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This document is re-typed by Enzo.F / Jeroen because the original pdf, which contains pixelbased scans from the Akai originals, has a bad quality for reading, searching and copying.

Comments are appreciated "jeroen02 at hotmail dot com"

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*C>PIP LST:=S7MIDI.DOC[TB]
MIDI SYSTEM EXCLUSIVE DATA FORMAT FOR S700
30 JUN 86. Copyright Akai Ltd. Gailus faciebat.

RECOGNIZED BY S700:

                EXCLUSIVE AKAI:
                                                          MNEMONIC
Request for overall settings.                             ROVS
Overall settings.                                         OVS
Request for sample parameters.                            RSPRM
Sample parameters.                                        SPRM
System exclusive common reception enable.                 SECRE
System exclusive common reception disable.                SECRD


                SYSTEM EXCLUSIVE COMMON:

                                                          MNEMOMIC
Request sample dump                                       RSD
Abort Sample dump.                                        ASD
Not acknowledge sampel block. (Request retransmission)    NAKS
Acknowledge sample block. (or sample header)              ACKS
Sample dump.                                              SD


Transmitted by S900:
                Akai exclusive.
                                                          MNEMONIC
Overall settings.                                         DOVS
Sample parameters                                         DSP

                Exclusive common:
Sample dump.                                              SD
Abort sample dump.                                        ASD
Not ack sample block.                                     NAKS
Ack sample block.                                         ACKS
```

GENERAL NOTES

The purpose of the interface is to allow a computer to control all S700 functions, to process and synthesize samples, and to allow the S700 to replay samples developed for other machines, e.g. Prophet 2000.

S700 is always a slave. It will never send unless it is told to. This means all data transfers out of S700 must use to way communication. S700 can however receive with an incoming communication only. Reception of sample dump is speeded up with a two way connection.

Samples are requested by NUMBER. This number is 0 to 5 and corresponds to the displayed numer -1.

Sample transfer is according to the standard described in the Prophet 2000 manual. This uses 'System exclusive common' which does not include a manufacturers prefex code. As it does not include a MIDI channel code, any samples sent, or requests for samples woudl be responded to by all samples on the same MIDI line. The 'System exclusive common reception enable' and '…disable' messages, which do include a MIDI channel number, can be used to select one of several S700s on the same line.

A further enhancement of the standard sample dump protocol is that when closed loop transmission is used, gaps between blocks may be as long as 10 seconds rather than the 20 mS specified. This allows the computer to use its disk in the middle of a long file. This variation maintains full compatibility with the standard.

There are several parameters associated with a S700 sample that are not included in the Prophet 2000 sample dump. These may be sent with the Akai exclusive 'Sample parameters' messages.

The use of the above enhancements will not prevent the S700 from beeing completely compatible with the Prophet 2000 sample dump format.

START POINT

