SEGA SATURN TECHNICAL BULLETIN #45
(PRELIMINARY)

To: **Sega and Third Party Developers**

From: **Developer Technical Support**

Date: **July 10, 1996**

Re: **Saturn Keyboard Data Format Ver.1.00**

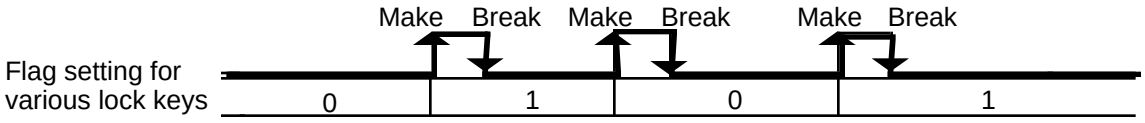
Table 1 Keyboard Data Format

	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
SATURN Peripheral ID	0	0	1	1	0	1	0	0
1st Data	Right	Left	Down	Up	Start	ATRG	CTRG	BTRG
2nd Data	RTRG	XTRG	YTRG	ZTRG	LTRG	KB TYPE2	KB TYPE1	KB TYPE0
3rd Data	0	CapsLock	NumLock	ScrLock	Make	1	1	Break
4th Data	D7	D6	D5	D4	D3	D2	D1	D0

- Saturn peripheral ID = 34H
    - Saturn peripheral type: 3H
    - Data size: 4H (4 bytes)
- Description of data
    - KB TYPE2-0: 000B = Saturn keyboard, 001B-110B = Reserved, 111B = Not recognized as keyboard.
    - CapsLock: Outputs 1 while CapsLock is locked.
    - NumLock: Outputs 1 while NumLock is locked.
    - ScrLock: Outputs 1 while ScrLock is locked.
    - Make: Outputs 1 when there is a valid Make code in D7-D0.
    - Break: Outputs 1 when there is a valid Break code in D7-D0.
    - D7-D0: Key code. Undefined except when Make or Break is 1. Keys and key codes are explained in the table "*Meaning of Key Codes*" below
    - Right, Left, Down, Up, Start: Output 0 while the button (key) is depressed.
    - ATRG, BTRG, CTRG, XTRG, YTRG, ZTRG, LTRG, RTRG
- Relationship between buttons and keys
    - The following shows the relationship between standard Sega Saturn pad buttons and the keyboard.

- Right: [→] key
- Left: [←] key
- Down: [↓] key
- Up: [↑] key
- Right: [ESC] key
- ATRG: [Z] key
- BTRG: [X] key
- CTRG: [C] key
- XTRG: [A] key
- YTRG: [S] key
- ZTRG: [D] key
- LTRG: [Q] key
- RTRG: [E] key

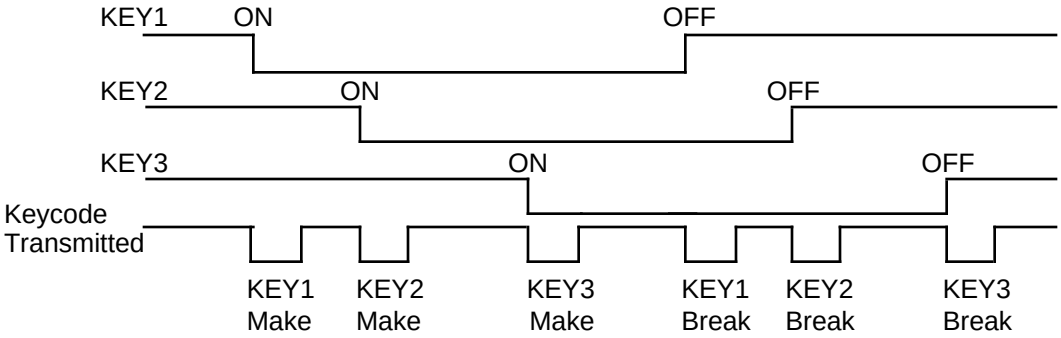
- Flag changes for the CapsLock, Scroll, and NumLock keys
  - The following shows how the flags change for the CapsLock, ScrLock, and NumLock keys.



