Beyond Sampling, Beyond Synthesis

The DSS-1 is a new kind of digital keyboard that blurs the boundaries between sampling and synthesis, between reproduction and improvisation. Any audio input can serve as your starting point. From a microphone, tape, even another synth. You may also create completely new waveforms by "drawing" them or specifying their harmonic composition. Blend and edit your waveforms to alter their timbre any way you like. Never has synthesis been this fast, easy or versatile. You can select any of 32 sound programs in a flash. No waiting like with conventional sampling systems.

Three Ways to Create Sounds
Conventional sampling units simply record and reproduce sounds. The DSS-1 lets you use sampled sounds as your raw material for the creation of new sounds. Or you can synthesize waveforms from scratch by specifying the levels of 128 harmonics. You can even "draw" a waveform by moving a data entry slider up and down while the display indicates the time axis position in the full-wave cycle. That's just the beginning. Five powerful functions—"trim," "reverse," "link," "mix," and "view/edit sample data"—give you real creative freedom. Shape the data to fit your musical mold. The "auto-zero cross search" and "cross-fade" commands assure a smooth loop for your waveform. You can assign waveform samples to up to 16 sections of the keyboard, enabling more natural response. Operation is simplified by an interactive programming system using a large LCD display.

Sixteen Waveforms and 32 Programs at Your Fingertips
The DSS-1's internal memory holds sixteen waveforms of your creation. There are two "oscillators," called OSC1 and OSC2, each of which can be assigned one of the sixteen waveforms. You can detune these two oscillators, change octaves, set them at regular intervals, and alter their relative volume levels. Then adjust the VCF, VCA and EG parameters to determine the final sound program. Advanced sync effects are possible between OSC1 and OSC2. You can even produce distortion by varying digital-to-analog converter resolution. Up to 32 programs can reside in internal memory. Change sounds instantly by simply selecting a different program number.

Four Sampling/Synth Systems per Disk
In the world of Korg's DSS-1, sixteen waveforms and 32 programs make up one "system." Each pocket-size floppy disk holds four of these sampling/synth systems. It's like having four completely different synthesizers per disk. Contrast this with conventional sampling keyboards which tend to use one whole disk for a single sound.
Start with the Basic Waveform

1. The starting point for sound synthesis.
   - The raw materials.
     There are three ways to obtain a waveform:
     - Sampling
     - Harmonic Synthesis
     - "Waveform Drawing"

   - Editing the waveform.
     Five editing functions enable manipulation of the waveform.
     - Trim
     - Reverse
     - Mix
     - Link
     - View/Edit Sample Data

   - Assignment of waveforms to keyboard split sections.
     Different waveform samples can be assigned to different portions of the keyboard, looped and grouped make one complete sound source.

   - Makes one complete sound source.

2. Ways to obtain waveforms.
   - Sampling: As in a conventional sampling keyboard, this makes a digital recording of an audio input signal from a microphone or other external source. Sampling allows accurate storage and reproduction of complex, changing waveforms like that of a piano.
   - Harmonic Synthesis: Here you individually set the level of 128 harmonics, using the number keys.
     This is handy for synthesizing relatively conventional "regular" waveforms.
   - Drawing: The display indicates elapsed time, while you move the data entry slider up and down to "draw" the waveform. Useful for producing complex, irregular waveforms.

3. Editing the Waveform.
   - Trim: This lets you chop off any portion of a waveform for use.
     (Normally applied to sampled material.)

     To be used as the starting waveform for synthesis.