When the S700 sends a sample it sends only that part of the waveform between the start and end points. When it sends the AKAI exclusive sample parameters it sends the start and end points as shown on the S700 display.

DETAILED SPECIFICATION OF MESSAGES.

;SAMPLE DUMP FORMAT (as recognized and transmitted by S7000)

BYTE	RANGE	TYPE*	DESCRIPTION
0	0F0H	B	System exclusive code.
1	07EH	B	Common non-realtime identifier.
2	1	B	SD Sample dump code.
3	N	B	Sample number, LS. The incomming sample will replace replace the S700's sample numbered N+1 where N is 0 to 5 (or 15). If N is greater than 5 (or 15), then the sample being edied will be replaced.
4	0	B	Reserved. Must be 0.
5	0-16	B	Bits per word, S700 transmits 12, but can accept 8 to 14.
6,7,8	0-127	TB	SAMPING PERIOD IN nB. S700 accepts 15259 to 500000, S700 asumes that the nominal pitch of samples is C3 (MIDI 60) unless a subsequent set of AKAI exclusive parameters specifies it otherwise.
9,10,11	0-127	TB	TOTAL WORDS IN SAMPLE, S700 accepts 200 to 32752. If more than 32752 points are sent only the first 32752 will be stored.
12,13,14	0-127	TB	LOOP START POINT. If is total-5, assume non looping.
15,16,17	0-127	TB	LOOP END, S7000 takes this as end point. It takes the start point as 0 unless AKAI exclusive sample parameters subsequently raise it.
18	0-1	B	0=looping 1=alternating. (One shot if loop length <5).

Next follows a variable number of sample blocks. Each has the same format:

0	0-127	B	Block numer LSByte. (Block number MSbyte is not sent.
1,2	0-4095	SW	
3-120	as 1,2 above,		
121	0-127	B	Checksum, being the exclusive OR of the previous 120 bytes.

A final byte follows the last block:

??	0F7H	B	End of exclusive code.

SYSTEM COMMON HANDSHAKES (recognised and transmitted by S700)

BYTE#	RANGE	TYPE	DESCRIPTION
0	0F0H	B	System exclusive code.
1	7EH	B	Common non-realtime code.
2	ff	B	Function code: ACKS=7FH Acknowledge sample block or header ASD =7DH Abort sample dump. NAKS=7EH Not Acknowledge. (Request retransmission of block).
3	0F7H	B	End of exclusive.

SYSTEM COMMON REQUEST SAMPLE DUMP (recognized by S700)

BYTE#	RANGE	TYPE	DESCRIPTION
0	070H	B	System exclusive code
1	7EH	B	Common non-realtime code.
2	0	B	RSD Request sample dump code
3	0-5(15)	B	Sample #, =S700 displayed number - 1
4	0	B	
5	0F7H	B	EOX

AKAI EXCLUSIVE MESSAGES. (Recognised by S700)

BYTE	RANGE	TYPE	DESCRIPTION
0	0F0H	B	System exclusive code
1	47H	B	Akai identifier
2	0-15	B	MIDI channel #
3	1,4,5,6	B	Function code: ROVS = 1 Request for overall settings. RSPRM = 4 request for sample parameters. SECRE = 5 System exclusive common reception enable. SECRD = 6 Ditto disable.
(	65	B	S700 identifier.
5	0-5(15)	B	Sample number where applicable. Otherwise 0
6	0	B	Reserved. (must be 0).
7	0F7H	B	EOX

AKAI EXCLUSIVE Overall settings. (Recognised and transmitted by S700)

BYTE	RANGE	TYPE	DESCRIPTION
0	0F0H	B	System exclusive code
1	47H	B	Akai Identifier
2	0-15	B	MIDI channel #
3	8	B	OVS Function code for overall settings
4	65	B	S700 identifier
5	0	B	Reserved. (must be 0)
6	0	B	Reserved. (must be 0)
	Overall settings data:		
7,8	0,15	DB	MDCH0 S700 basic MIDI reception channel, coded 0-15.
9,10	3,8	DB	MDMPM S700 MIDI mode. 3=Poly, 8=Mono, 16=Special mode
11,12	0,15	DB	MDXTCH MIDI channel to be used by S700 when S700 is sending AKAI exclusive messages.
13,14	0,64,128	DB	OMNION S700 Omni on=128, Omni off=0, Multi-program=64
15,16	0-12	DB	PWRNGE. Pitch wheel range (+- semitones). Eg 12 means range of octave down to octave up
17,18	0,255	DB	PRCHOF, MIDI program change reception. 0 to allow, 255 to inhibit.
19,22	0	DW	Reserved
23,26	0	DW	Reserved
27,30	0	DW	Reserved
31	0-127	B	CHECKSUM, exclusive OR of bytes 7-30
32	0F0H	B	EOX

AKAI EXCLUSIVE Sample parameters. (Recognized and transmitted by S700)

BYTE	RANGE	TYPE	DESCRIPTION	
0	0F0H	B	System exclusive code	
1	47H	B	Akai identifier	
2	0-15	B	MIDI channel #	
3	10	B	SPRM Function code for sample parameters.	
4	65	B	S700 identifier	
5	0-5(15)	B	Sample number	
6	0	B	Reserved. (must be 0).	
	First are 32 sets of sample parameters, one for each program. Each consists of 4 datea elements:			
7,8	0-99	DB	KEYL	Lowest key in keyrange for this sample in first program.
9,10	0-99	DB	KEYH	Highest key in keyrange.
11,12	0-255	DB	TRABS	7 LSBs are signed keyu transpose. +-60. MSB is set for constant pitch.
13,14	0,255	DB	ATPTCH	Audio trigger. MSB set to disable, ? LSBs give MIDI note.
15-262	31 further blocks of four elements for 2nd to 32nd programs. Each block is coded as bytes 7-14 above.			
263, 264	x	DB		Undefined.
265-266	1-4	DB	RPMODE	1=one shot. 2=Looping, 4=alternating. 9=Drum triggered one shot.
267-270	0-32555	DW	SSTAT	Start point.
271-274	X	DW		Undefined.
275-278	200-32762	DW	SEND	End point +1. Must be >=SSTRT+200
279-282	0-32752	DW	SLOOP	Loop point. Must be < SEND
283-286	x	DW		Undefined
287,288	0-99	DB	LFSP	LFO speed. 0=2 Hz, 99=8 Hz.
289-290	0-99	DB	LFDP	LFO depth, 99=+- semitone.
291-292	0-99	DB	LFDL	LFO delay. 99 means slow buildup.
293-294	0-99	DB	FLTFRQ	Filter frequency, 99 means maximun.
295,296	0-99	DB	RLEASE	Release time. 99 means slowest.
297-298	0-99	DB	LONSS	Loudness. 99=max, LSB 1= -0.375 dB.
299,300	1-16	DS	SFNTUN	Fine tuning. Signed. LAV is -0.375 semitone
301-302	24-96	DS	RECNP	Nominal recording pitch. Coding as for MIDI key in semitones. (69 = A440).
303,304	36-??	DB	RECBW	Recording bandwidth. Defines original sample rate. 69 means bandwith of 19,56 kHz which corresponds to samle rate of 26400 Hz. Other rates are computed according to: Rate= 26400*2^((RECBW-69)/12). If RECNP=RECBW and SFNTUN=0 and TRNSP=0 then samples made with 60 points per cycle

				will come out at concert pitch.
305,306	0,255	DB	RVRSE	0=Forward, 255=Reversed. Used only for displ
307,308	0,99	DB	VELFIL	Velocity/filter interaction.
309,310	0,99	DB	VELLDN	Velocity/Loudness interaction.
311,312	0,99	DB	VELRLS	Velocity/release interaction. 99 gives slower release for Low velocity.
313,314	X	DB		Undefined.
315,316	X	DB		Undefined.
317	0-127	B		Checksum. Exclusive DR of bytes 7-317
318	0F0H	B		End of sample parameters.

* CODING OF B TB DB DW

B represents a byte transmitted as a single MIDI byte.

DB represe ts an 8bit parameter in S700's memory. It is sent as two MIDI bytes:

first byte	0	d6	d5	d4	d3	d2	d1	d0
Second byte	0	0	0	0	0	0	0	d7

Where d9 is the parameters's least significant bit.
If th second byte is 2 or higher the value will not be copied into S700's memory and he previous value wille remain. It is thus possible to change only selecte paameters.

TB represents a 21 bit value transmitted as three MINI bytes:

first byte:	0	d6	d5	d4	d3	d2	d1	d0
second byte:	0	d13	d12	d11	d10	d9	d8	d7
third byte:	0	d20	d19	d18	d17	d16	d15	d14

BW represents a 12 bit value transmitted as two MIDI bytes:

first byte:	0	d11	d10	d9	d8	d7	d6	d5
second byte:	0	d4	d3	d2	d1	d0	0	0

Coding is offset binary, zero is sent as 40H 0

DW represents a 16 bit quantity. It is sent as four MIDI bytes:

first byte	0	d6	d5	d4	d3	d2	d1	d0
second byte	0	0	0	0	0	0	0	d7
third byte	0	d14	d13	d12	d11	d10	d9	d8
fourth byte	0	0	0	0	0	0	0	d15

If both the second and third bytes are 2 or more, the values will not be copied into S700's memory and the previous values will remain.

Signed and unsigned.

Parameters descriped as signed are represented in twos complement form. e.g.: DB value of -1 = 0FFH

UNDEFINED and RESERVED

Reserved values are for possible future enhancements and must be transmitted as shown. Undefined values have no operational effect and might as well be filled with 0s.

EXAMPLE OF DIALOG WHERE COMPUTER RECEIVES SAMPLE FROM S700

