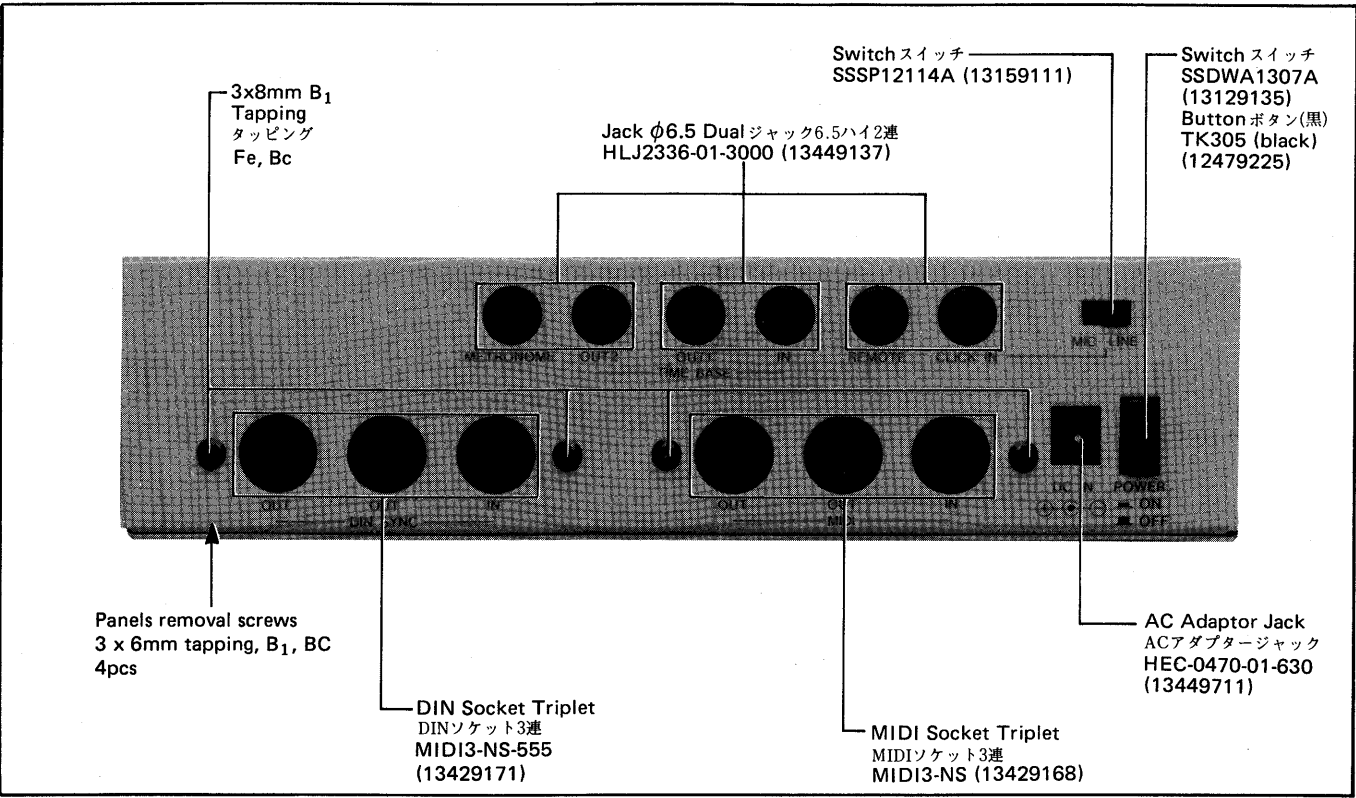
