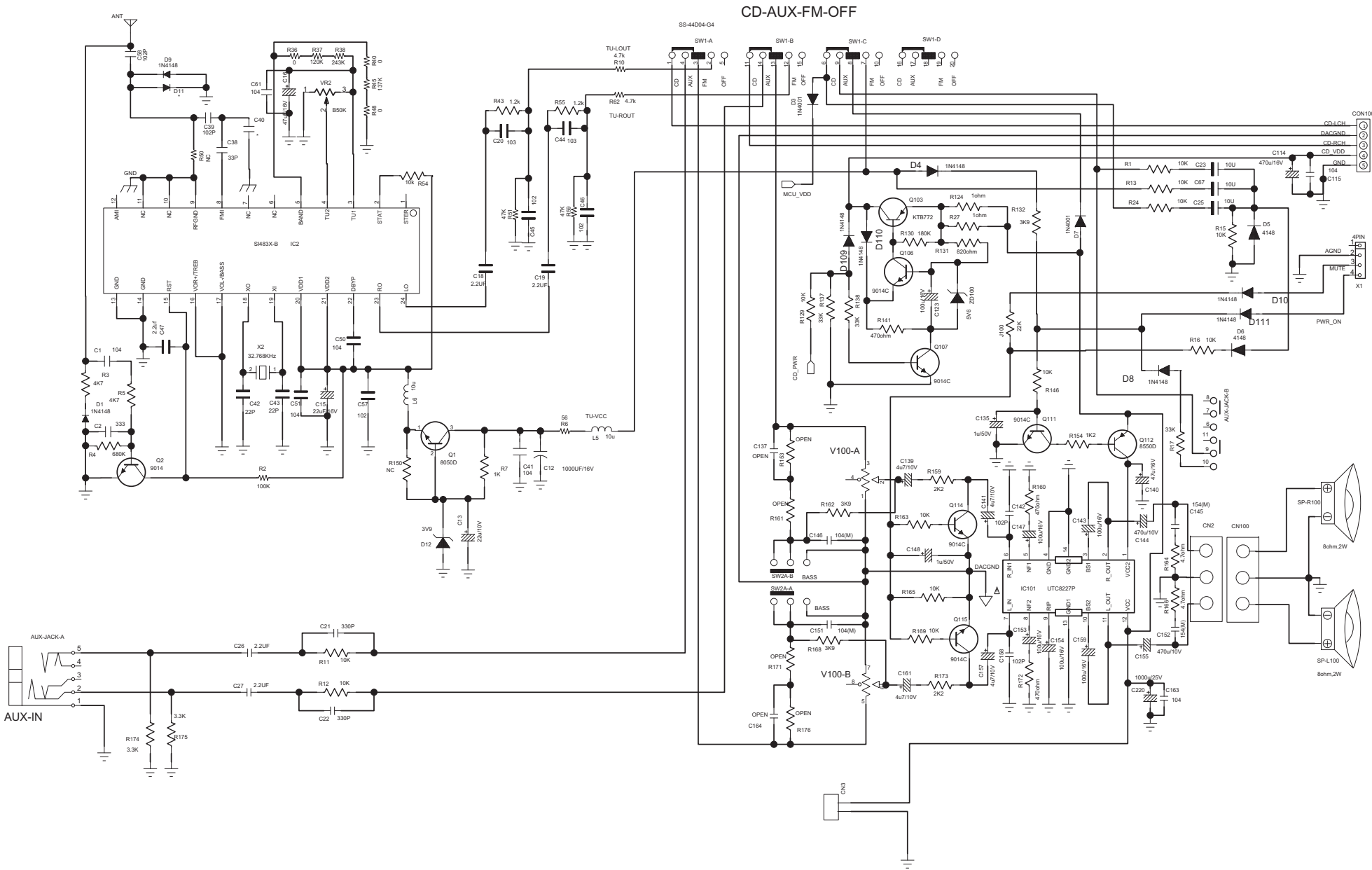
Caution: These servicing instructions are for use by qualified service personnel only .
To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so .



AZ105 wiring diagram



CIRCUIT DIAGRAM



CIRCUIT DIAGRAM

4-2