```
COMPUTER:   RSD
            (0F0H,      7EH,  0,    0,    0,    0F7H)
            Computer requests S700 to send its first sample.

S700:       SD
            (0F0H,      7EH,  1,    0,    0,    0CH,
            77H,  27H,  2,                    Sample period - 10^9 / 26400.
            79H,  7FH,  1,                     Words in sample = 32752.
            34H,  7FH,  1,                     Loop start point = 32692.
            77H,  27H,2,                       Loop end point = last sample
                                               point
            0)                                 Mode=looping.

COMPUTER:   ACKS
            (0F0H,      7EH,  7FH,  0F7H)      Computer acknowledges sample
                                               header.

S700:       (0,   40H,  0,    40H,  0,    40H,  0,    40H,  0, …… 0)
            This is a block of 60 sample points.

COMPUTER:   ACKS
            (0f0h,      7EH,  7FM,  0F7H)           Computer acknowledges
      sample
                                               block.

      The above two lines are repeated while S700 sends a total of 546
      blocks.
            :
            :
            :
S700:       (26H, 40H,  0,    40H,  0,    40H,  0,    40H,  0,    ……0,  0,
            0,    0,    0)
            This is the 546th block. Note that the last bytes are padde
      with 0s to keep the block the same length as the others.

COMPUTER:   ACKS
            (0F0H,      7EH,  7FH,  0F7H)           Computer acknowledges
      last
                                               block.

S700:       EOX
            (0F0H)                                 Marks end of message.
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```
*C>PIF LST:=FF
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TIMEOUT.

When receiving Akai exclusive data, after the first six bytes have been received, the remaining bytes must be seperated by no more than 2 seconds. This provision protects the S700 from hanging in the event of incomplete messages.

*COPIP LST:=S7MIDI.DOC[TB]
MIDI SYSTEM EXCLUSIVE DATA FORMAT FOR S700
30 JUN 86. Copyright Akai Ltd. Gallus faciebat.

RECOGNISED BY S700:

EXCLUSIVE AKAI:	MNEMONIC
Request for overall settings.	ROVS
Overall settings.	OVS
Request for sample parameters.	RSPRM
Sample parameters.	SPRM
System exclusive common reception enable.	SECRE
System exclusive common reception disable.	SECRD

SYSTEM EXCLUSIVE COMMON:	MNEMONIC
Request sample dump	RSD
Abort sample dump.	ASD
Not acknowledge sample block. (Request retransmission)	NAKS
Acknowledge sample block. (or sample header)	ACKS
Sample dump.	SD

TRANSMITTED BY S900:

Akai exclusive.	MNEMONIC
Overall settings.	DOVS
Sample parameters	DSP

Exclusive common:	
Sample dump.	SD
Abort sample dump.	ASD
Not ack sample block.	NAKS
Ack sample block.	ACKS

GENERAL NOTES

The purpose of the interface is to allow a computer to control all S700 functions, to process and synthesize samples, and to allow the S700 to replay samples developed for other machines, e.g. Prophet 2000.

S700 is always a slave. It will never send unless it is told to. This means all data transfers out of S700 must use two way communication. S700 can however receive with an incoming connection only. Reception of sample dump is speeded up with a two way connection.

Samples are requested by NUMBER. This number is 0 to 5 and corresponds to the displayed number -1.

Sample transfer is according to the standard described in the Prophet 2000 manual. This uses 'System exclusive common' which does not include a manufacturers prefix code. As it does not include a MIDI channel code, any samples sent, or requests for samples would be responded to by all samplers on the same MIDI line. The 'System exclusive common reception enable' and '...disable' messages, which do include a MIDI channel number, can be used to select one of several S700s on the same line.

A further enhancement of the standard sample dump protocol is that when closed loop transmission is used, gaps between blocks may be as long as 10 seconds rather than the 20 mS specified. This allows the computer to use its disk in the middle of a long file. This variation maintains full compatibility with the standard.

There are several parameters associated with a S700 sample that are not included in the Prophet 2000 sample dump. These may be sent with the Akai exclusive 'Sample parameters' messages.

The use of the above enhancements will not prevent the S700 from being completely compatible with the Prophet 2000 sample dump format.

START POINT

When S700 sends a sample it sends only that part of the waveform between the start and end points. When it sends the AKAI exclusive sample parameters it sends the start and end points as shown on the S700 display.

