1. SPECIFICATIONS

1. KEYBOARD.............................................................................C – C 37 keys
2. TABLET..................................................................................SYNTH
   ● Ring Mod...................................................... Synthx INSTRUMENT.........................Synth Pitch (+700 cents)
   ● .................................................. Attack/Release
   ● .................................................. 32 Attack/Release
   ● .................................................. 16 Clock Speed
   ● .................................................. 16 Attack/Release
   ● .................................................. 8’ Decay
   ● .................................................. 8’ Attack/Release
   ● .................................................. 4 Decay

INSTRUMENT
   ● Electric Bass.............................................................32 Cutoff Freq.
   ● Tuba..............................................................................32 Cutoff Freq.
   ● Clavi...........................................................................16 Pitch Width
   ● Fuzz Guitar...............................................................16 Tone
   ● Horn..........................................................................16’ Cutoff Freq.
   ● Trumpet.......................................................................8’ Cutoff Freq.
   ● Clarinet.......................................................................8’ Tone
   ● Double Reed..............................................................8’ Tone
   ● String..........................................................................8 Attack
   ● Flute ..............................................................................4 Tone
   ● Hammered Percussion..................................................4 Decay

EFFECT
   ● Octave Down
   ● Octave Up
   ● Portamento.................................................................Time
   ● Keyboard Sensor.........................................................Intensity
   ● Joy Stick SYNTHE..................................................Range
   ● Joy Stick INSTRUMENT.................................................Range
   ● Delay Vibrato INSTRUMENT.........................................Delay, Depth, Speed
   ● Quarter Tone
   ● Multiple Trigger
   ● Key Hold
   ● Joy Stick........................................................................Pitch Bend, Vibrato Depth, Pink Noise Depth
   ● Joy Stick........................................................................LPF, Cutoff Freq. (SYNTHE)
   ● HPF, Cutoff Freq. (SYNTHE)
   ● Keyboard Sensor Control Switch..................................Pitch Bend Up, Vibrato Depth/Pitch Bend Down,
   ● SYNTHE/INSTRUMENT Balance
   ● Total Tune ± 250 cents
   ● Synth Pitch ± 700 cents
   ● Portamento Memontary Switch
   ● Power Switch and Volume
   ● OUT PUT.....................................................................Max/Synth Out 5Vp-p Max.
   ● Mix/Instrument Out 5Vp-p Max.
   ● KBD CV Out....................................................................Hz/V (0V ~ 8V)
   ● KBD TRIG Out.................................................................%
   ● Headphones Out
   ● VCO CV In......................................................................Hz/V (0V ~ 8V)
   ● EG TRIG In....................................................................%
   ● VCO FM In.....................................................................OCT/V (~ 3V ~ +3V)
   ● Synth VGF FcM In..........................................................OCT/V (~ -5V ~ +5V)
   ● POWER CONSUMPTION............................................17 Watts, Local Voltage, 50/60 Hz
   ● DIMENSIONS.........................................................774 x 400 x 173 (mm)
   ● WEIGHT.................................................................11 kg
5. BLOCK DIAGRAM
6. CHECK AND ADJUSTMENT
*Functions not included in steps 1 ~ 10 below, are to be checked aurally.

6-1 KBD CV adjustment
Use a 4-1/2 place digital voltmeter to measure the KBD CV OUT signal.
a. Measure output voltage first when you play key C-4, then when you play key C-3. The output voltage for C-3 should be exactly half that for C-4. Adjust the KBD CV Hi or Lo as necessary so that C-3 produces half the voltage of C-4.
b. Measure C-2 and then C-1 in the same way. Adjust the KBD CV Lo or Hi as necessary so that C-1 produces exactly half the voltage of C-2.
c. Repeat steps a and b as many times as necessary until the output voltage of each of C-1, C-2, C-3, and C-4 is exactly half that of the next.

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6-2 Instrument pitch adjustment

<table>
<thead>
<tr>
<th>Settings</th>
<th>Mix out</th>
<th>WT-10A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>Clarinet</td>
<td></td>
</tr>
<tr>
<td>Balance</td>
<td>Instrument</td>
<td></td>
</tr>
<tr>
<td>Tune</td>
<td>Center</td>
<td></td>
</tr>
</tbody>
</table>

a. Play C-4 and adjust Inst Pitch Hi (on rear panel) so WT-10A meter indicates 0 cent.
b. Play C-1 and adjust Inst Pitch Lo to 0 cent.
c. Repeat steps a and b several times as necessary so that C-1 through C-4 are within ±3 cents.
d. Check that pitch remains within ±5 cents at Octave Up and Octave Down positions.

6-3 Synthe pitch adjustment

<table>
<thead>
<tr>
<th>Settings</th>
<th>Mix out</th>
<th>WT-10A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>8' Rect. (A/R Min.)</td>
<td></td>
</tr>
<tr>
<td>Balance</td>
<td>Synthe</td>
<td></td>
</tr>
<tr>
<td>Synthe Pitch</td>
<td>Center</td>
<td></td>
</tr>
</tbody>
</table>

Follow same procedure as for Inst Pitch, but use Synthe Pitch Hi and Lo or Hi's for adjustment.

6-4 Instrument LPF fc ADJ.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Mix out</th>
<th>Oscilloscope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>Trumpet (fc max.)</td>
<td></td>
</tr>
<tr>
<td>Volume</td>
<td>Max.</td>
<td></td>
</tr>
<tr>
<td>Balance</td>
<td>Instrument</td>
<td></td>
</tr>
</tbody>
</table>

Play C-2 and after the waveform has stopped moving, adjust the Inst LPF fc so that the second peak in the waveform is at 400msec. Refer to fig-1.

