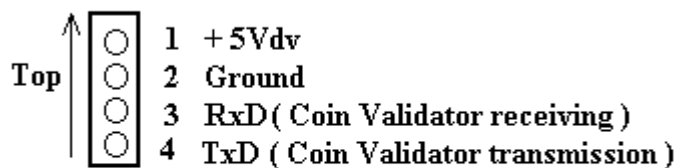# READING PROTOCOL OF THE VALUE OF COINS THROUGH A SERIAL LINE (RS232) RELATED TO THE RM4 AND RM5 TOKEN DISPENSER
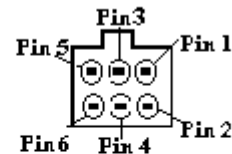
SERIAL CONNECTOR

The token dispenser communicates with the host through an RS232 serial line made of only two wires (RX, TX) and with TTL logic levels. The MARK level is identified through a voltage higher than 2V, whereas the SPACE level has a voltage lower than 0.4V. The bits are sent in both directions at a speed of 9600/second and each byte is preceded by a space bit and followed by a stop bit; in MS-DOS language the set-up of the serial line is expressed with "**9600,N,8,1**".

This is the position of the pins on the token dispenser connector:

Connector RM4

Top
1 + 5Vdv
2 Ground
3 RxD (Coin Validator receiving)
4 TxD (Coin Validator transmission)

Connector RM5

Pin 3
Pin 5   Pin 1
Pin 6   Pin 4   Pin 2

N° Pin	Meaning	N° Pin	Meaning
1	Gnd	4	RX
2	+ 5 Vdc	5	N.U.
3	TX	6	N.U.

PROTOCOL

The host sends units called "commands" to the token dispenser. These commands are divided into two parts: "request" and "answer". Only the host has the possibility of starting the dialog on the line by sending the command request, the token dispenser transmits only in answer mode to transmissions coming from the host.
Each one of the two parts must put a 100 millisecond timeout on every byte that it expects to receive from the other part: in case of timeout you need to consider the command failed. Even receiving one byte with a value different from what is expected for the command that is being sent entails the failure of the command. In case of failure the host must wait at least one second before sending a new command (or before re-transmitting the failed one).
The token dispenser does not carry out any command if the request of the command was not received completely.
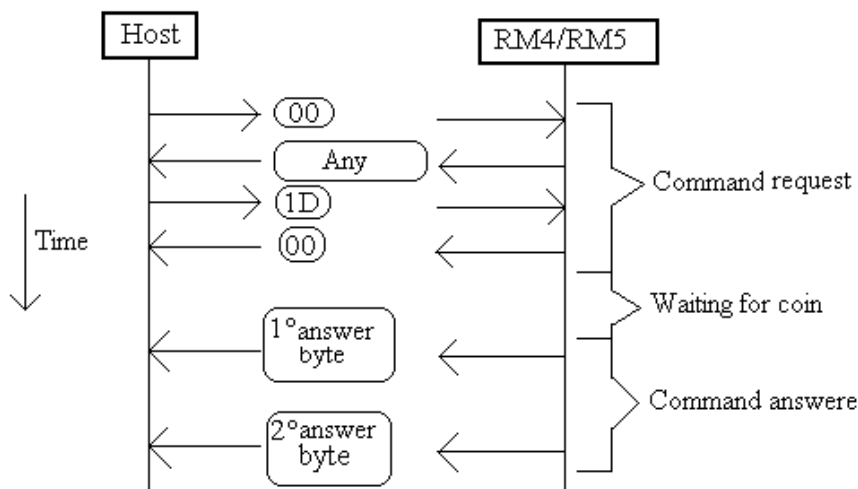
COMMANDS

## ALL THE VALUES ARE EXRESSED IN HEXADECIMALS.

Coin reading command

This commands is used to read the value of the first coin that is accepted by the machine after the request has been sent by the PC.

This command is like an exception to the one second timeout rule explained in the previous paragraph: no timeout needs to be put on the receipt of the first byte of the command's answer by the host, because this will be sent only when a coin is accepted. Activities on the serial line for this command:

The two answer bytes are structured as follows:
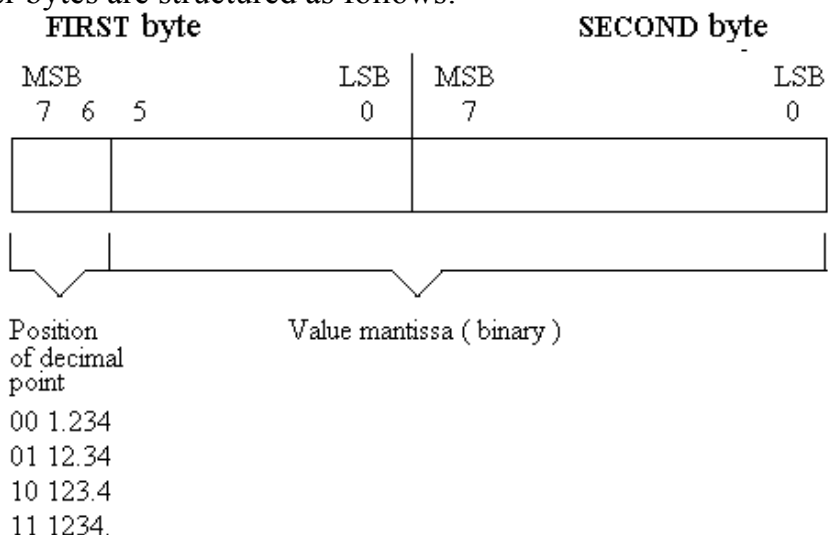
For example:

500 Lit.	C1F4
0.50 DM	4032
0.25 $	4019

Command not valid

This command has no effect. It is typically used to cancel a pending command, i.e. a command for which the request has been sent but the answer has not yet been sent back. It can be transmitted before the answer of the coin reading command to cancel it.

Activities on the serial line for this command:
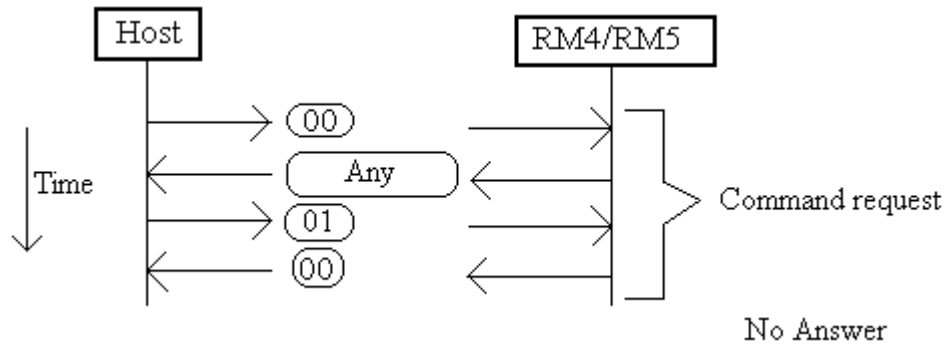
ACCEPTANCE

When there is a pending coin reading command (for which the request has been sent but the answer has not yet been received) the coin acceptance function is enabled regardless of the condition of the enabling hardware pin for the only duration of the command. Configuration 10 is an exception (stepper two prices), the coin reading command does not affect coin acceptance.

For the applications that receive the value of the coins accepted exclusively through the coin reading command we suggest putting the enabling hardware pin in the disabling condition (+12V) so the token dispenser is enabled only if a coin reading command is pending.

Practical example: