

KMC-18/18A

SERVICE MANUAL

KENWOOD

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KMC-18/18A

INTRODUCTIONS

INTRODUCTIONS --- KMC-18/18A (DTMF MICROPHONE)

The KMC-18/18A is a DTMF microphone for mobile transceivers with a 6-pin modular connector. The KMC-18 is a standard microphone, the KMC-18A, a multi-function one. They have the following features. (In the table below, indicates that the function is available, and indicates it is not .)

	Feature	KMC-18	KMC-18A
1	Conforms to MIL-STD-81- C/D/E. Rain 506.1/Proce. 2, 506.2/Proce. 2, 506.3/Proce.2 Dust 510.1/Proce. 1, 510.2/Proce. 1, 510.3/Proce.1 Vibration514.2/Proce. 8.10, 514.3/Proce. 1, 514.4/Proce.1 Shock 516.2/Proce. 1.2.3.5, 516.3/Proce. 1.3.4.5.6, 516.4/Proce.1.4	○	○
2	Backlit keyboard (The KMC-18A has a three-level programmable illumination switching function (bright, dark, and OFF).	○	○
3	The hook fitting has a switch function, and the on-hook ground wire is no longer necessary.	○	○
4	The curly cord has an 8-pin modular connector (microphone) and a 6-pin modular connector (transceiver). It can be replaced easily.	○	○
5	A beep sounds to confirm operation. (The KMC-18A is programmable to set it ON or OFF.)	○	○
6	DTMF key operation is inhibited while the PTT button is being held down. (The KMC-18A is programmable to disable or enable the DTMF key.)	○	○
7	When the DTMF key is pressed, the PTT turns on automatically and the microphone is disabled.	○	○
8	The hook can be held on or off.	×	○
9	The DTMF code transmission time is variable.	×	○
10	The 4th column tone transmission is variable.	×	○
11	Eight types of DTMF code up to 22 digits (such as telephone numbers) can be stored in memory.	×	○
12	Connect/disconnect ANI codes up to 17 digits can be stored in memory.	×	○
13	One of the nine operation modes can be selected by combinations of three kinds of operation function (Auto Dial, Store and Send, and Manual Dial) and the Last Number Redial function.	×	○

SEMICONDUCTOR DATA

μPD75008-732-3B4 : KMC-18A (IC2)

Pin No.	Terminal Name	I/O	Function
1 – 3	P70 – P72	I	Key data input
4	P63	O	PTT output
5	P62	O	HOOK output
6	P61	O	Backlight: Bright (Output high: Bright is selected.)
7	P60	O	Backlight: Dark (Output high: Dark is selected.)
8	P53	O	DTMF output enable (Output high: Tone is output.)
9	P52	O	Tone select (Output high: Row tone is output.)
10	P51	O	Tone select (Output low: Column tone is output.)
11	P50	O	Microphone mute control (Output high: Mute on)
12	NC	–	+5V
13 – 16	P40 – P43	O	DTMF tone data output
17	Vss	–	GND
18	XT1	I	Open (not used)
19	XT2	O	Open (not used)
20	RESET	I	Reset input (Low: Reset)
21	X1	I	System clock input
22	X2	I	System clock input
23	P33	O	EEPROM clock output
24	P32	I/O	EEPROM address output, data input/output
25	P31	O	Open (not used)
26	P30	O	Open (not used)
27	P81	O	Open (not used)
28	P81	O	2000-Hz/500-Hz beep output
29	P03	I	Open (not used)
30	P02	I	Open (not used)
31	P01	I	Open (not used)
32	P00	I	EEPROM version switching (Open:1-kbit EEPROM)
33	P13	I	PTT switch input
34	NC	–	+5V
35	P12	I	HOOK switch input
36	P11/INT1	I	Test data input (Low: Input start)
37	P10/INT0	I	Clone data input (High: Input start)
38	NC	–	+5V
39	VDD	–	+5V
40 – 43	P20 – P23	O	Key scan data output (Output: Normally low)
44	NC	–	Open (not used)

KMC-18/18A

PARTS LIST

× New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnes dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
KMC-18/18A						
1	1B	*	A02-1744-08	CASE(FRONT)		
2	3B	*	A02-1745-08	CASE(REAR)		
3		*	B62-0354-08	INSTRUCTION MANUAL(ACS)		
4		*	B72-0542-08	MODEL NAME PLATE		B
4		*	B72-0543-08	MODEL NAME PLATE		A
6	2A	*	E23-0426-05	TERMINAL(HOOK)		
7	2B	*	E30-3156-05	CURL CORD		
CN1		*	E37-0345-08	CONNECTING WIRE(2P)		
CN2		*	E40-5190-05	PIN ASSY(13P)		
		*	E40-5179-05	PIN ASSY(2P)		
CN3			E08-0571-05	MODULAR JACK		
W1		*	E37-0344-08	CONNECTING WIRE(13P)		
8	3B	*	G02-0739-08	SPRING(PTT)		
		*	G10-0736-08	FELT(MIC)		
		*	G10-0737-08	FELT(SP)		
10	3B	*	G53-0753-08	PACKING(PTT)		
11	2B	*	G53-0754-08	PACKING(MIC,SP)		
12		*	H52-0425-08	ITEM CARTON BOX		B
12		*	H52-0426-08	ITEM CARTON BOX		A
13		*	J19-1376-15	MIC HANGER		
		*	J19-1511-05	MIC HANGER SET(ACS)		
		*	J30-0595-08	SPACER(MIC)		
15	3B	*	K24-2004-08	KNOB(PTT)		
16	1B	*	K29-4856-08	KEY TOP		
X1			L78-0035-05	CRYSTAL OSC(3.594MHZ)		B
X1			L78-0089-05	CERAMIC OSC(480KHZ)		A
X2			L78-0036-05	CRYSTAL OSC(4.19MHZ)		A
A		*	N17-1020-46	TOOTHED LOCK WASHER(HOOK)		
B		*	N24-3020-41	E RING(PTT)		
		*	N39-2050-41	MACHIN SCREW(HOOK)		
		*	N46-2606-46	TAPTITE SCREW(UNIT)		
		*	N46-4016-46	TAPTITE SCREW(HANGER)		
D		*	N80-3016-41	TAPTITE SCREW(CASE)		
			S50-1415-05	TACT SWITCH(PTT)		
17	2B		T07-0285-05	SPEAKER		
18	2B	*	T91-0538-05	MICROPHONE(EMC)		
			232-0032-05	TUBE(CASE)		
D1			1SS184	DIODE		B
D1			1SS190	DIODE		A
D2			1SS181	DIODE		B
D2			1SS190	DIODE		A
D3			1SS184	DIODE		B
D3			1SS190	DIODE		A
D4			1SS190	DIODE		B
D4			1SS226	DIODE		A
D5			1SS226	DIODE		A
D6			1SS190	DIODE		A
IC1			LR40872	IC(TONE DIALER)		B

L:Scandinavia

K:USA

P:Canada

A:KMC-18A

Y:PX(Far East, Hawaii)

T:England


E:Europe

B:KMC-18

Y:AAFES(Europe)

X:Australia

M:Other Areas

 indicates safety critical components.

PARTS LIST

× New Parts

Parts without Parts No. are not supplied.

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Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
IC1			TC35219F	IC(DTMF GENERATOR)		A
IC2		*	75008GB-732-3B4	IC(CPU)		A
IC2			NJM78L08UA	IC(VOLTAGE REGULATOR / +8V)		B
IC3			TC4S584F	IC(SCHMITT TRIGGER)		B
IC3		*	X24C01SI	IC(EEPROM)		A
IC4			M51943BML	IC(SYSTEM RESET)		A
IC5			NJM78L08UA	IC(VOLTAGE REGULATOR / +8V)		A
IC6			NJM78L05UA	IC(VOLTAGE REGULATOR / +5V)		A
Q1 -Q3			DTC144EK	DIGITAL TRANSISTOR		A
Q1 -Q3			2SC2712	TRANSISTOR		B
Q4			DTC144EK	DIGITAL TRANSISTOR		A
Q4			DTA144EK	DIGITAL TRANSISTOR		B
Q5			DTA144EK	DIGITAL TRANSISTOR		A
Q5			DTC144EK	DIGITAL TRANSISTOR		B
Q6			DTC144EK	DIGITAL TRANSISTOR		B
Q7			DTA144EK	DIGITAL TRANSISTOR		B
Q7			DTC114YK	DIGITAL TRANSISTOR		A
Q8			DTC144EK	DIGITAL TRANSISTOR		B

L:Scandinavia

K:USA

P:Canada

A:KMC-18A

Y:PX(Far East, Hawaii)

T:England

E:Europe

B:KMC-18

Y:AAFES(Europe)

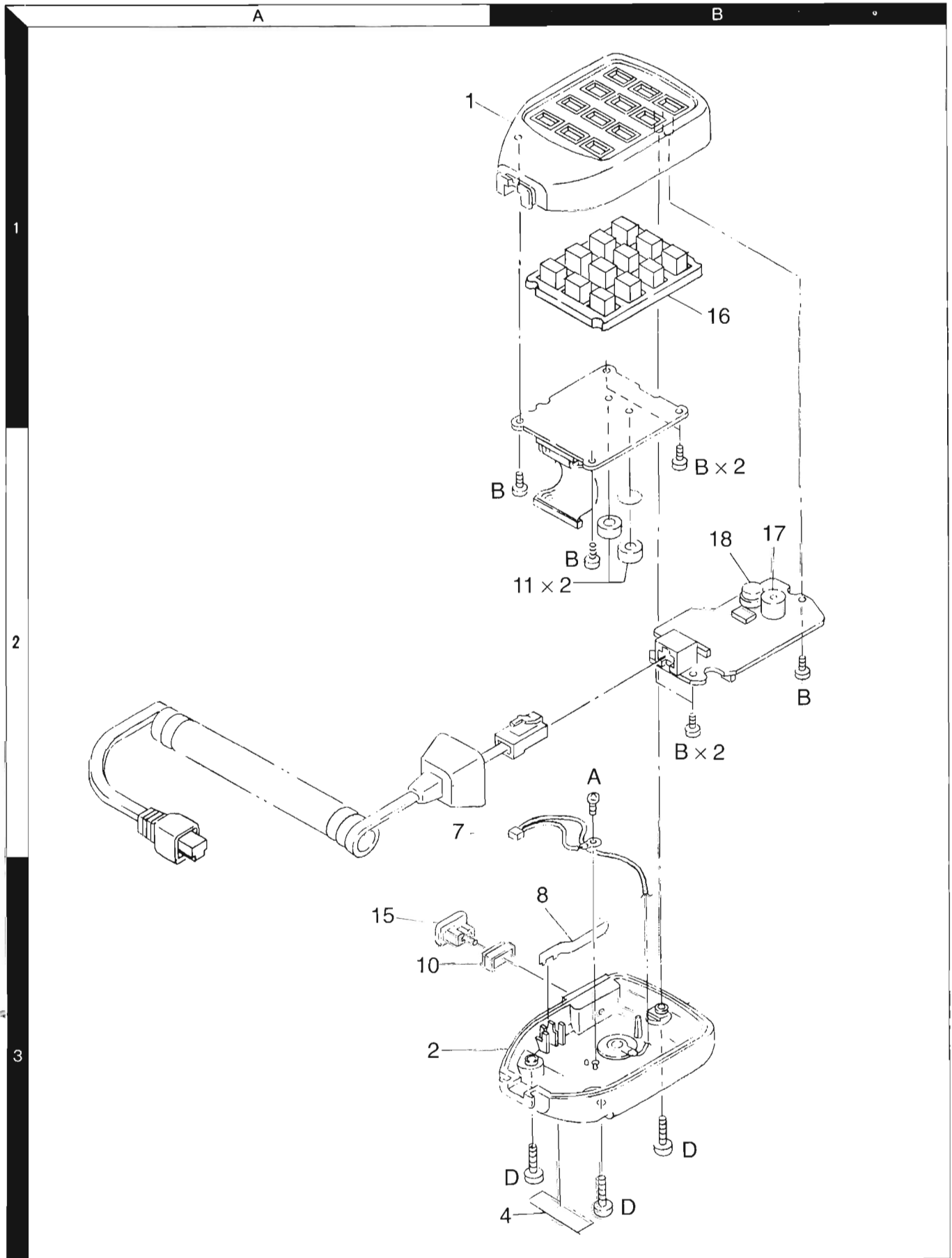
X:Australia

M:Other Areas

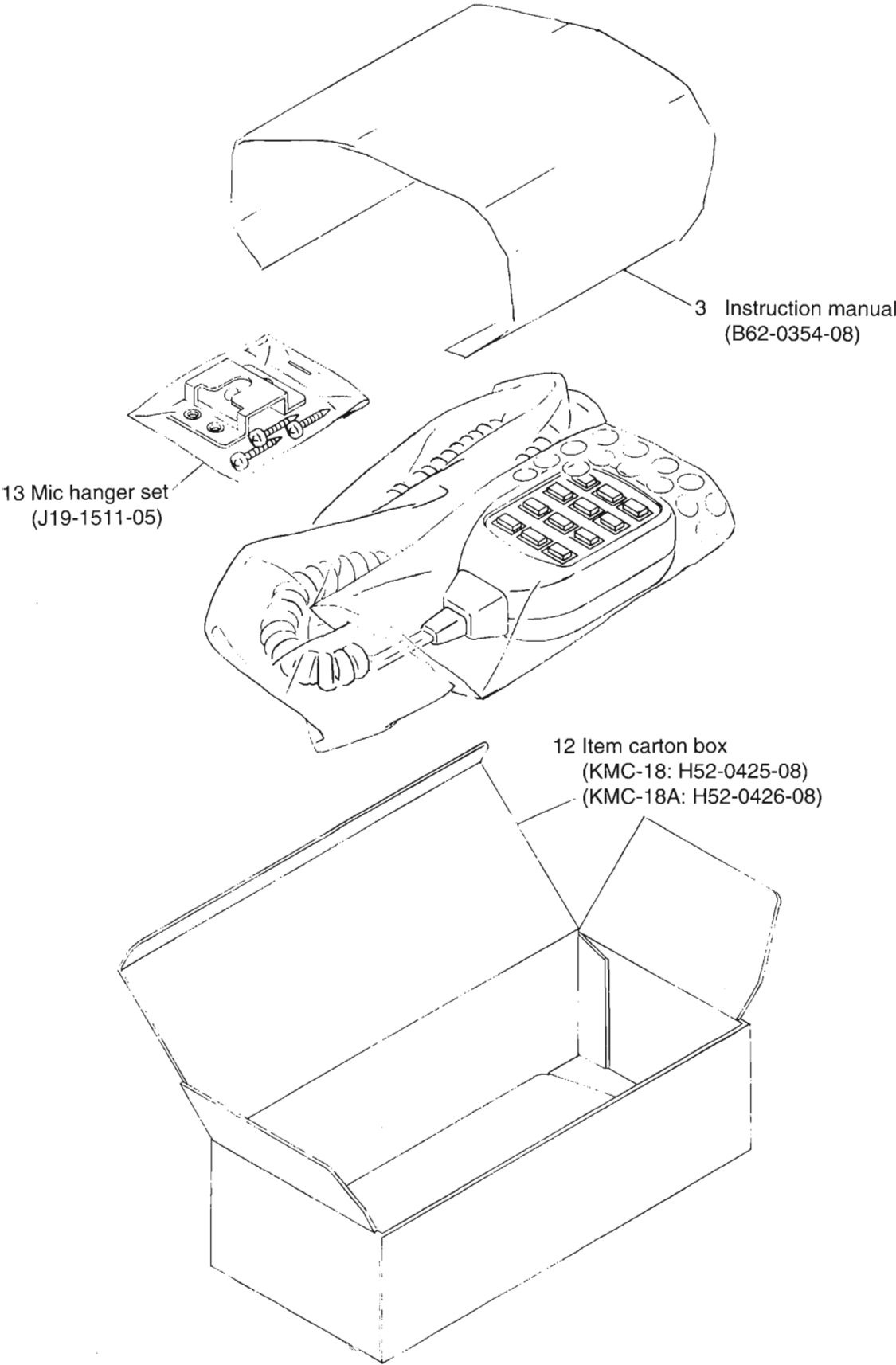
 indicates safety critical components.