DETAILED SPECIFICATION OF MESSAGES.

;SAMPLE DUMP FORMAT (as recognised and transmitted by S700)

BYTE#	RANGE	TYPE*	DESCRIPTION
0	0F0H	B	System exclusive code.
1	07EH	B	Common non-realtime identifier.
2	1	B	60 Sample dump code.
3	N	B	Sample number, LB. The incoming sample will replace replace the S700's sample numbered N+1 where N is 0 to 5 (or 15), then the sample being edited will be replaced.
4	0	B	Reserved. Must be 0.
5	8-16	B	Bits per word. S700 transmits 12, but can accept 8 to 14.
6,7,8	0-127	TB	SAMPLING PERIOD IN nS. S700 accepts 15259 to 500000. S700 assumes that the nominal pitch of samples is C3 (MIDI 60) unless a subsequent set of AKAI exclusive parameters specifies it otherwise.
9,10,11	0-127	TB	TOTAL WORDS IN SAMPLE. S700 accepts 200 to 32752. If more than 32752 points are sent only the first 32752 will be stored.
12,13,14	0-127	TB	LOOP START POINT. If >= total-5, assume non looping.
15,16,17	0-127	TB	LOOP END, S700 takes this as end point. It takes the start point as 0 unless AKAI exclusive sample parameters subsequently raise it.
18	0-1	B	0=looping 1=alternating. (One shot if loop length<5).

Next follows a variable number of sample blocks. Each has the same format:

0	0-127	B	Block number LSbyte. (Block number MSbyte is not sent.
1,2	0-4095	SW	
3-120	as 1,2 above.		
121	0-127	B	Checksum, being the exclusive OR of the previous 120 bytes.

A final byte follows the last block:

??	0F7H	B	End of exclusive code.

SYSTEM COMMON HANDSHAKES (recognised and transmitted by S700).

BYTE#	RANGE	TYPE	DESCRIPTION
0	0F0H	B	System exclusive code.
1	7EH	B	Common non-realtime code.
2	ff	B	Function code: ACK@=7FH Acknowledge sample block or header. ASD =7DH Abort sample dump. NAK@=7EH Not acknowledge. (Request retransmission of block).
3	0F7H	B	End of exclusive.

SYSTEM COMMON REQUEST SAMPLE DUMP (recognised by S700)

BYTE#	RANGE	TYPE	DESCRIPTION
0	0F0H	B	System exclusive code
1	7FH	B	Common non-realtime code.
2	0	B	RSD Request sample dump code
3	0-S(15)	B	Sample #, =S700 displayed number - 1
4	0	B	
5	0F7H	B	EOX

AKAI EXCLUSIVE MESSAGES. (Recognised by S700)

BYTE	RANGE	TYPE	DESCRIPTION
0	0F0H	B	System exclusive code
1	47H	B	Akai identifier
2	0-15	B	MIDI channel #
3	1,4,5,6	B	Function code: ROVD = 1 Request for overall settings. RSPRM= 4 request for sample parameters. SECRE= 5 System exclusive common reception enable. SECRD= 6 Ditto disable.
	65	B	S700 identifier.
5	0-S(15)	B	Sample number where applicable. Otherwise 0
6	0	B	Reserved. (must be 0).
7	0F7H	B	EOX

AKAI EXCLUSIVE Overall settings. (Recognised and transmitted by S700)

BYTE	RANGE	TYPE	DESCRIPTION
0	0F0H	B	System exclusive code
1	47H	B	Akai identifier
2	0-15	B	MIDI channel #
3	8	B	OVS Function code for overall settings
4	65	B	S700 identifier
5	0	B	Reserved. (must be 0)
6	0	B	Reserved. (must be 0)
			Overall settings data:
7,8	0,15	DB	MDCH@ S700 basic MIDI reception channel, coded 0-15.
9,10	3,8	DB	MDMPM S700 MIDI mode. 3=Poly, 8=Mono, 16=Special mor
11,12	0,15	DB	MDXTCH MIDI channel to be used by S700 when S700 is sending AKAI exclusive messages.
13,14	0,64,128	DB	OMNION S700 Omni on=128, Omni off=0, Multi-program=
15,16	0-12	DB	PWRNGE. Pitch wheel range (+- semitones). eg 12 means range of octave down to octave up.
17,18	0,255	DB	PRCHOF, MIDI program change reception. 0 to allow, 255 to inhibit.
19,22	0	DW	Reserved
23,26	0	DW	Reserved
27,30	0	DW	Reserved
31	0-127	B	CHECKSUM. exclusive OR of bytes 7-30
32	0F0H	B	EOX