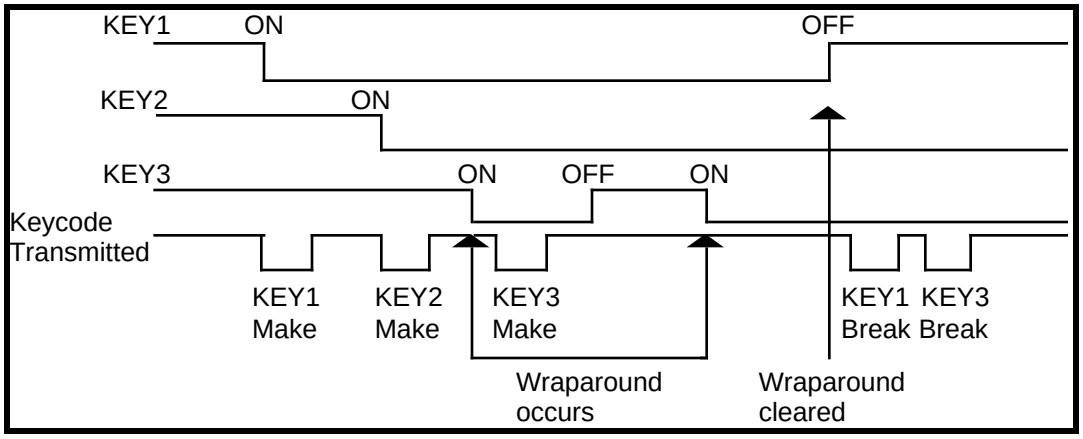
- Key Hitting Characteristics (Make or Break action)

Sends keycodes sequentially upon a roll over. Code is also sent sequentially when a key is released. When a wraparound produced by hitting two or more keys at once is detected, however, it waits until that status is cleared.

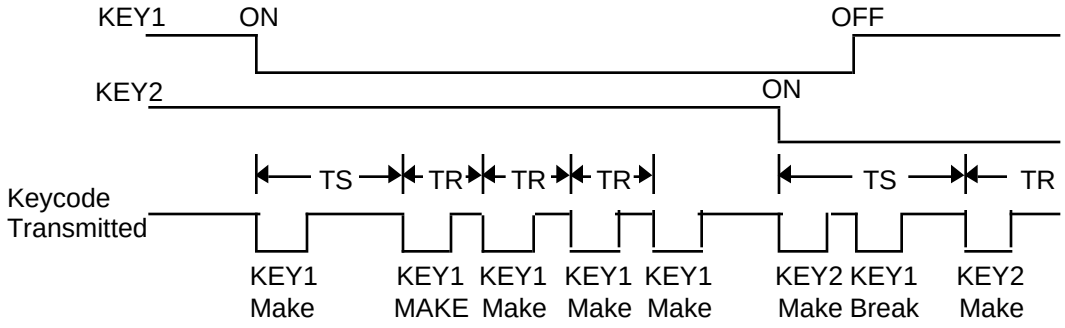
1) When no wraparound occurs



2) When a wraparound occurs



3) Repeat function (on all keys)



- The Make code is transmitted as long as the key is depressed. When another key is pressed, a new repeat cycle begins.

Meaning of Key Codes

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00H		F9		F5	F3	F1	F2	F12		F10	F8	F6	F4	Tab		
10H		Alt	Shift		Ctrl	Q	1	Alt	Ctrl		Z	S	A	W	2	
20H		C	X	D	E	4	3		F	Space	V		T	R	5	
30H		N	B	H	G	Y	6				M	J	U	7	8	
40H		<	K	I	O	0	9			>	?	L	;	P	-	
50H		_	:		@	^			CapsL	Shift	Enter	[		]		
60H							Back				\					
70H							Esc		F11						ScrL	
80H		Ins	Pause	F7	Print	Del	←	Home	End	↑	↓	Up	Down	→		

- Positions of duplicated keys
  - 11H [Alt key] is on the left of the keyboard
  - 17H [Alt key] is on the right of the keyboard
  - 12H [Shift key] is on the left of the keyboard
  - 59H [Shift key] is on the right of the keyboard
  - 14H [Ctrl key] is on the left of the keyboard
  - 18H [Ctrl key] is on the right of the keyboard