KMC-18/18A

EXPLODED VIEW



PACKING



KMC-18/18A

ADJUSTMENT

The DTMF tone deviation has been adjusted at the factory, so does not normally need to be adjusted.

- DTMF tone deviation adjustment (for KMC-18/18A)
 1. Remove the three screws securing the back of the KMC-18/18A case, then remove the back.
 2. Connect the deviation meter to the transceiver to be used, then connect the KMC-18/18A to the transceiver.
 3. Hold down key **[5]**. The transceiver transmits the DTMF tone corresponding to key **[5]**. With key **[5]** still down, adjust semi-fixed resistor VR1 on the KMC-18/18A board to set the deviation to 2.2 kHz.
 4. Put the back of the case on.
- The KMC-18A allows you to adjust the deviation using the single tone transmission function. Perform steps 1 and 2 above, then put the KMC-18A into set-up mode. (To enter set-up mode, hold down keys **[1]**, **[3]**, and **[*]** and switch the power on.)
Next, press keys **[8]**, **[0]**, and **[#]** in that order, then press the following keys:
Press **[1]** to transmit the Row 1 tone.
Press **[2]** to transmit the Row 2 tone.
Press **[3]** to transmit the Row 3 tone.
Press **[4]** to transmit the Row 4 tone.
Press **[5]** to transmit the Column 1 tone.
Press **[6]** to transmit the Column 2 tone.
Press **[7]** to transmit the Column 3 tone.
Press **[8]** to transmit the Column 4 tone.

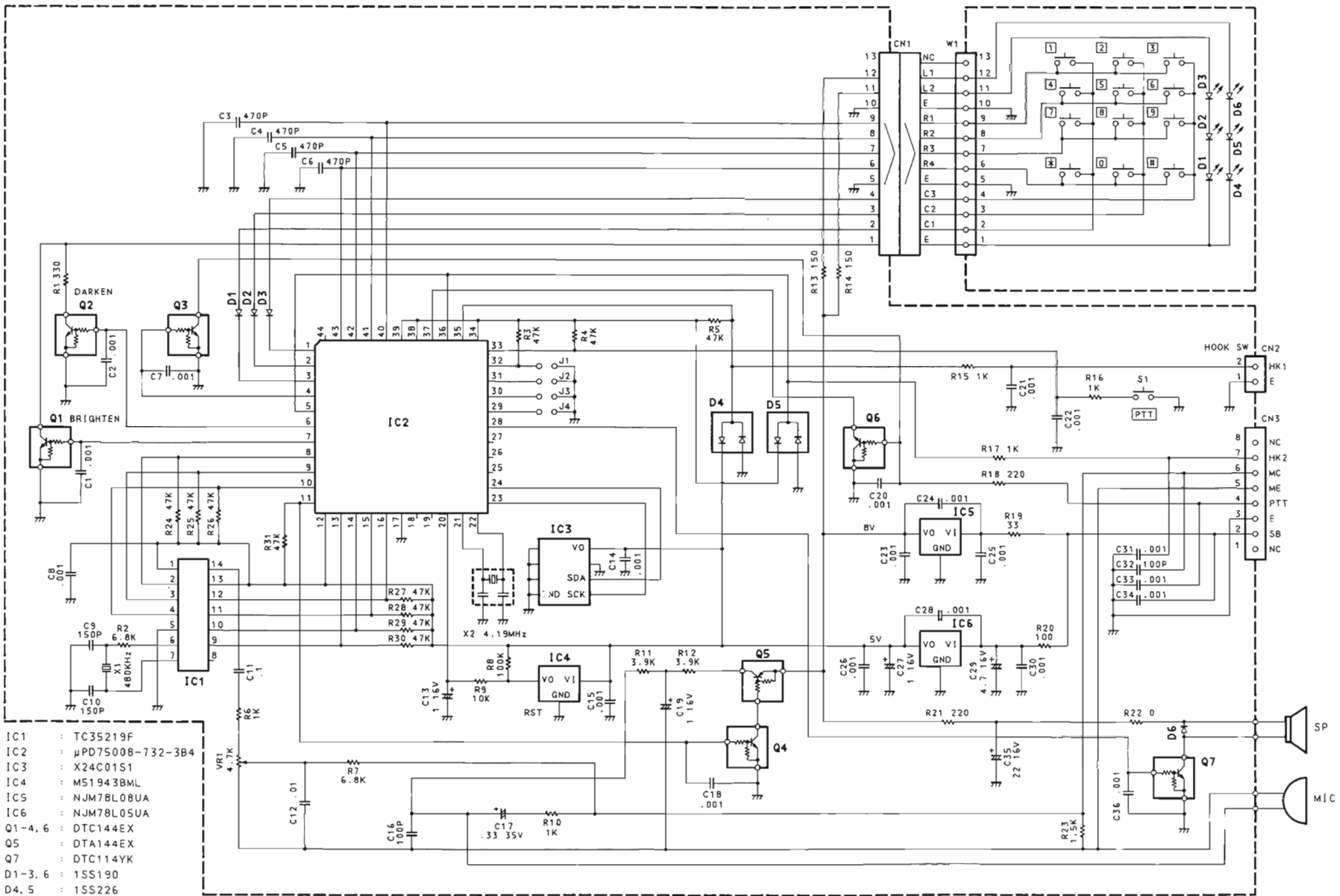
Adjust VR1 while each tone is being transmitted, setting the deviation to 1 kHz for the Row 1 tone (key **[1]**) and to 1.5 kHz for the Column 1 tone (key **[5]**).