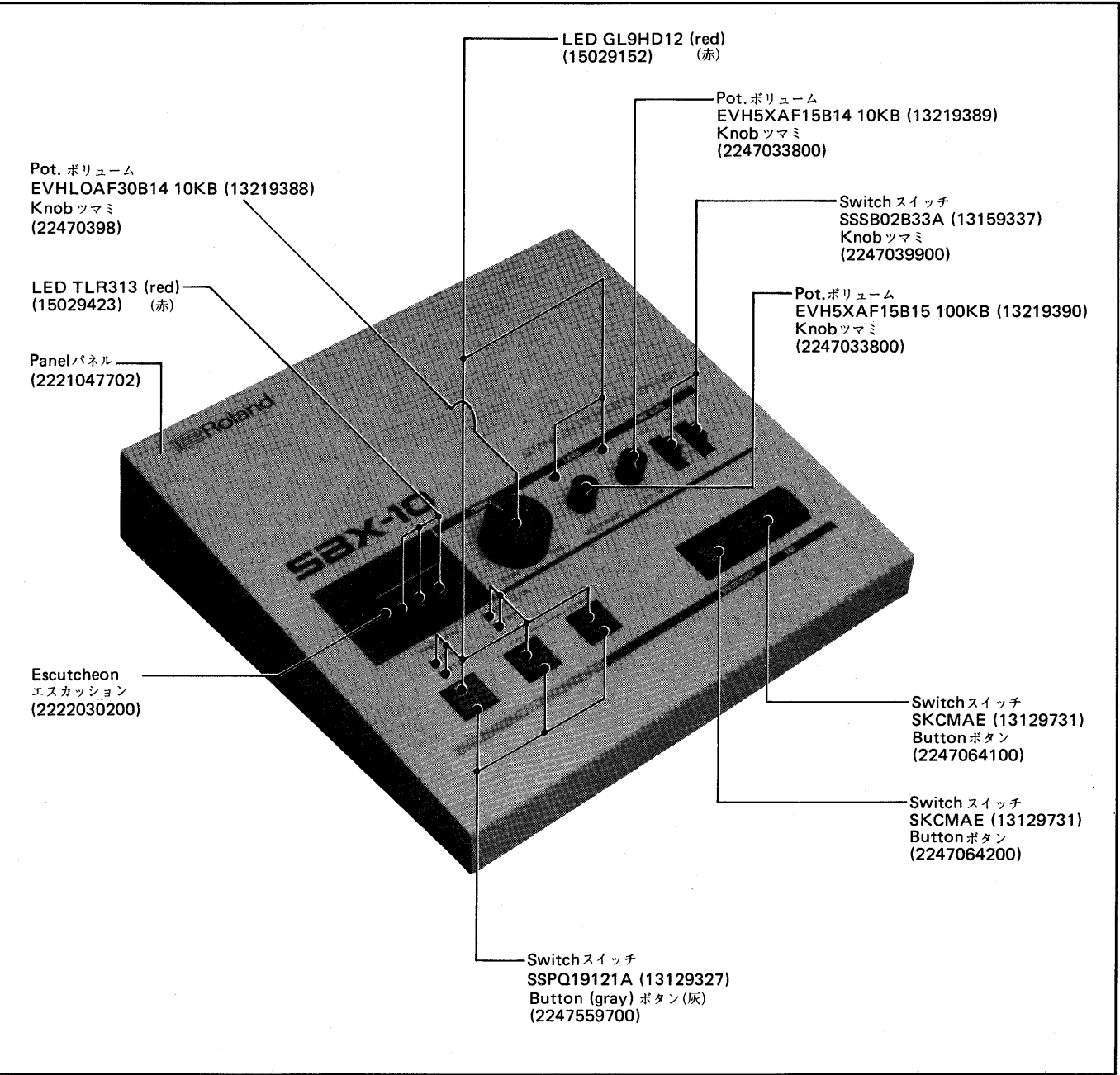


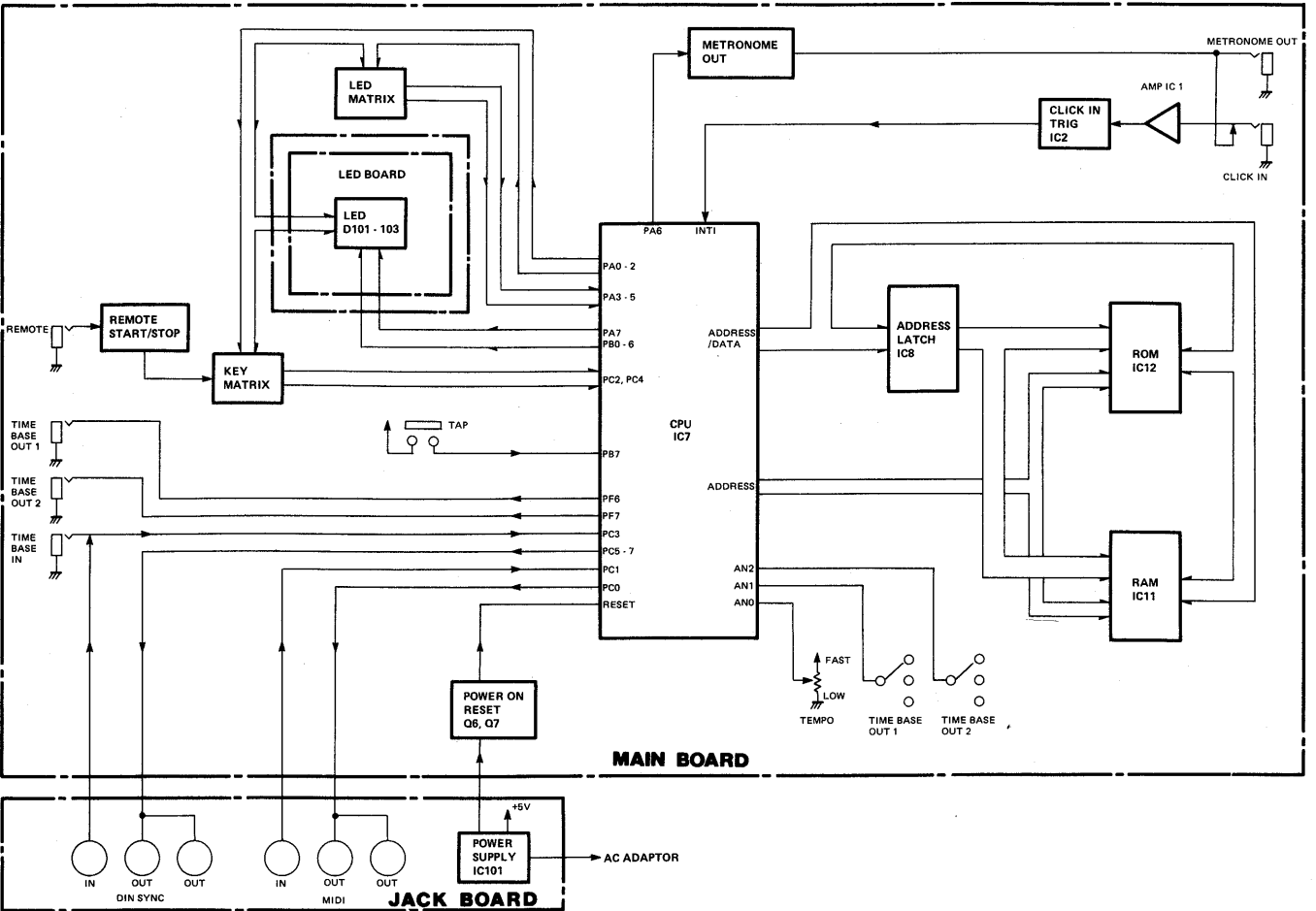
SBX-10 SERVICE NOTES *First Edition*

SPECIFICATIONS

INPUT	
CLICK	: -20dBm or -50dBm, 10kΩ
TIME BASE	: 0 to 5Vp-p
OUTPUT	
METRONOME	: Max.1Vp-p
TIME BASE	: 5Vp-p
POWER CONSUMPTION	: 5W
DIMENSIONS	: 226(W) x 225(D) x 61(H)mm 8 7/8" x 8 7/8" x 2 3/8"
WEIGHT	: 1.5Kg / 3 1b 50oz
ACCESSORIES	: 9V AC Adaptor (SBX-10) Connection Cord LP-25 MIDI / SYNC Cable



