DS-M7.1 RS-232 (PC/RC)

Interface specification

Rev.2 : December 19, 2002

TEAC Corporation

TASCAM Business Unit

[Connector]
- D-sub 9pin Male

[Connector Pin-assign]

No.	Signal	Content
1	—	No connection
2	TXD+	Transmit Data; RS232C Main unit -> PC
3	RXD+	Receive Data; RS232C PC -> Main unit
4	—	No connection
5	GND	GND
6	—	No connection
7	—	No connection
8	—	No connection
9	—	No connection

[Connecting cable]
- Connector: Both ends D-sub9pin female
- Specification: Straight cable

Data communication format

- Conformity with RS232C standard
- Asynchronous communication method 38400bps
- Start bit: 1 bit
- Data: 8 bit
- **Parity: 1 bit**
  - It's not "None Parity". Parity bit is 1bit (this is Even Parity). And also, please reconfirm the following points.
    * 8bit data is LSB first.
    * Signal level is inverted inside the cable. For example, Start bit is "0" at first, but it appears to be "1" because the signal level is inverted and then transmitted through the cable.

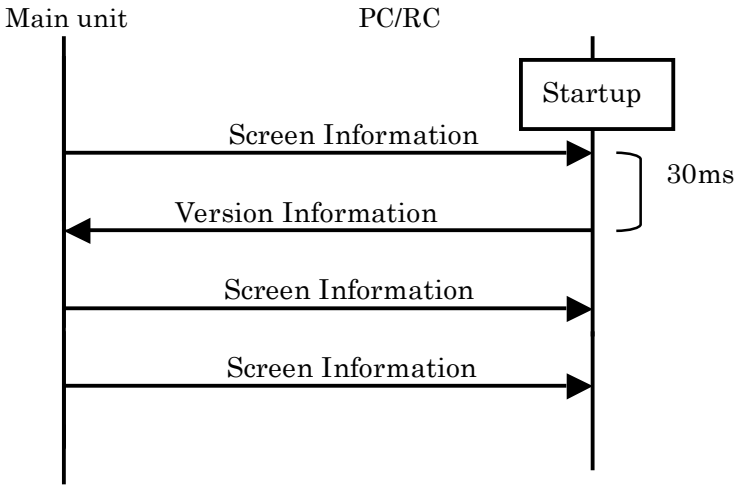
- Stop bit: 1 bit

PC/RC Interface (PC: Personal Computer, RC: Remote Controller)

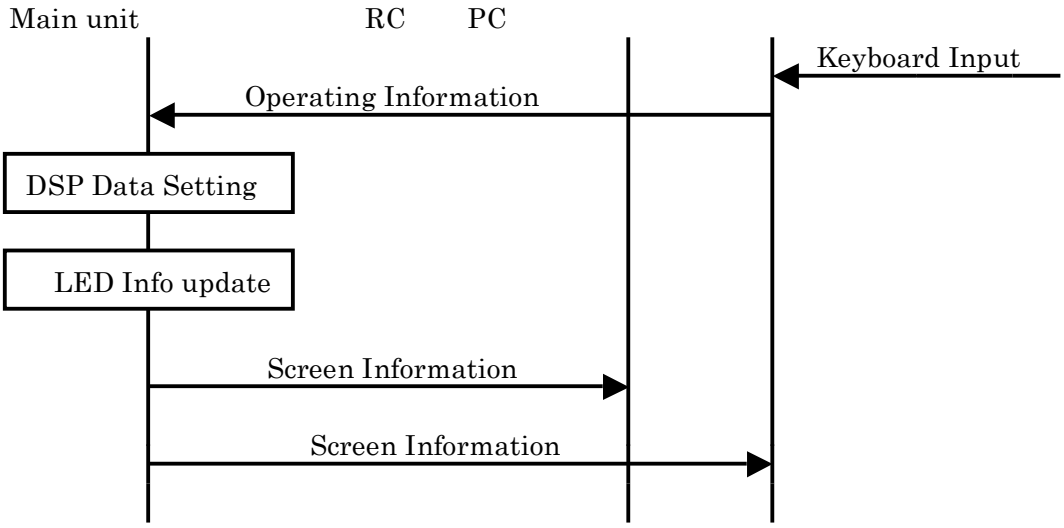
Sequence

PC/RC sends operating information of rotary encoder or keyboard entry to main unit as needed. Main unit sends screen information data every 30 ms. When Receive Data is broken up, time-out control is conducted and received data is scrapped.

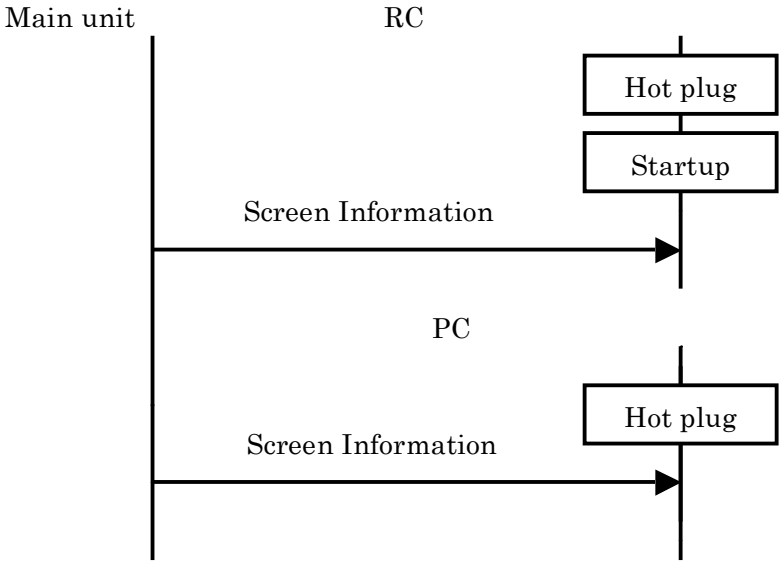
- On startup / idling
  Main unit sends information data of LCD screen, LED, and 7 seg-LED to PC/RC as screen information data. After the first screen information is received, version information data is sent from only Remote Controller.