TERMINAL FUNCTION

Connector No.	Terminal No.	Terminal Name	Terminal function
KMC – 18			
CN1	1	E	GND
	2	C1	Key matrix column 1
	3	C2	Key matrix column 2
	4	C3	Key matrix column 3
	5	E	GND
	6	R4	Key matrix row 4
	7	R3	Key matrix row 3
	8	R2	Key matrix row 2
	9	R1	Key matrix row 1
	10	E	GND
	11	L2	LED power
	12	L1	LED power
	13	NC	Open (not used)
KMC – 18/18A			
CN2	1	E	GND
	2	HK1	Hook SW input
KMC – 18/18A			
CN3	1	NC	Open (not used)
	2	SB	Power supply
	3	E	GND
	4	PTT	PTT
	5	ME	Microphone GND
	6	MC	MIC/DTMF signal output
	7	HK2	Hook switch output
	8	NC	Open (not used)

Connector No.	Terminal No.	Terminal Name	Terminal function
KMC – 18A			
CN1	1	E	LED dimmer control
	2	C1	Key matrix column 1
	3	C2	Key matrix column 2
	4	C3	Key matrix column 3
	5	E	GND
	6	R4	Key matrix row 4
	7	R3	Key matrix row 3
	8	R2	Key matrix row 2
	9	R1	Key matrix row 1
	10	E	GND
	11	L2	LED power
	12	L1	LED power
	13	NC	Open (not used)

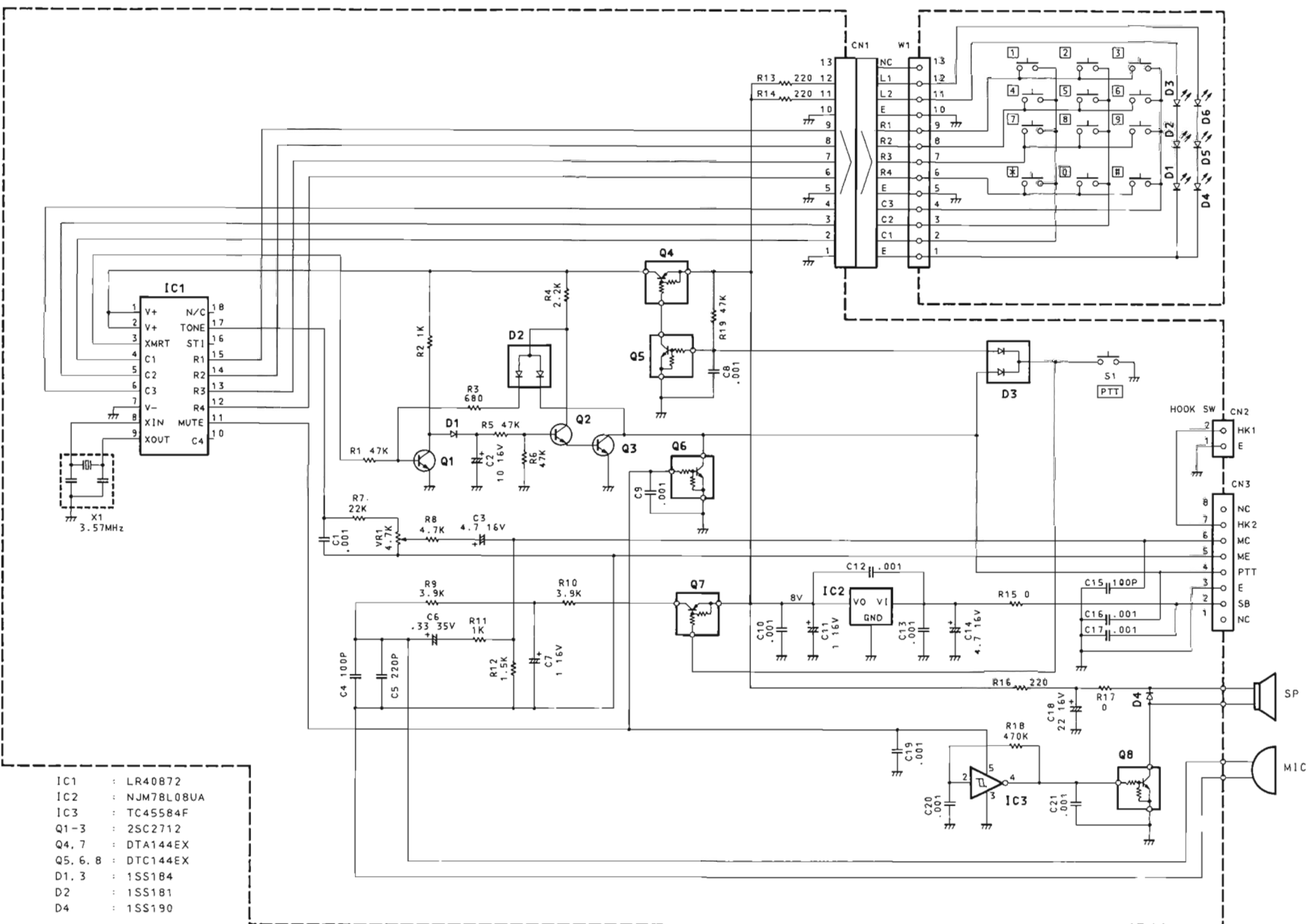
KMC-18/18A SCHEMATIC DIAGRAM



- IC1 : TC35219F
- IC2 : µPD75008-732-3B4
- IC3 : X24C01S1
- IC4 : M51943BML
- IC5 : NJM78L08UA
- IC6 : NJM78L05UA
- Q1-4, 6 : DTC144EX
- Q5 : DTA144EX
- Q7 : DTC114YK
- D1-3, 6 : 1SS190
- D4, 5 : 1SS226

KMC-18A

KMC-18/18A SCHEMATIC DIAGRAM



- IC1 : LR40872
- IC2 : NJM78L08UA
- IC3 : TC45584F
- Q1-3 : 2SC2712
- Q4, 7 : DTA144EX
- Q5, 6, 8 : DTC144EX
- D1, 3 : 1SS184
- D2 : 1SS181
- D4 : 1SS190

KMC - 18

KMC-18/18A

SPECIFICATIONS

Element Type	: $\varnothing 10$ mm ECM
Impedance	: $1\text{ K}\Omega \pm 30\%$
Sensitivity	: $-64\text{ dB} \pm 3\text{ dB}$ at 1 kHz (0 dB = 1 $\text{v}/\mu\text{Bar}$)
Voltage required	: DC 13.8 V $\pm 20\%$
Current drain	: 45 mA or less (Back Light: bright, Beep: OFF) : 65 mA or less (Back Light: bright, Beep: ON)
Operating temperature range	: $-30^{\circ}\text{C} - +60^{\circ}\text{C}$
Output impedance	: $600\ \Omega$
DTMF tone output level	: $5\text{ mV} \pm 1.0\text{ mV}$
Frequency stability	: $\pm 1.5\%$
Tone distortion	: 10% or less
High group tone output (relative to low group)	: +1 dB or more, +3 dB or less

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