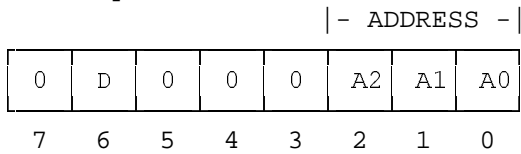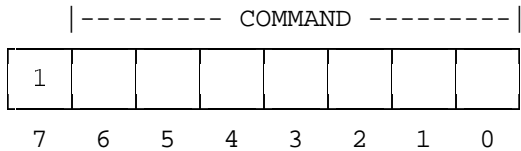## PROTOCOL USED FOR VS-808 COMUNICATION (RS-232)

Communication with the VS-808 is done using three bytes of information as defined below. The rate of data is 9600 baud, with no parity, 8 data bits and one stop bit.
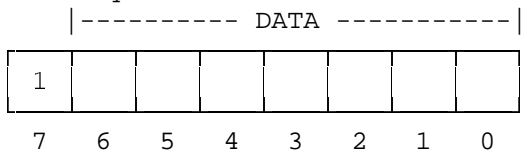
first byte

```
                           |- ADDRESS -|
     +---+---+---+---+---+---+---+---+
     | 0 | D | 0 | 0 | 0 | A2| A1| A0|
     +---+---+---+---+---+---+---+---+
       7   6   5   4   3   2   1   0
```

second byte

```
         |--------- COMMAND ---------|
     +---+---+---+---+---+---+---+---+
     | 1 |   |   |   |   |   |   |   |
     +---+---+---+---+---+---+---+---+
       7   6   5   4   3   2   1   0
```

third byte

```
         |---------- DATA -----------|
     +---+---+---+---+---+---+---+---+
     | 1 |   |   |   |   |   |   |   |
     +---+---+---+---+---+---+---+---+
       7   6   5   4   3   2   1   0
```

DETAILED DESCRIPTION

First byte

First byte - bits 0..2 - ADDRESS.
These bits describe the Machine number that is influenced by COMMAND.
The number of the machine can be 1 (master) to 8.

```
                   |
Machine number |   A2    A1    A0
-------------------------------------
       1       |   0     0     0      MASTER
       2       |   0     0     1   ─┐
       3       |   0     1     0    │
       4       |   0     1     1    │
       5       |   1     0     0    │  SLAVES
       6       |   1     0     1    │
       7       |   1     1     0    │
       8       |   1     1     1   ─┘
```

1st byte - bit 6 - destination bit (D).
When sending a message from the PC (ie. to machine), this bit must be 0.
When the machine sends a message to the PC, this bit is 1.

1st byte - bits 3,4,5,7 - must be 0.

Second byte

Second byte - bits 0..6 - COMMAND.
These bits describe the "CODE" corresponding to each "COMMAND", as shown in the table below.

last bit - bit 7 must be 1.

Third byte

Third byte - bits 0..6 - DATA.
These bits describe the DATA that is influenced by COMMAND.
For example to connect input 7 to output 3, the DATA should be 7 (hex).
last bit - bit 7 must be 1.

List of commands

CODE (hex)	COMMAND	ADDRESS	DATA	REPLY
01	Set Output 1	Machine number-1 (0 - 7)	input number (0 - 8)	Three bytes as was sent, except for D which will be 1.
02	Set Output 2	Machine number-1 (0 - 7)	input number (0 - 8)	Three bytes as was sent, except for D which will be 1.
03	Set Output 3	Machine number-1 (0 - 7)	input number (0 - 8)	Three bytes as was sent, except for D which will be 1.
04	Set Output 4	Machine number-1 (0 - 7)	input number (0 - 8)	Three bytes as was sent, except for D which will be 1.
05	Set Output 5	Machine number-1 (0 - 7)	input number (0 - 8)	Three bytes as was sent, except for D which will be 1.
06	Set Output 6	Machine number-1 (0 - 7)	input number (0 - 8)	Three bytes as was sent, except for D which will be 1.
07	Set Output 7	Machine number-1 (0 - 7)	input number (0 - 8)	Three bytes as was sent, except for D which will be 1.
08	Set Output 8	Machine number-1 (0 - 7)	input number (0 - 8)	Three bytes as was sent, except for D which will be 1.
09	Set all outputs	Machine number-1 (0 - 7)	input number (0 - 8)	Three bytes as was sent, except for D which will be 1.
0A	Get the status of output	Machine number-1 (0 - 7)	output number (1 - 8)	ADDRESS - As sent. COMMAND - output number. DATA - input number.
0B	Get the machine type	Machine number-1 (0 - 7)		ADDRESS - As sent. COMMAND - 0. DATA - 88.

Examples how to use the protocol:

1) To connect input 8 in machine 2 to output 5, set the byte as below:
   First byte - 40(hex) + ADDRESS(hex) = 00 + 02 = 02(hex).
   Second byte - 80(hex) + COMMAND   = 80 + 05 = 82(hex).
   Third byte - 80(hex) + DATA(hex)   = 80 + 08 = 88(hex).

DIP-SWITCH SETTINGS

MACHINE NUMBER	SWITCH NUMBER							
	8	7	6	5	4	3	2	1
1 (MASTER)	ON	ON	ON	ON	ON	ON	ON	ON
2	OFF	OFF	ON	ON	ON	ON	ON	OFF
3	OFF	OFF	ON	ON	ON	ON	OFF	ON
4	OFF	OFF	ON	ON	ON	ON	OFF	OFF
5	OFF	OFF	ON	ON	ON	OFF	ON	ON
6	OFF	OFF	ON	ON	ON	OFF	ON	OFF
7	OFF	OFF	ON	ON	ON	OFF	OFF	ON
8	OFF	OFF	ON	ON	ON	OFF	OFF	OFF

TABLE OF RS-232 CODES FOR VS-808

	TO OUTPUT 1	TO OUTPUT 2	TO OUTPUT 3	TO OUTPUT 4	TO OUTPUT 5	TO OUTPUT 6	TO OUTPUT 7	TO OUTPUT 8	TO ALL
FROM INPUT 1	00 81 81	00 82 81	00 83 81	00 84 81	00 85 81	00 86 81	00 87 81	00 88 81	00 89 81
FROM INPUT 2	00 81 82	00 82 82	00 83 82	00 84 82	00 85 82	00 86 82	00 87 82	00 88 82	00 89 82
FROM INPUT 3	00 81 83	00 82 83	00 83 83	00 84 83	00 85 83	00 86 83	00 87 83	00 88 83	00 89 83
FROM INPUT 4	00 81 84	00 82 84	00 83 84	00 84 84	00 85 84	00 86 84	00 87 84	00 88 84	00 89 84
FROM INPUT 5	00 81 85	00 82 85	00 83 85	00 84 85	00 85 85	00 86 85	00 87 85	00 88 85	00 89 85
FROM INPUT 6	00 81 86	00 82 86	00 83 86	00 84 86	00 85 86	00 86 86	00 87 86	00 88 86	00 89 86
FROM INPUT 7	00 81 87	00 82 87	00 83 87	00 84 87	00 85 87	00 86 87	00 87 87	00 88 87	00 89 87
FROM INPUT 8	00 81 88	00 82 88	00 83 88	00 84 88	00 85 88	00 86 88	00 87 88	00 88 88	00 89 88
OFF	00 81 80	00 82 80	00 83 80	00 84 80	00 85 80	00 86 80	00 87 80	00 88 80	00 89 80