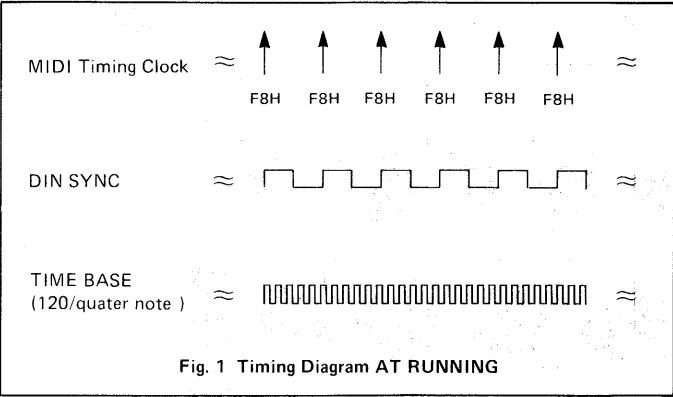
BLOCK DIAGRAM



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

SYNC FORMAT

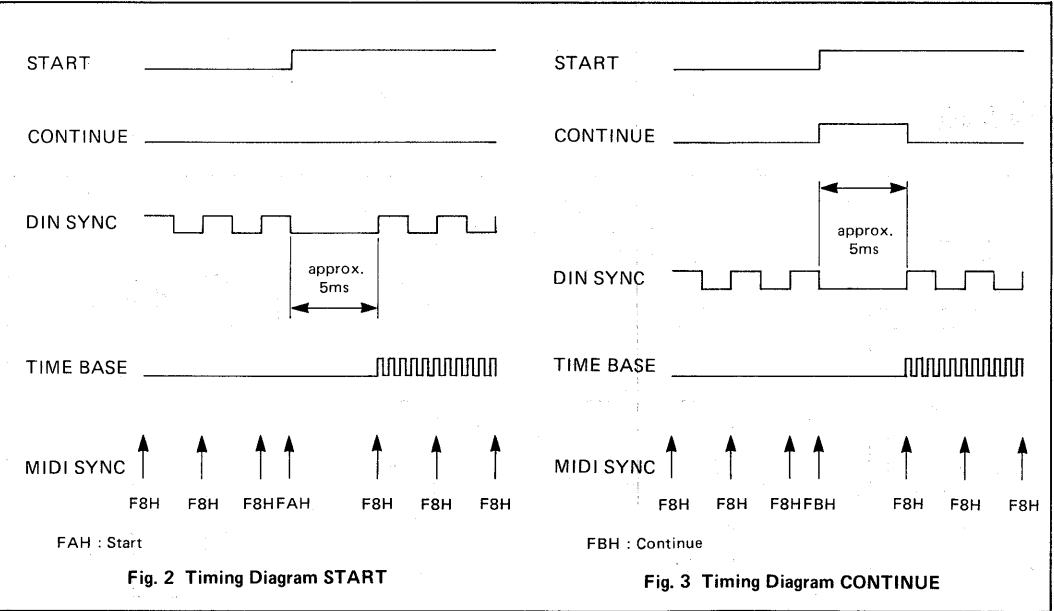
The SBX-10 handles MIDI messages (Timing Clock, Start, Continue and Stop), DIN SYNC, and TIME BASE as SYNC signals for use to control or to sync with timing-related equipment.



TIME BASE
The TIME BASE here refers to a clock(s) that represents the duration of a quater note. When TIME BASE is selected either 48, 96 or 120 from front panel (SW2, 3), the output from voltage divider is connected to AN1 and AN2 of the CPU IC7 which converts the voltage to digital data through the internal A/D converter and subsequent circuitry then puts out a rectangular wave at PF6, 7.