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Fig. 1
6-5 Synthe HPF fc ADJ.

Settings
Mix out | Oscilloscope
Mode | 32 \( \Leftrightarrow \) (A/R min.)
Volume | Max.
Balance | Synth

Filter joy stick

Play C-1 and adjust HPF fc to the setting that produces the lowest sound.

6-6 Synthe LPF fc ADJ.

Settings
Mix out | Oscilloscope
Mode | 8 \( \Leftrightarrow \) (A/R min.)
Volume | Max.
Balance | Synth

Filter joy stick

Play C-1 and adjust so that the 6th peak in the waveform is at 1sec. Refer to fig. 2.

6-7 Ring Mod Adjustment

Settings
Mix out | Oscilloscope
Mode | 8 \( \Leftrightarrow \) (A/R min.)
and RING MOD.
Balance | Synth

Filter joy stick

a. Adjust Ring bias to the setting that gives minimum output when you play a key (any key will do).
b. At that setting, turn on Horn 16° and adjust Ring Level so that the volume is the same as when Ring Mod is turned off.

6-8 Quarter Tone and Key Hold

Settings
Mix out | Amp
Mode | Clarinet
Quarter Tone | On
Key Hold | On

a. Play B-3 (for example) and adjust the Quarter Tone Vr so that when you release the key the pitch does not change.
b. Turn Key Hold off, play G-3 and B-3 at the same time and compare the pitch to that of A-3. Repeat adjustment a (above) as many times as necessary so that the pitch matches A-3.

6-9 KBD Sensor

Settings
Mix out | Amp, WT-10A
Mode | 8 \( \Leftrightarrow \)
Mode | Clarinet
KBD Sensor | On (Intensity – max.)

With KBD SENSOR switches at \( \Leftrightarrow \) and \( +5 \), adjust the KBD Sensor Vr so that both sounds rise in pitch by 6 degrees. (Up to 5 cents difference between the pitch of the two sounds is OK.)

6-10 Noise Level

Settings
Mix out | Oscilloscope
Mode | Noise (A/R min.)
Mode | 16 \( \Leftrightarrow \) (A/R min.)
Balance | Synth

Filter joy stick

Play C-2 and adjust so that the noise level is the same as the PW waveform signal level. (This is easy to tell by listening to the sound.)
7. PARTS LIST
(Refer to structural diagram for parts list)

- **CARBON RESISTORS**
  not listed

- **METAL FILM RESISTORS**
  1/4W 1% 100Ω x 3
  403Ω x 19
  427Ω x 22
  1.00KΩ x 1
  2.00KΩ x 2
  2.94KΩ x 1
  4.27KΩ x 1
  5.11KΩ x 3
  7.32KΩ x 1
  12.4KΩ x 2
  24.9KΩ x 2
  61.9KΩ x 18
  75.0KΩ x 2
  100KΩ x 11
  110KΩ x 3
  121KΩ x 8
  150KΩ x 4
  301KΩ x 6
  619KΩ x 2
  49.9KΩ x 2

- **SOLID RESISTORS**
  1/4W 10% 10MΩ x 5
  22MΩ x 1

- **MYLAR CAPACITORS**
  50V - 0.001μF x 7
  0.0022μF x 4
  0.0047μF x 7
  0.01μF x 6
  0.012μF x 3
  0.015μF x 1
  0.022μF x 8
  0.027μF x 2
  0.047μF x 2
  0.056μF x 4
  0.068μF x 3
  0.1μF x 7

- **CERAMIC CAPACITORS**
  50V - 22pF x 1
  100pF x 5
  270pF x 1
  330pF x 1
  470pF x 3
  0.0047μF x 6
  25V - 0.1μF x 4

- **ELECTROLYTIC CAPACITORS**
  50V - 1μF x 21
  25V - 22μF x 1
  3.3μF x 2
  4.7μF x 1
  16V - 10μF x 74
  22μF x 2
  33μF x 3
  100μF x 2
  220μF x 5
  25V - 220μF x 1
  2200μF x 2

- **TANTALUM CAPACITORS**
  16V - 0.47μF x 1

- **POLYPROPYLENE CAPACITORS**
  200V - 0.22μF x 1

- **POLYSTYRENE CAPACITORS**
  50V - 3000pF x 2

- **TRANSISTORS**
  2SA-564A(S) x 4
  684S x 1
  2SC-945(L/K) x 22
  (special selected)
  2SC-1384S x 1
  1583G x 4
  1685S x 22
  644R x 1

- **FET**
  2SK-30A(GR) x 8
  (O) x 2

- **DIODES**
  1S-1555 x 81
  1885 x 6

- **LED**
  GL-3AR-2 x 2

- **PHOTOCOUPLER**
  HTVP-873-G35-911 x 1
  (special selected)

- **IC**
  4558DV x 38
  CA-3140E x 3
  MC-14013 x 4
  μPC-14315 x 1
  μA7915 x 1
  EHM KORG35 x 12
  (special selected)

- **SEMI-FIXED RESISTORS**
  SR29D 470Ω x 1
  1KΩ x 1
  10KΩ x 7
  100KΩ x 5

- **ROTARY VARIABLE RESISTORS**
  VM602 10KΩ x 9
  100KΩ x 13
  1MΩ x 5
  2MΩ x 1
  2MA x 1

- **CONNECTORS**
  MLR-03 TRC-1 x 1
  MLP-03TRC-60 x 1
  ⊡ 3P x 4
  4P x 2
  6P x 1
  7P x 1
  10P x 1
  11P x 1