

# ICB-1000W

USA Model  
E Model  
AUS Model



## TRANSCEIVER

### SPECIFICATIONS

#### GENERAL

Frequency	Ch 4: 22.225 MHz - 110.414 MHz Ch 5: 22.750 MHz - 110.438 MHz Ch 6: 23.0 MHz - 110.462 MHz
Communication System	Modulation: FSK (FSK-43, FSK-125, FSK-170)
Swing Modulation	FSK: 1 PE, 14 symbols/sec, 2 levels
Antenna	16.5 m (54 ft) whip 1.645 m (5.4 ft) whip
Speaker	2 x 100 mW (40 mW) speaker 8 cm (3 1/8") x 7.6 cm (3")
Microphone	Dynamic (electret), 20 mW
Power Consumption	DC: 12.0 V (battery) 1.1 A (max) 1.32 W (max) AC: 100-240 V (50/60 Hz) 0.1 A (max) 10 W (max) AC: 100-240 V (50/60 Hz) 0.1 A (max) 10 W (max) AC: 100-240 V (50/60 Hz) 0.1 A (max) 10 W (max)
Coverage (Meters)	In mode 1: 2 km (DS - 1) (max) 10.11 m (33 ft) x 3 km (1.9 mi) x 5 km (3.1 mi) Out of mode: 100 m (328 ft) x 3 km (1.9 mi) x 5 km (3.1 mi)
Dimensions	26.5 cm x 101 mm x 28 mm (10 3/8" x 4 1/8" x 1 1/8")
Weight	1.1 kg (2.4 lbs) (battery & antenna)

#### TRANSMITTER SECTION

Carrier	Crystal controlled oscillator
Frequency Tolerance	± 0.01%
Output Power	100 mW
Modulation	FSK (FSK-43, FSK-125, FSK-170) FSK (FSK-43, FSK-125, FSK-170) with a 100% modulation or FSK (FSK-43, FSK-125, FSK-170)
Carrier Deviation	± 100 Hz (FSK-43, FSK-125, FSK-170)

#### RECEIVER SECTION

Carrier	40 symbols/sec (FSK-43, FSK-125, FSK-170)
Total Harmonic Distortion	40% (max)
Maximum Sensitivity (100 mW/5 Hz)	70 dB (0.22 µV)
Signal to Noise Ratio	44 dB (100:1) (max)
Sensitivity	27-42 dB (0.5-10 µV) (max)
Maximum Power Output	100 mW
Carrier Deviation	± 100 Hz (FSK-43, FSK-125, FSK-170)

# SONY

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# SERVICE MANUAL

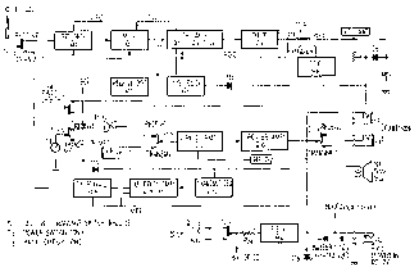
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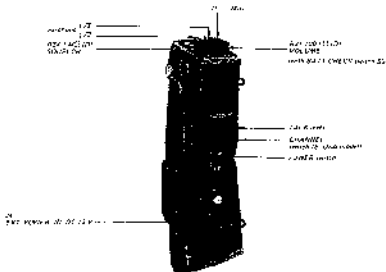
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SECTION 1  
OUTLINE

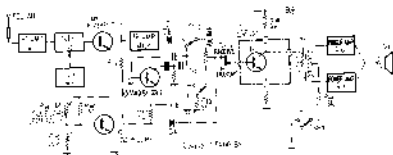
1-1. BLOCK DIAGRAM



1-2. EXTERNAL VIEW



## 13. STAND-BY CIRCUIT OPERATION



The 1000W uses STANDBY circuit, consisting of VOLTAGE and STAND-BY relays.

STANDBY circuit operates when the receiver signal is higher level than the level constant ANY VOLTAGE mode and STANDBY is set signal of 1.5V or more through relay.

When a signal of the stand-by signal is 1.5V or more, the relay is closed, current increases and the filament RTV voltage decreases. RTV decreases the electron is high. When input signal level is higher than the key controlled with 50Hz, 100Hz, 1000Hz, 5000Hz, 10000Hz and more. The STANDBY relay signal is supplied through 100V power amp and outputs the signal.

When the input signal level is less than 1.5V, the current decreases and filament is low.

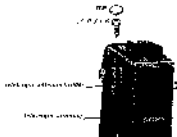
Therefore, electron current is high in RTV frequency and electron current drops to make a high frequency filament and more electron. So, single frequency of the stand-by signal, signal does not appear through speaker.

## Note

1. In STANDBY mode, 100V AC is supplied to the filament. In standby mode, 100V AC is supplied to the filament.
2. In STANDBY mode, 100V AC is supplied to the filament.