The truncate function is also handy for obtaining a single full-wave (like you get with the harmonic synthesis and drawing methods) from a sampled input.
### DSS-1 MIDI DATA

**SEND DATA**
- NOTE ON
- NOTE OFF
- CONTROL CHANGE
  - NO. 1 OSC MODULATION

**RECEIVE DATA**
- NOTE ON
- NOTE OFF
- CONTROL CHANGE
  - NO. 1 OSC MODULATION
  - NO. 2 OSC MODULATION
  - NO. 64 SUSTAIN

**NO. 2 VCF MODULATION**
- NO. 64 SUSTAIN FOOT SWITCH
- PROGRAM CHANGE
- CHANNEL PRESSURE (AFTER TOUCH)

**OPTIONS**
- PS-1 PEDAL SWITCH
- PS-2 PEDAL SWITCH
- TW-500 TWIN CABLE (3m)
- DS-1 DAMPER SWITCH
- KH-1000 DYNAMIC STEREO HEADPHONES
- HC-DSS HARD CASE
- MIDI CABLE (7m/10m/12m)
- MF-2DD MICRO FLOPPY DISKS
- SOUND PROGRAM LIBRARY

### DSS-1 SPECIFICATIONS

- **KEYBOARD:** C–C (88) Keys, Velocity, After Touch
- **CONTROLLERS:** Joystick (X Axis: OSC/CVF FC Bend, Y Axis: OSC Modulation, –Y Axis: VCF Modulation), Program Up/Down, Sustain Damper Jack
- **CONFIGURATION:** 8 Voices, 16 Oscillators, (2 Oscillators per Voice), 8 VCF Modules, 8 VCA Modules
- **SOUND SOURCES:** Waveforms Obtained by Sampling, 128 Harmonic Synthesis, or "Drawing" can be edited, assigned to sections of the keyboard and looped. 12-bit quantization.
- **Sampling Frequencies and Times:** 16kHz, 16s, 24kHz, 1s, 32kHz, 8s, 48kHz, 5s (can be used together as one sound source), Number of Keyboard Split Points: Up to 16
- **NUMBER OF SOUND SOURCES:** Up to 16 in internal wave RAM, Up to 120 per Disk
- **EFFECTS:** Digital Delay x2, Equalizer High & Low (All Programmable)
- **NUMBER OF PROGRAMS:** 32 in memory, 128 on disk
- **BUILT-IN DISK DRIVE:** Takes 3.5-inch, Double Sided, Double Density (1MB unformatted) Floppy Disks, 770K PCM Data Storage Capacity per Disk
- **SUPPLIED ACCESSORIES:** Floppy Disks x4, AC Power Cord
- **DIMENSIONS:** 1171 (W) x 438 (D) x 123 (H) mm
- **WEIGHT:** 18.5kg

### MF-2DD MICRO FLOPPY DISK

### PS-1 PEDAL SWITCH

### PS-2 PEDAL SWITCH

### DS-1 DAMPER SWITCH

### KH-1000 DYNAMIC STEREO HEADPHONES

### HC-DSS HARD CASE

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KORG INC., 15-12, Shintoshindencho, Suginami-ku, Tokyo, Japan.
The "auto-zero cross search" function can be used to make sure that the truncated waveform is cut off at the zero cross point, thereby enabling smooth linking and looping.

Since the truncate function allows you to get rid of unneeded portions of a sample, it saves memory and disk space.

**Reverse:** Reverses the waveform so it sounds like a tape played backward. (Usually used with sampled materials.)

**Link:** Joins two waveforms together.

You can also link single full-waves created with harmonic synthesis or drawing. You can make longer waveforms by linking as many times as you want.

The "splice cross-fade" function can help assure a smooth transition between dissimilar waveforms. Similarly, the "auto-level adjust" function minimizes unnatural effects at the crossover between different timbres.

**Mix:** This mixes two waveforms, producing the same kind of output that you would obtain with an audio mixing console. Of course, you can also mix single full-waves. When mixing you can adjust the volume levels and detune (or tune) the waveforms relative to each other.

For View/Edit Sample Data: Lets you examine and modify one "data word" at a time in "wave RAM" memory where the basic waveforms are stored. Editing is a simple matter of moving a data entry slider.

Some waveforms may be missing a tail end, resulting in an unnatural crossover if looped as is. Using the view/edit sample function you can process the end of the waveform to assure a loop with smooth crossover.

4. Assignment of waveforms to keyboard split sections.

Different waveforms (produced by steps 2 and 3 above) can be assigned to different portions of the keyboard, then looped and grouped together to make one complete sound source. (The keyboard may be split into a maximum of sixteen sections.)

- This procedure is necessary to produce realistic results with sampled sounds. The more samples you take (at different pitches), the more natural the effect will be.
- Single full-waves created by harmonic synthesis or drawing are looped and assigned automatically to the entire keyboard. Therefore this procedure is not required unless you edit the waveforms.
- The auto-cross search function can be used to assure smooth crossover for the loop.
- Looping may also be assisted by the "cross-fade" and "back-and-forth" functions. (Cross-fade helps avoid unnatural effects while back-and-forth is used to produce special effects.)

Cross-Fade used to loop the waveform below:

Back-and-Forth used to loop waveform below:

Pitch, timbre and volume can be adjusted for each keyboard split section, thereby avoiding unnatural results regardless of which notes you play.
New Parameters Mold the Sound to Fit Your Image

OSC

16 SYNC MODE, D/A RESOLUTION
The sync mode forces OSC2 to follow OSC1; very effective for metallic and reed sounds. Be lowering D/A (digital-to-analog converter) resolution from 12 bits to 10, 8, 7, or 6, you can cause upper harmonics to be added to the sound.

VCF

31 VCF MODE
Filter slope is switchable between a steep - 24dB/oct and a more gentle - 12dB/oct. This effectively changes the brightness of the sound.

VCA

37 VCA DEC KBTRACK
Reduces decay time as you play higher notes on the keyboard. Effective for imitating piano sounds.

VELOCITY SENS

41 AUTO BEND INT
Controls the amount of pitch bend that is dependent upon keyboard velocity. Handy for chopper bass and related effects.

43 VCF EG (ATK_DEC.SLP)
Controls the amount of timbre change that is dependent upon keyboard velocity. You get bright sound at the beginning when you play hard. But when you play soft the sound gradually gets brighter. The decay and slope parameters allow you to obtain more rapid tone color changes on the attack and after the break-point when you play harder, much like on a piano.

45 VCA EG (ATK_DEC.SLP)
Determines the amount of volume change that is dependent upon keyboard velocity. This is a tool to obtain a more rapid attack when you play harder and a slower attack when you play softer. Decay and slope times also decrease when you play harder.

46 VELOCITY SWITCH
This allows you to reverse the mix levels of the two oscillators (as set by parameter 14) depending on keyboard velocity. You can have strings when you play softly and piano when you play loud. You can also determine the velocity value at which the switch will occur.

KEY ASSIGN

64 UNISON DETUNE & VOICES
Especially valuable for bass and reed synthesizer effects, this lets you determine the number of voices in the unison mode and adjust detuning to obtain and fatter sound.

DDL-2 CONTROL

91 INPUT SIGNAL SELECT
There are two built-in digital delays. You can either apply the source signal to DDL-2 directly or use the output of DDL-1 for input to DDL-2.

These two delays can be used to create many sophisticated effects.
Beyond Sampling, Beyond Synthesis

The DSS-1 is a new kind of digital keyboard that blurs the boundaries between sampling and synthesis, between reproduction and improvisation. Any audio input can serve as your starting point. From a microphone, tape, even another synth. You may also create completely new waveforms by “drawing” them or specifying their harmonic composition. Blend and edit your waveforms to alter their timbre any way you like. Never has synthesis been this fast, easy or versatile. You can select any of 32 sound programs in a flash. No waiting like with conventional sampling systems.

Three Ways to Create Sounds

Conventional sampling units simply record and reproduce sounds. The DSS-1 lets you use sampled sounds as your raw material for the creation of new sounds. Or you can synthesize waveforms from scratch by specifying the levels of 128 harmonics. You can even “draw” a waveform by moving a data entry slider up and down while the display indicates the time axis position in the full-wave cycle. That’s just the beginning. Five powerful functions—truncation, reverse, link, mix, and view/edit sample data—give you real creative freedom. Shape the data to fit your musical mold. The “auto-zero cross search” and “cross-fade” commands assure a smooth loop for your waveform. You can assign waveform samples to up to 16 sections of the keyboard, enabling more natural response. Operation is simplified by an interactive programming system using a large LCD display.

Sixteen Waveforms and 32 Programs at Your Fingertips

The DSS-1’s internal memory holds sixteen waveforms of your creation. There are two “oscillators,” called OSC1 and OSC2, each of which can be assigned one of the sixteen waveforms. You can detune these two oscillators, change octaves, set them at regular intervals, and alter their relative volume levels. Then adjust the VCF, VCA and EG parameters to determine the final sound program. Advanced sync effects are possible between OSC1 and OSC2. You can even produce distortion by varying digital-to-analog converter resolution. Up to 32 programs can reside in internal memory. Change sounds instantly by simply selecting a different program number. The DSS-1 goes so much further than conventional sampling keyboards that it will change the way you think about synthesis and synthesizers.

Four Sampling/Synth Systems per Disk

In the world of Korg’s DSS-1, sixteen waveforms and 32 programs make up one “system.” Each pocket-size floppy disk holds four of the sampling/synth systems. It’s like having four completely different synthesizers per disk. Contrast this with conventional sampling keyboards which tend to use one whole disk for a single sound.
The "auto-zero cross search" function can be used to make sure that the truncated waveform is cut off at the zero cross point, thereby enabling smooth linking and looping.

Since the truncate function allows you to get rid of unneeded portions of a sample, it saves memory and disk space.

**Reverse:** Reverses the waveform so it sounds like a tape played backward. (Usually used with sampled material.)

Original waveform.  Reversed to sound like backward tape playback.

**Link:** Joins two waveforms together.

Piano attack.  Strings sustain.  Piano attack strings sustain.

You can also link single full-waves created with harmonic synthesis or drawing. You can make longer waveforms by linking as many times as you want.

Sawtooth half-wave  Square-wave half-wave  Linked

The "splice cross-fade" function can help assure a smooth transition between dissimilar waveforms. Similarly, the "auto-level adjust" function minimizes unnatural effects at the crossover between different timbres.

**Mix:** This mixes two waveforms, producing the same kind of output that you would obtain with an audio mixing console. Of course, you can also mix single full-waves. When mixing you can adjust the volume levels and detune (or tune) the waveforms relative to each other.

Square wave  Sawtooth wave  Mixed sawtooth

Brass waveform  Strings waveform  Mix of brass and strings.

4. Assignment of waveforms to keyboard split sections.

Different waveforms (produced by steps 2 and 3 above) can be assigned to different portions of the keyboard, then looped and grouped together to make one complete sound source. (The keyboard may be split into a maximum of sixteen sections.)

This procedure is necessary to produce realistic results with sampled sounds. The more samples you take (at different pitches), the more natural the effect will be.

Single full-waves created by harmonic synthesis or drawing are looped and assigned automatically to the entire keyboard. Therefore this procedure is not required unless you edit the waveforms.

The auto-cross search function can be used to assure smooth crossover for the loop. Looping may also be assisted by the "cross-fade" and "back-and-forth" functions. (Cross-fade helps avoid unnatural effects while back-and-forth is used to produce special effects.)

Cross-Fade used to loop the waveform below:

Back-and-Forth used to loop waveform below:

Pitch, timbre and volume can be adjusted for each keyboard split section, thereby avoiding unnatural results regardless of which notes you play.
New Parameters Mold the Sound to Fit Your Image

**OSC**

**16 SYNC MODE, D/A RESOLUTION**
The sync mode forces OSC2 to follow OSC1; very effective for metallic and reed sounds. Be lowering D/A (digital-to-analog converter) resolution from 12 bits to 10, 8, 7, or 6, you can cause upper harmonics to be added to the sound.

**VCF**

**31 VCF MODE**
Filter slope is switchable between a steep — 24dB/oct and a more gentle — 12dB/oct. This effectively changes the brightness of the sound.

**VCA**

**37 VCA DEC KBDTRACK**
Reduces decay time as you play higher notes on the keyboard. Effective for imitating piano sounds.

**VELOCITY SENS**

**41 AUTO BEND INT**
Controls the amount of pitch bend that is dependent upon keyboard velocity. Handy for chopper bass and related effects.

**43 VCF EG (ATK,DEC,SLP)**
Controls the amount of timbre change that is dependent upon keyboard velocity. You get bright sound at the beginning when you play hard. But when you play soft the sound gradually gets brighter. The decay and slope parameters allow you to obtain more rapid tone color changes on the attack and after the break-point when you play harder, much like on a piano.

**45 VCA EG (ATK,DEC,SLP)**
Determines the amount of volume change that is dependent upon keyboard velocity. This allows you to obtain a more rapid attack when you play harder and a slower attack when you play softer. Decay and slope times also decrease when you play harder.

**46 VELOCITY SWITCH**
This allows you to reverse the mix levels of the two oscillators (as set by parameter 14) depending on keyboard velocity. You can have strings when you play softly and piano when you play loud. You can also determine the velocity value at which the switch will occur.

**KEY ASSIGN**

**64 UNISON DETUNE & VOICES**
Especially valuable for bass and reed synthesizer effects, this lets you determine the number of voices in the unison mode and adjust detuning to obtain and fatter sound.

**DDL-2 CONTROL**

**91 INPUT SIGNAL SELECT**
There are two built-in digital delays. You can either apply the source signal to DDL-2 directly or use the output of DDL-1 for input to DDL-2.

These two delays can be used to create many sophisticated effects.
1. The starting point for sound synthesis.

- The raw materials.
  There are three ways to obtain a waveform:
  
  - Sampling
  - Harmonic Synthesis
  - "Waveform Drawing"

- Editing the waveform.
  Five editing functions enable manipulation of the waveform.

  - Truncate
  - Reverse
  - Mix
  - Link
  - View/Edit Sample Data

- Assignment of waveforms to keyboard split sections.
  Different waveform samples can be assigned to different portions of
  the keyboard, looped and grouped make one complete sound source.

2. Ways to obtain waveforms.

- **Sampling**: As in a conventional sampling keyboard, this makes a
  digital recording of an audio input signal from a microphone or other
  external source. Sampling allows accurate storage and reproduction of
  complex, changing waveforms like that of a piano.

- **Harmonic Synthesis**: Here you individually set the level of 128
  harmonics, using the number keys. This is handy for synthesizing relatively
  conventional "regular" waveforms.

- **Drawing**: The display indicates elapsed time, while you move the
  data entry slider up an down to "draw" the waveform. Useful for
  producing complex, irregular waveforms.

3. Editing the Waveform.

- **Truncate**: This lets you chop off any portion of a waveform for use.
  (Normally applied to sampled material.)

  To be used as the starting
  waveform for synthesis.

  This section is cut out.

The truncate function is also handy for obtaining a single full-wave
like you get with the harmonic synthesis and drawing methods) from
a sampled input.
DSS-1 MIDI DATA

SEND DATA
- NOTE ON
- NOTE OFF
- CONTROL CHANGE
  NO. 1 OSC MODULATION
- NO. 2 VCF MODULATION
- NO. 64 SUSTAIN FOOT SWITCH
- PROGRAM CHANGE
- CHANNEL PRESSURE (AFTER TOUCH)
- PITCH BEND
- SYSTEM EXCLUSIVE

RECEIVE DATA
- NOTE ON
- NOTE OFF
- CONTROL CHANGE
  NO. 1 OSC MODULATION
  NO. 2 VCF MODULATION
  NO. 64 SUSTAIN
- PROGRAM CHANGE
- CHANNEL PRESSURE (AFTER TOUCH)
- PITCH BEND
- ALL NOTES OFF
- OMNI MODE OFF
- OMNI MODE ON
- LOCAL CONTROL ON
- LOCAL CONTROL OFF
- ACTIVE SENSING
- SYSTEM EXCLUSIVE

DSS-1 SPECIFICATIONS

- KEYBOARD: C-61 Keys, Velocity, After Touch
- CONTROLLERS: Joystick (X Axis: OSC/VCF FC Bend, + Y Axis: DSS Modulation, - Y Axis: VCF Modulation), Program Up/Down, Sustain Damper Jack
- CONFIGURATION: 8 Voices, 16 Oscillators, (2 Oscillators per Voice), 8 VCF Modules, 8 VCA Modules
- SOUND SOURCES: Waveforms Obtained by Sampling, 128 Harmonic Synthesis, or “Drawing” can be edited, assigned to sections of the keyboard and looped, 12-bit quantization. Sampling Frequencies and Times: 16kHz, 16s, 24kHz, 11s, 32kHz, 8s, 48kHz, 5.5s (can be used together as one sound source), Number of Keyboard Split Points: Up to 16
- NUMBER OF SOUND SOURCES: Up to 16 in internal wave RAM, Up to 120 per Disk
- EFFECTS: Digital Delay x2, Equalizer
- HIGH & LOW (All Programmable)
- NUMBER OF PROGRAMS: 64 in memory, 128 on disk
- BUILT-IN DISK DRIVE: Takes 3.5-inch, Double Sided, Double Density (1MB unformatted) Floppy Disks, 720K PCM Data Storage Capacity per Disk
- SUPPLIED ACCESSORIES: Floppy Disks x4, AC Power Cord
- DIMENSIONS: 1171 (W) x 433 (D) x 123 (H) mm
- WEIGHT: 15kg

OPTIONS
- PS-1 PEDAL SWITCH
- PS-2 PEDAL SWITCH
- TWC-030 TWIN CABLE (3m)
- DS-1 DAMPER SWITCH
- KH-1000 DYNAMIC STEREO HEADPHONES
- HC-DSS HARD CASE
- MIDI CABLE (7m/10m/12m)
- MF-2DD MICRO FLOPPY DISKS
- SOUND PROGRAM LIBRARY

MF-2DD MICRO FLOPPY DISK
PS-1 PEDAL SWITCH
PS-2 PEDAL SWITCH
DS-1 DAMPER SWITCH
KH-1000 DYNAMIC STEREO HEADPHONES
HC-DSS HARD CASE

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New Parameters Mold the Sound to Fit Your Image

**OSC**

**16 SYNC MODE, D/A RESOLUTION**
The sync mode forces OSC2 to follow OSC1; very effective for metallic and reed sounds. By lowering D/A (digital-to-analog converter) resolution from 12 bits to 10, 8, 7, or 6, you can cause upper harmonics to be added to the sound.

**VCF**

**31 VCF MODE**
Filter slope is switchable between a steep - 24dB/oct and a more gentle - 12dB/oct. This effectively changes the brightness of the sound.

**VCA**

**37 VCA DEC KBDTRACK**
Reduces decay time as you play higher notes on the keyboard. Effective for imitating piano sounds.

**VELOCITY SENS**

**41 AUTO BEND INT**
Controls the amount of pitch bend that is dependent upon keyboard velocity. Handy for heavier bass and related effects.

**43 VCF EG (ATK,DEC,SLP)**
Controls the amount of timbre change that is dependent upon keyboard velocity. You get bright sound at the beginning when you play hard. But when you play soft the sound gradually gets brighter. The decay and slope parameters allow you to obtain more rapid tone color changes on the attack and after the break-point when you play harder, much like on a piano.

**45 VCA EG (ATK,DEC,SLP)**
Determines the amount of volume change that is dependent upon keyboard velocity. This allows you to obtain a more rapid attack when you play harder and a slower attack when you play softer. Decay and slope times also decrease when you play harder.

**46 VELOCITY SWITCH**
This allows you to reverse the mix levels of the two oscillators (as set by parameter 14) depending on keyboard velocity. You can have strings when you play softly and piano when you play loud. You can also determine the velocity value at which the switch will occur.

**KEY ASSIGN**

**64 UNISON DETUNE & VOICES**
Especially valuable for bass and reed synthesizer effects, this lets you determine the number of voices in the unison mode and adjust detuning to obtain and fatter sound.

**DDL-2 CONTROL**

**91 INPUT SIGNAL SELECT**
There are two built-in digital delays. You can either use the source signal to DDL-2 directly or use the output of DDL-1 for input to DDL-2.

These two delays can be used to create many sophisticated effects.
The "auto-zero cross search" function can be used to make sure that the truncated waveform is cut off at the zero cross point, thereby enabling smooth linking and looping.

Since the truncate function allows you to get rid of unneeded portions of a sample, it saves memory and disk space.

- **Reverse:** Reverses the waveform so it sounds like a tape played backward. (Usually used with sampled material.)

- **Link:** Joins two waveforms together.

You can also link single full-waves created with harmonic synthesis or drawing. You can make longer waveforms by linking as many times as you want.

The "splice cross-fade" function can help assure a smooth transition between dissimilar waveforms. Similarly, the "auto-level adjust" function minimizes unnatural effects at the crossover between different timbres.

- **Mix:** This mixes two waveforms, producing the same kind of output that you would obtain with an audio mixing console. Of course, you can also mix single full-waves. When mixing you can adjust the volume levels and detune (or tune) the waveforms relative to each other.

- **View/Edit Sample Data:** Lets you examine and modify one "data word" at a time in "wave RAM" memory where the basic waveforms are stored. Editing is a simple matter of moving a data entry slider.

Some waveforms may be missing a tail end, resulting in an unnatural crossover if looped as is. Using the view/edit sample function you can process the end of the waveform to assure a loop with smooth crossover.

### 4. Assignment of waveforms to keyboard split sections.

Different waveforms (produced by steps 2 and 3 above) can be assigned to different portions of the keyboard, then looped and grouped together to make one complete sound source. (The keyboard may be split into a maximum of sixteen sections.)

- This procedure is necessary to produce realistic results with sampled sounds. The more samples you take (at different pitches), the more natural the effect will be.
- Single full-waves created by harmonic synthesis or drawing are looped and assigned automatically to the entire keyboard. Therefore this procedure is not required unless you edit the waveforms.
- The auto-cross search function can be used to assure smooth crossover for the loop. Looping may also be assisted by the "cross-fade" and "back-and-forth" functions. (Cross-fade helps avoid unnatural effects while back-and-forth is used to produce special effects.)

**Cross-Fade used to loop the waveform below:**

**Back-and-Forth used to loop waveform below:**

Pitch, timbre and volume can be adjusted for each keyboard split section, thereby avoiding unnatural results regardless of which notes you play.
**DSS-1 MIDI DATA**

**SEND DATA**
- NOTE ON
- NOTE OFF
- CONTROL CHANGE
- NO. 1 OSC MODULATION
- NO. 2 VCF MODULATION
- NO. 64 SUSTAIN FOOT SWITCH
- PROGRAM CHANGE
- CHANNEL PRESSURE (AFTER TOUCH)
- PITCH BEND
- SYSTEM EXCLUSIVE