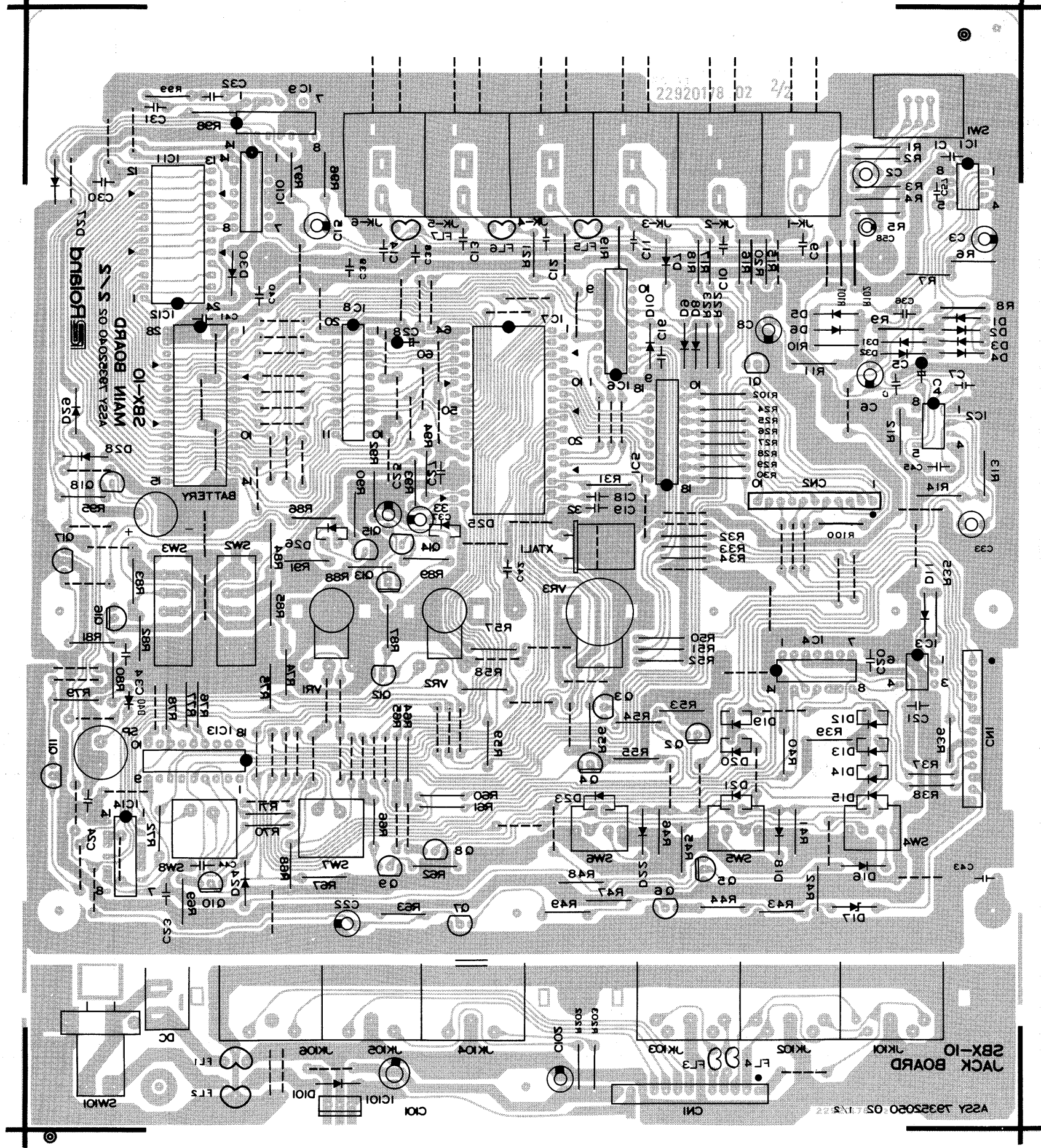
DIN SYNC
This signal is also called SYNC-24. As the name implies, the number of clocks per quater note is always 24. The signal is transmitted even in the stop mode.

MIDI SYNC
This is Timing Clock message F8H. The number of F8H which determines the length of a quater note is 24. Timing Clock is, as is the case of DIN SYNC, sent out from the SBX-10 even in the stop mode.

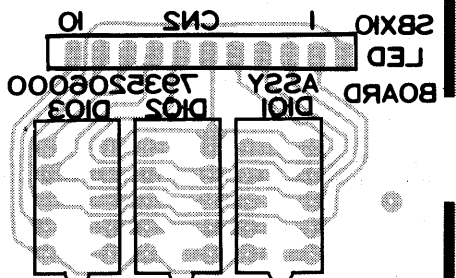


MAIN BOARD
79352040
(pcb 2292017801)

JACK BOARD
79352050
(pcb 2292017801)