## SECTION 2 DISASSEMBLY

### 21. TELESCOPIC ANTENNA REMOVAL



### 22. ANTENNA LOCK REMOVAL



### 23. REAR CABINET REMOVAL



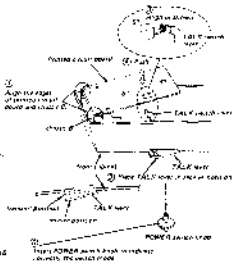
### 24. PRINTED CIRCUIT BOARD REMOVAL

After the antenna is removed, the printed circuit board can be removed from the chassis as shown by arrow.



### 25. PRINTED CIRCUIT BOARD INSTALLATION

Reinsert the antenna in order.



## SECTION 3 ADJUSTMENTS

### 1. POWER VOLTAGE ADJUSTMENT

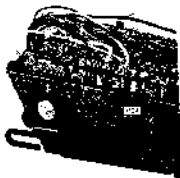
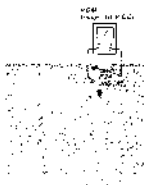
#### Control Switch Setting:

Power Switch	ON
VOLTAGE CONTROL	Fully clockwise (Lowest)
Power Control	12 V DC

#### Procedure:

##### Step 1: Entry

Adjust R26 for a 5.5V output.



### 2. RF SECTION DC BIAS ADJUSTMENT

#### Control Switch Setting:

Power Switch	ON
VOLTAGE CONTROL	Fully clockwise (Lowest)
Power Control	12 V DC

#### Procedure:

##### 1. Note Receiver

- PDM: 900 kHz
- Page 25 VFO (VFO) 7.140 MHz



- 1. Select R5 resistance between 10KΩ and 47KΩ with 0.5V DC or 500 Hz. Low resistance increases output.
- 2. Select R4 resistance between 10KΩ and 47KΩ with 0.1 to 0.5 V dc 500 Hz. Low resistance increases the voltage.

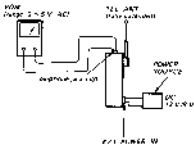
### 3. SENSITIVITY ADJUSTMENT

#### Control/Switch Setting

- POWER switch ON
- SQUELCH control MIN
- VOLUME control MAX
- Channel select to CH-6 (USA, except Alaska)
- Use normal broadcast signal.

#### Procedure

1.



2. With 12 V DC power voltage, when L2 and L1 be max min. 5/20 dB drive.

1. When decreasing power voltage to 8 V DC, ensure the same condition.
4. If necessary, adjust L2.

After adjustment, be the set with 12 V.



22 43 10

### 4. SQUELCH LEVEL ADJUSTMENT

#### Control/Switch Setting

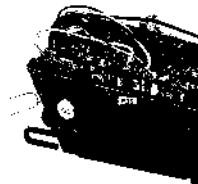
- POWER switch ON
- SQUELCH control MAX
- SQUELCH control according below.



Channel select Channel for an signal input.

#### Procedure

Adjust R15 so that noise is not audible.



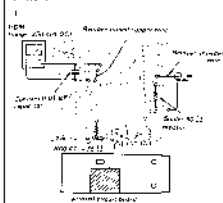
**5. TRANSMITTER OUTPUT POWER ADJUSTMENT**

**Control Switch Setting**

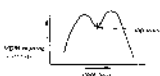
- INVERTER OFF      ON
- Power mode      15.0V
- Control switch    15.0V / 15.0V (High/Low)

Press main power ON and adjust the output power to control through the phone.

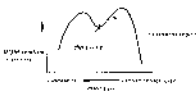
**Procedure**



1. Press the output level 1 button of the switch. Then the SW is placed in 1 position mode.
2. Turn 111, 112 and 113 screws of typical VOM (VOM).
3. Turn 110 screw for adjustment VOM (VOM).



4. Turn 111 screw fully clockwise and then slowly counterclockwise until the output power is 100W (example frequency 1500 kHz).



5. Set the final adjustment to 100W (1500 kHz) 15.0V (15.0V VOM) reading.
6. After adjustment, solder antenna spring and shield wire to ground on SW (1500 kHz).





## 5. TAPPING COIL ADJUSTMENT

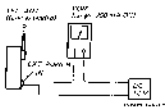
## Control Switch Setup:

DIFFER switch ON  
 POWER switch OFF  
 Channel switch HIGH (USCA or USCB)  
 FREQ switch (200 kHz) OFF

Insert test plug into DHE and observe displayed  
 frequency on the frequency display.

## Procedure:

Make the following



Use the test plug to adjust the  
 frequency until the display is within 100 kHz.