**RECEIVE DATA**
- NOTE ON
- NOTE OFF
- CONTROL CHANGE
- NO. 1 OSC MODULATION
- NO. 2 VCF MODULATION
- NO. 64 SUSTAIN
- PROGRAM CHANGE
- CHANNEL PRESSURE (AFTER TOUCH)
- PITCH BEND
- ALL NOTES OFF
- QMNI MODE OFF
- QMNI MODE ON
- LOCAL CONTROL ON
- LOCAL CONTROL OFF
- ACTIVE SENSING
- SYSTEM EXCLUSIVE

**DSS-1 SPECIFICATIONS**
- KEYBOARD: C-61 Keys, Velocity, After Touch
- CONFIGURATION: 8 Voices, 16 Oscillators, (2 Oscillators per Voice), 8 VCF Modules, 8 VCA Modules
- SOUND SOURCES: Waveforms Obtained by Sampling, 128 Harmonic Synthesis, or "Drawing" can be edited, assigned to sections of the keyboard and looped. 12-bit quantization.
- Sampling Frequencies and Times: 16kHz, 16s, 24kHz, 11s, 32kHz, 8s, 48kHz, 5s (can be used together as one sound source). Number of Keyboard Split Points: Up to 16.
- NUMBER OF SOUND SOURCES: Up to 16 in internal wave RAM. Up to 120 per disk.
- EFFECTS: Digital Delay x2, Equalizer HIGH & LOW (All Programmable)
- NUMBER OF PROGRAMS: 32 in memory, 128 on disk
- BUILT-IN DISK DRIVE: Takes 3.5-inch, Double Sided, Double Density (1MB unformatted) Floppy Disks, 770K PCM Data Storage Capacity per Disk
- SUPPLIED ACCESSORIES: Floppy Disks x4, AC Power Cord
- DIMENSIONS: 1171 (W) x 438 (D) x 123 (H) mm
- WEIGHT: 18.3kg

**OPTIONS**
- PS-1 PEDAL SWITCH
- PS-2 PEDAL SWITCH
- TWC-030 TWIN CABLE (3m)
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- HC-DSS HARD CASE
- MF-2DD MICRO FLOPPY DISKS
- SOUND PROGRAM LIBRARY

**MF-2DD MICRO FLOPPY DISK**

**PS-1 PEDAL SWITCH**

**PS-2 PEDAL SWITCH**

**DS-1 DAMPER SWITCH**

**KH-1000 DYNAMIC STEREO HEADPHONES**

**HC-DSS HARD CASE**

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1. The starting point for sound synthesis.

- The raw materials.
  There are three ways to obtain a waveform:

  - Sampling
  - Harmonic Synthesis
  - "Waveform Drawing"

- Editing the waveform.
  Five editing functions enable manipulation of the waveform.

  - Truncate
  - Reverse
  - Link
  - Mix
  - View/Edit Sample Data

- Assignment of waveforms to keyboard split sections.
  Different waveform samples can be assigned to different portions of the keyboard, looped and grouped make one complete sound source.

2. Ways to obtain waveforms.

**Sampling:** As in a conventional sampling keyboard, this makes a digital recording of an audio input signal from a microphone or other external source. Sampling allows accurate storage and reproduction of complex, changing waveforms like that of a piano.

**Harmonic Synthesis:** Here you individually set the level of 128 harmonics, using the number keys. This is handy for synthesizing relatively conventional "regular" waveforms.

**Drawing:** The display indicates elapsed time, while you move the data entry slider up and down to "draw" the waveform. Useful for producing complex, irregular waveforms.

3. Editing the Waveform.

- **Truncate:** This lets you chop off any portion of a waveform for use. (Normally applied to sampled material.)

  ![Truncate Example](image)

  To be used as the starting waveform for synthesis.

  This section is cut out.

  The truncate function is also handy for obtaining a single full-wave (like you get with the harmonic synthesis and drawing methods) from a sampled input.