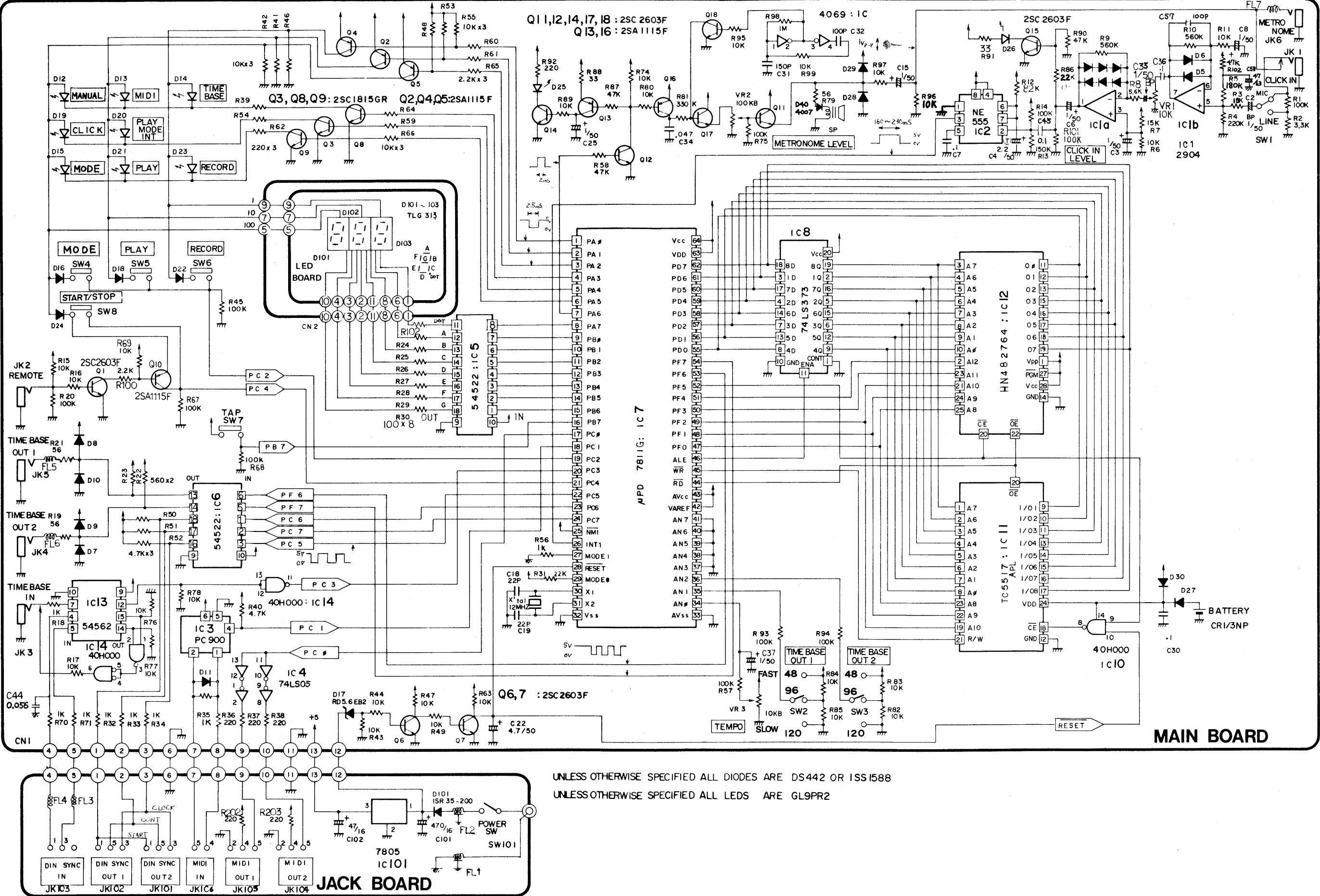
LED BOARD
79352060
(pcb 2292018100)