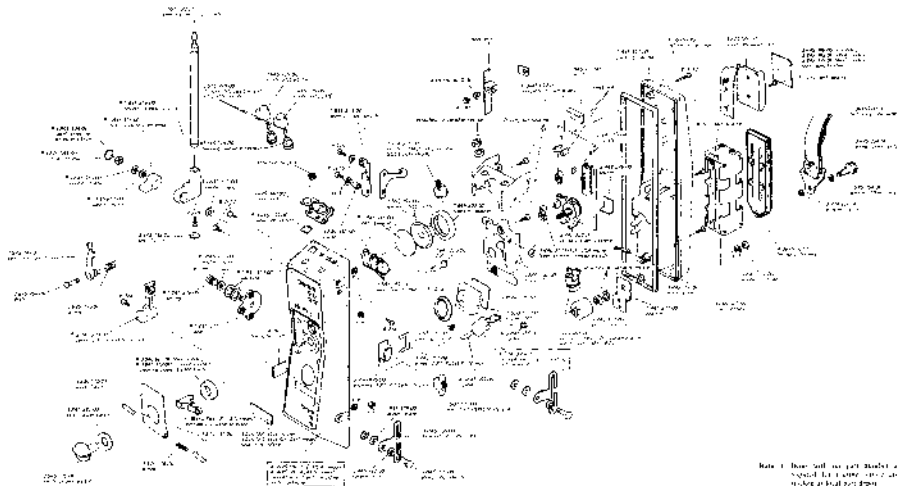






SECTION 5  
EXPLODED VIEW AND PACKING

## 5-1. EXPLODED VIEW





SECTION 6  
ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
	X 9455 220	complete circuit board	C1	1-021 391-01	1 50 V electrolytic
	RESISTORS (OHMS)		C2	.....	.....
			C3	1-001 923-01	0.01 100k
			C4	1-001 923-01	0.01 100k
			C5	1-001 923-01	0.01 100k
			C6	1-001 899-01	0.5 p 100k
			C7	1-001 899-01	0.5 p 100k
			C8	1-021 491-01	1 50 V electrolytic
			C9	1-021 402-01	33 10 V electrolytic
			C10	1-000 924-01	0.01 100k
			C11	1-001 923-01	0.01 100k
			C12	1-002 871-01	300 p 100k
			C13	1-001 923-01	0.01 100k
			C14	.....	.....
			C15	1-021 552-01	47 10 V electrolytic
			C16	1-021 491-01	1 50 V electrolytic
			C17	1-021 552-01	47 10 V electrolytic
			C18	1-001 923-01	0.01 100k
			C19	.....	.....
			C20	1-001 923-01	0.01 100k
			C21	1-001 923-01	0.01 100k
			C22	1-021 651-01	10 10 V electrolytic
			C23	.....	.....
			C24	1-000 821-02	0.0005 100k
			C25	1-000 821-02	0.0005 100k
			C26	1-021 595-01	4.7 25 V electrolytic
			C27	1-001 923-01	0.01 100k
			C28	1-021 591-01	1 50 V electrolytic
			C29	1-021 402-01	33 10 V electrolytic
			C30	1-000 821-02	0.0005 100k
			C31	.....	.....
			C32	1-000 821-02	0.0005 100k
			C33	.....	.....
			C34	1-021 413-01	100 0.5 V electrolytic
			C35	1-021 651-01	10 10 V electrolytic
			C36	.....	.....
			C37	1-000 821-02	0.0005 100k
			C38	1-000 821-02	0.0005 100k
			C39	1-021 409-01	47 10 V electrolytic
			C40	1-002 949-01	15 p 100k
			C41	1-001 923-01	0.01 100k
			C42	.....	.....
			C43	1-021 491-01	10 10 V electrolytic
			C44	1-002 934-01	1 p 100k
			C45	1-002 934-01	1 p 100k
			C46	.....	.....
			C47	1-001 923-01	0.01 100k
			C48	1-021 491-01	1 50 V electrolytic
			C49	1-021 591-01	1 50 V electrolytic
			C50	.....	.....
			C51	1-000 945-01	5 p 100k
			C52	1-021 726-01	0.0025 50 V electrolytic
			C53	1-001 901-01	25 p 100k
			C54	.....	.....
			C55	.....	.....
			C56	.....	.....
			C57	.....	.....
			C58	.....	.....
			C59	.....	.....
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			C197	.....	.....
			C198	.....	.....
			C199	.....	.....
			C200	.....	.....