AKAI EXCLUSIVE Sample parameters. (Recognised and transmitted by S700)

BYTE	RANGE	TYPE	DESCRIPTION	
0	0F0H	B	System exclusive code	
1	47H	B	Akai identifier	
2	0-15	B	MIDI channel #	
3	10	B	SPRM Function code for sample parameters.	
4	65	B	S700 identifier	
5	0-S(15)	B	Sample number	
6	0	B	Reserved. (must be 0).	
	First are 32 sets of sample parameters, one for each program. Each consists of 4 data elements:			
7,8	0-99	DB	KEYL	Lowest key in keyrange for this sample in first program.
9,10	0-99	DB	KEYH	Highest key in keyrange.
11,12	0-255	DB	TRANSP	7 LSBs are signed key transpose. +-60. MSB is set for constant pitch.
13,14	0-255	DB	ATPTCH	Audio trigger. MSB set to disable. 7 LSBs give MIDI note.
15-262			31 further blocks of four elements for 2nd to 32nd programs. Each block is coded as bytes 7-14 above.	
263,264	X	DB		Undefined.
265,266	1-4	DB	APMODE	1=one shot, 2=Looping, 4=alternating, 9=Drum triggered one shot.
267-270	0-32552	DW	SSTRT	Start point.
271-274	X	DW		Undefined.
275-278	200-32752	DW	SEND	End point+1. Must be >=SSTRT+200
279-282	0-32752	DW	SLOOP	Loop point. Must be < SEND
283-286	X	DW		Undefined.
287,288	0-99	DB	LFSP	LFO speed, 0=2 Hz, 99=8 Hz.
289,290	0-99	DB	LFDP	LFO depth, 99=+- semitone.
291,292	0-99	DB	LFDL	LFO delay. 99 means slow buildup.
293,294	0-99	DB	FLTFRQ	Filter frequency, 99 means maximum.
295,296	0-99	DB	RLEASE	Release time. 99 means slowest.
297,298	0-99	DB	LDNSS	Loudness, 99=max. LSB is -0.375 dB.
299,300	1-16	DB	SFNTUN	Fine tuning, signed. LSB is 1/16 semitone
01,302	24-96	DB	RECNP	Nominal recording pitch. Coding as for MIDI key in semitones. (69 = A440).
303,304	36-??	DB	RECBW	Recording bandwidth. Defines original sample rate. 69 means bandwidth of 10.56 KHz which corresponds to sample rate of 26400 Hz. Other rates are computed according to: Rate= 26400*2^((RECBW-69)/12). If RECNP=RECBW and SFNTUN=0 and TRNSP=0 then samples made with 60 points per cycle will come out at concert pitch.
305,306	0,255	DB	RVRSE	0=Forward, 255=Reversed. Used only for displ
307,308	0-99	DB	VELFIL	Velocity/filter interaction.
309,310	0-99	DB	VELLDN	Velocity/loudness interaction.
311,312	0-99	DB	VELRLS	Velocity/release interaction. 99 gives slowe release for low velocity.
313,314	X	DB		Undefined.
315,316	X	DB		Undefined.
317	0-127	B		Checksum. Exclusive OR of bytes 7-317
318	0F0H	B		End of sample parameters.

* CODING OF B TB DB DW

B represents a byte transmitted as a single MIDI byte.

DB represents an 8bit parameter in S700's memory. It is sent as two MIDI bytes: first byte 0 d6 d5 d4 d3 d2 d1 d0
second byte 0 0 0 0 0 0 0 d7
where d0 is the parameter's least significant bit.
If the second byte is 2 or higher the value will not be copied into S700's memory and the previous value will remain. It is thus possible to change only selected parameters.

TB represents a 21 bit value transmitted as three MIDI bytes:
first byte: 0 d6 d5 d4 d3 d2 d1 d0
second byte: 0 d13 d12 d11 d10 d9 d8 d7
third byte: 0 d20 d19 d18 d17 d16 d15 d14

SW represents a 12 bit value transmitted as two MIDI bytes:
first byte: 0 d11 d10 d9 d8 d7 d6 d5
second byte: 0 d4 d3 d2 d1 d0 0 0
Coding is offset binary, zero is sent as 40h 0

DW represents a 16 bit quantity. It is sent as four MIDI bytes:

first byte	0	d6	d5	d4	d3	d2	d1	d0
second byte	0	0	0	0	0	0	0	d7
third byte	0	d14	d13	d12	d11	d10	d9	d8
fourth byte	0	0	0	0	0	0	0	d15

If both the second and third bytes are 2 or more, the val
will not be copied into S700's memory and the previous val
will remain.

Signed and unsigned.
Parameters described as signed are represented in twos complement form. e.g: DB value of -1 = 0FFH

UNDEFINED and RESERVED
Reserved values are for possible future enhancements and must be transmitted as shown. Undefined values have no operational effect and might as well be filled with 0s.

EXAMPLE OF DIALOG WHERE COMPUTER RECEIVES SAMPLE FROM S700

COMPUTER: REQ
(0F0H, 7EH, 0, 0, 0, 0F7H)
Computer requests S700 to send its first sample.

S700: SD
(0F0H, 7EH, 1, 0, 0, 0CH,
77H, 27H, 2, Sample period = 10^9 / 26400.
78H, 7FH, 1, Words in sample = 32752.
34H, 7FH, 1, Loop start point = 32692.
77H, 27H, 2, Loop end point = last sample point +1
0) Modeslooping.

COMPUTER: ACKB
(0F0H, 7EH, 7FH, 0F7H) Computer acknowledges sample header.

S700: (0, 40H,0, 40H,0, 40H,0, 40H,0, ... 0)
This is a block of 60 sample points.

COMPUTER: ACKS
(0F0H, 7EH, 7FH, 0F7H) Computer acknowledges sample block.

The above two lines are repeated while S700 sends a total of 546 blo
:
:
;

S700: (26H, 40H,0, 40H,0, 40H,0 40H,0, ...,0,0 0,0 0)
This is the 546th block. Note that the last bytes are padde with 0s to keep the block the same length as the others.

COMPUTER: ACKS
(0F0H, 7EH, 7FH, 0F7H) Computer acknowledges last block.

S700: EOX
(0F7H) Marks end of message.

*C>PIP LST:=FF

TIMEOUT.
When receiving Akai exclusive data, after the first six bytes have been received, the remaining bytes must be separated by no more than 2 seconds. This provision protects the S700 from hanging in the event of incomplete messages.

AKAI
professional

To : Akai Professional Distributors
From : K.Urata / Hakkyo Akai Tokyo EMI Dept. cc: Service department

Subject : X7000/S700 MIDI System Exclusive's Bug Jan ?' 1987

Dear Sirs,

Unfortunately we have found a bug in X7000/S700 MIDI System Exclusive and this has been fixed, an improved ROM version will be installed by our production line starting at beginning of Feb '87.

Bug : When X7000/S700 is received " Request for Sample Parameter " (KSPRM=4), X7000/S700 should be sending 319 byte of data to the computer once, but keep sending these data repeatedly(endless)

Countermeasure : ROM adress / 30C4 = F4
⇓ to change
30C4 = F8

Current	23	0D	20	F4	19	10	F3
Improved	23	0D	20	F8	19	10	F3

X7000/S700 serial number : 202XX - XXXXX
S62(Japanese) = '1987' Feburary

Serial number (202XX - XXXXX) all after will be having improved ROM version.

Please note that this bug is in MIDI System Exclusive, so this could be only concerned with the customer who want to develop or to buy computer software, and if there's any inquiry from your dealer or coustomer concerning this problem, please contact to Akai Tokyo / Service department.

We will be able to provide you improved ROM version with free of charge. (Available by the end of January'87)

Apart from above change, there were mistakes in MIDI System Exclusive Format, so please find enclosed reissued MIDI System Exclusive (changes underlined)

AKAI ELECTRIC COMPANY, LTD. ELECTRONIC MUSICAL INSTRUMENTS DIV.
[illegible]