CIRCUIT DIAGRAM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U



UNLESS OTHERWISE SPECIFIED ALL DIODES ARE DS442 OR ISS1588
UNLESS OTHERWISE SPECIFIED ALL LEDS ARE GL9PR2

PARTS LIST

CASING ケース			
2221047702	Panel	パネル	
2202027400	Bottom Cover	底カバー	
2235031300	Foot Base	フット・ベース	
2222030200	Escutcheon	エスカッション	
KNOB, BUTTON ツマミ, ボタン			
12479225	Button TK-305	ボタン	POWER
2247559700	Button	ボタン	MODE, PLAY, PROGRAM
2247064200	Button	ボタン	START/STOP
2247064100	Button	ボタン	TAP
2247039900	Knob	ツマミ	TIME BASE OUT
2247033800	Knob	ツマミ	METRONOME OUT, CLICK IN
SWITCH スイッチ			
13129135	SSDWA1307A		POWER
13129327	SSPQ19121A		MODE, PLAY, PROGRAM
13129731	SKCMAE		START/STOP, TAP
13159111	SSSP12114A		MIC/LINE
13159337	SSSB02B33A		TIME BASE OUT
JACK, SOCKET ジャック, ソケット			
13449137	HLJ2336-01-3000	φ6.5 Dual 2連	
13429168	MIDI3-NS	MIDI	
13429171	MIDI3-NS-555	DIN	
13449711	HEC-0470-01-630	AC Adaptor	
PCB ASSY 基板完成品			
79352040	MAIN BOARD (pcb 2292017802 2/2) Replacement MAIN BOARD includes JACK BOARD. 補修用はメインとジャックボードで1セットとなります 79352050 JACK BOARD (pcb 2292017802 1/2)		
79352060	LED BOARD (pcb 2292018100)		
POTENTIOMETER ボリューム			
13219388	EVHLOAF30B14	10KB	TEMPO
13219389	EVH5XAF15B14	10KB	CLICK IN
13219390	EVH5XAF15B15	100KB	METRONOME
XTAL クリスタル			
12389717	12MHz		
IC			
15179176	MPD7811G-037-036	CPU	
15179752	HN482764 (HITACHI only)	ROM	
15179317	TC5517APL	RAM	
15149110	M54562	transistor array	
15149121	M54522	transistor array	
15229712	PC900	photo coupler	
15189134	NJM2904D	OP amp	
15219109J0	NJM555D	timer	
15159116T0	TC4069UBP	hex inverter	
15159503	TC40H000	quad 2 input NAND	
15169358H0	74LS373	3 state D latches	
15169334H0	74LS05P	hex inverter	
15199106F0	UA7805UC	+5V voltage regulator	
TRANSISTOR トランジスタ			
15129137	2SC2603F		
15129114	2SC1815GR		
15119125	2SA1115		
DIODE ダイオード			
15029152	GL9HD12	LED	
15029423	TLR313	LED 7 segment	
15019525	RD5.6EB-2	ツェナー zener	
15019107	DS-442		
15019208	1SR35-200		
AC ADAPTOR ACアダプタ			
12449542		100V	
12449543		120V	
12449544		220V, 240VE	
12449545		240VA	
MISCELLANEOUS その他			
12389806	EAF16R02C	発音体 speaker	
12199501	KGLS4S	LED基板ホルダ LED board holder	
2246048100		ヒート・シンク heat sink	
13529105	DSS310-55D223S	フィルター filter	
12399501	BL02RN-R62	インダクター inductor	
12569111	CR1/3N	リチウム電池 lithium battery	
2347017300		フラット・ケーブル Flat cable 11P	

MIDI IMPLEMENTATION

1. TRANSMITTED DATA

1.1 While in MANUAL, DIN SYNC, TIME BASS 48, 96, 120, INTERNAL or MTR mode

Status	Second	Third	Description
1111 1000			Timing Clock
1111 1010			Start
1111 1011			Continue
1111 1100			Stop

1.2 While in MIDI mode
No messages are transmitted.

2. RECOGNIZED RECEIVE DATA

2.1 While in MANUAL, DIN SYNC, TIME BASS 48, 96, 120, INTERNAL or MTR mode

No messages are recognized for its internal function.

2.2 While in MIDI mode

Status	Second	Third	Description
1111 1000			Timing Clock
1111 1010			Start
1111 1011			Continue
1111 1100			Stop

3. TRANSFERRED RECEIVE DATA

3.1 While in MANUAL, DIN SYNC, TIME BASS 48, 96, 120, INTERNAL or MTR mode

The following messages received from MIDI IN are directly transmitted to MIDI OUT.

Status	Second	Third	Description
100X nnnn	0kkk kkkk	0vvv vvvv	Note ON/OFF
1010 nnnn	0kkk kkkk	0vvv vvvv	Key after touch
1011 nnnn	0ccc cccc	0vvv vvvv	Control change, Mode message
110X nnnn	0vvv vvvv		Program change, Channel pressure /after touch
1110 nnnn	0vvv vvvv	0vvv vvvv	Pitch bender
1111 0000	0iii iiiii	0ddd dddd	 1111 0111 System Exclusive message
1111 0010	0ppp pppp	0ppp pppp	Song Position Pointer
1111 0011	0sss ssss		Song Select
1111 0000			Tune request
1111 0111			EOX
1111 1111			System reset

3.2 While in MIDI mode

The following messages received from MIDI IN in addition to messages described in 3.1 are directly transmitted to MIDI OUT.

Status	Second	Third	Description
1111 1000			Timing clock
1111 1010			Start
1111 1011			Continue
1111 1100			Stop