Capacitors with values in pF are in pF unless otherwise noted.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
C54	1-100-974-11	230 p	crystal	H-05	1-210-020-00	100 µm diameter wafer (100)
C55	1-100-974-11	230 p	crystal	H-06	1-210-020-11	100
C56	1-100-974-11	82 p	crystal	H-07	1-210-020-11	120
C57	1-100-974-11	82 p	crystal	H-08	1-210-020-11	14
				H-09	1-210-020-11	22
				H-10	1-210-020-11	30
				H-11	1-210-020-11	2.5 p
				H-12	1-210-020-11	120
				H-13	1-210-020-11	10
				H-14	1-210-020-11	100
				H-15	1-210-020-11	100
				H-16	1-210-020-11	100
				H-17	1-210-020-11	100
				H-18	1-210-020-11	100
				H-19	1-210-020-11	100
				H-20	1-210-020-11	100
				H-21	1-210-020-11	100
				H-22	1-210-020-11	100
				H-23	1-210-020-11	100
				H-24	1-210-020-11	100
				H-25	1-210-020-11	100
				H-26	1-210-020-11	100
				H-27	1-210-020-11	100
				H-28	1-210-020-11	100
				H-29	1-210-020-11	100
				H-30	1-210-020-11	100
				H-31	1-210-020-11	100
				H-32	1-210-020-11	100
				H-33	1-210-020-11	100
				H-34	1-210-020-11	100
				H-35	1-210-020-11	100
				H-36	1-210-020-11	100
				H-37	1-210-020-11	100
				H-38	1-210-020-11	100
				H-39	1-210-020-11	100
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				H-41	1-210-020-11	100
				H-42	1-210-020-11	100
				H-43	1-210-020-11	100
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				H-49	1-210-020-11	100
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				H-55	1-210-020-11	100
				H-56	1-210-020-11	100
				H-57	1-210-020-11	100
				H-58	1-210-020-11	100
				H-59	1-210-020-11	100
				H-60	1-210-020-11	100
				H-61	1-210-020-11	100
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				H-64	1-210-020-11	100
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				H-87	1-210-020-11	100
				H-88	1-210-020-11	100
				H-89	1-210-020-11	100
				H-90	1-210-020-11	100
				H-91	1-210-020-11	100
				H-92	1-210-020-11	100
				H-93	1-210-020-11	100
				H-94	1-210-020-11	100
				H-95	1-210-020-11	100
				H-96	1-210-020-11	100
				H-97	1-210-020-11	100
				H-98	1-210-020-11	100
				H-99	1-210-020-11	100
				H-100	1-210-020-11	100

Ref. No.	Part No.	Description	Qty./No.	Part No.	Description
57	1-514-130-00	main body	1	1-527-113-11	optical unit, quartz 27.055 MHz CE USA model
58		included in (3) (5) (6) (7) (8)			
59	1-514-130-00	main body	1	1-527-109-11	optical unit, quartz 27.055 MHz CE USA model
60	1-527-130-11	optical unit, quartz 26.691 MHz CE USA model		1-527-101-12	main unit
61	1-527-130-11	optical unit, quartz 26.702 MHz CE USA model		1-526-529-00	socket, quartz crystal unit
62	1-527-130-11	optical unit, quartz 26.765 MHz CE USA model		1-527-100-11	optical unit, quartz 27.240 MHz CE USA model
			62	1-527-100-11	optical unit, quartz 26.765 MHz CE USA model

## SECTION 7 HARDWARE

### Part No.

### Description

1-622-874-20	writing plate, 1
1-622-576-01	bag, paper
1-622-611-61	cover, 3 x 5
1-622-416-61	tag, retaining, F-3
1-622-626-61	tag, retaining, F-4
1-622-145-61	cover, machine, F-4 x 8
1-622-149-61	cover, machine, F-2 x 2B
1-622-441-25	cover, machine, F-2 x 6
1-622-548-25	cover, machine, F-2 x 8
1-622-550-25	cover, machine, F-2 x 12
1-622-140-25	cover, self-sticking, F-2 x 8
1-622-146-25	cover, self-sticking, F-2 x 16
1-622-548-25	cover, self-sticking, F-2 x 12

### Hardware Non-Exhaustive

<p><b>P</b> - Pin Head Screw</p> <p><b>PS</b> - Pin Head Screw with Spring Washer</p> <p><b>R</b> - Flat Cross-Round Head Screw</p> <p><b>R</b> - Round Head Screw</p> <p><b>RK</b> - Flat Cross-Round Head Screw</p> <p><b>T</b> - Torx Head Screw</p> <p><b>R</b> - Round Head Screw</p> <p><b>F</b> - Flat Ribbed Head Screw</p>	<p><b>SC</b> - Set Screw</p> <p><b>E</b> - Retaining Ring II, Washer</p> <p>W - Washer</p> <p>SW - Spring Washer</p> <p>LB - Lock Washer</p> <p>N - Nut</p> <p><b>Example -</b></p> <p>— Type of Nut</p> <p>W - Washer</p> <p>— Example of nut (1)</p> <p>— Character as per (1)</p> <p>1 - Torx of Nut</p>
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