- On key entry
  PC/RC sends operating information of rotary encoder or key entry to main unit as needed. Main unit sets data for DSP and updates LED information. Information data including keyboard input is reflected when the other receives screen information data.



- Hot plug
  Main unit doesn't recognize connection or disconnection of PC/RC, though, it regularly sends screen information data, and so PC/RC displays the latest received screen data.



- Operation Information frame (PC/RC -> Main unit)

	7 0	
1	STX	0xF0
2	OPECode	Refer to the below
3	Data	Refer to the below
4	ETX	0xF7

OPECode	Contents		Data
0x00	SCREEN SET	STATUS	Push Down / Pull Up
0x01		SYSTEM	Push Down / Pull Up
0x02		INSERT	Push Down / Pull Up
0x03		DOWNMIX	Push Down / Pull Up
0x04		BASSMGT	Push Down / Pull Up
0x05		SHIFT	Push Down / Pull Up
0x06		LEFT_CURSOR	Push Down / Pull Up
0x07		RIGHT_CURSOR	Push Down / Pull Up
0x08		VALUE	Variation
0x09	MUTE Control	L	Push Down / Pull Up
0x0A		LC	Push Down / Pull Up
0x0B		C	Push Down / Pull Up
0x0C		RC	Push Down / Pull Up
0x0D		R	Push Down / Pull Up
0x0E		SUB	Push Down / Pull Up
0x0F		LS	Push Down / Pull Up
0x10		CS	Push Down / Pull Up
0x11		RS	Push Down / Pull Up
0x12		MUTEALL	Push Down / Pull Up
0x13		SOLO/MUTE	Push Down / Pull Up
0x14	MISC	BUS/RTN	Push Down / Pull Up
0x15		DOWNMIX	Push Down / Pull Up
0x16		SMALLSPK	Push Down / Pull Up
0x17		SRND/ST	Push Down / Pull Up
0x18		BASSMGT	Push Down / Pull Up
0x19		PNOISE	Push Down / Pull Up
0x1A		DIM	Push Down / Pull Up
0x1B	SPL Reference Level		Variation
0x30	Version upper	(Only RC)	Version Number
0x31	Version lower	(Only RC)	Version Number
0x50	Update starts	(Only PC)	
0x51	Update ends	(Only PC)	

- **Details for Push Down / Pull Up Data Bit :** Push Down : "0x01" , Pull Up : "0x00"

- **Details for Variation Data Bit:**
  - The rotation volume of the encoder is shown by 2's complement.
    Ex. 0x7F: Move by 127 steps in a clockwise direction
    0x01: Move by 1 step in a clockwise direction
    0x00: Remain the same (there's no change)
    0xFF: Move by 1 step in a counterclockwise direction
    0x80: Move by 128 steps in a counterclockwise direction

    * The parameters change according to the step volume.

Screen Information frame (Main unit -> PC/RC)

	7 0	
1	STX	0xF0
2	OPECode	0x40 (Screen Info)
3	LCD Data	LCD Screen Info (20x4) : 80 bytes character codes ☆See the attached chart showing the relationship between Character codes and Character pattern
81		
82	Cursor	Cursor position (0, 0x80 to 0xE7)
83	LCDCtl	LCD control info (Refer to the below)
84	LED[5]	LED info (Refer to the below)
88		
89	SPL[2]	7seg-LED (Refer to the below)
90		
91	ETX	0xF7

[LCD Control Information]

	7	6	5	4	3	2	1	0
1	0	0	0	0	0	cur	crb	bkl

bkl: LCD Backlight (1=ON, 0=OFF)
crb: Cursor position character (1=Blink, 0=OFF)
cur: Cursor display (1=ON, 0=OFF)

[LED Information]

Each bit: 0=ON, 1=OFF

	7	6	5	4	3	2	1	0
1	0	LC-en	LC	LS-en	LS	L-en	L	SHIFT
2	0	0	CS-en	CS	SUB-en	SUB	C-en	C
3	0	0	RS-en	RS	R-en	R	RC-en	RC
4	0	0	0	TEST	BUS/RTN	SRND/ST	SOL/MUT	SMLSPK
5	0	0	0	0	DIM	MUTEALL	BASMGT	DWNMIX

[7 seg-LED]

	7	6	5	4	3	2	1	0
1	0	G	F	E	D	C	B	A
1	0	G	F	E	D	C	B	A

SPL[0]: Topside digit, SPL[1]: Downside digit
Each segment ON/OFF information (0=OFF, 1=ON)