

User manual STICK-LF-ASS

Controller USB PEN

125 kHz MULTITAG



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I. Description of the communication protocol

Preface

The controller STICK-LF-ASS USB multi tags allows the reading and writing of the main types of tags based on 125kHz technology. It supports Hitag1, HitagS, Hitag2, EM4x02, EM4x50 and EM4x05.

At power on blue led is switch on, when a tag is detected the colour of this led will be green.

The colour of led can be changed into red or green colour via serial command.

The baud rate of the serial is fixed and equal 9600; the number of bits per character is always 8, there is no parity and 1 bit of stop is designated.

The commands can also be issued using a terminal program.

The data is transmitted as ASCII characters that can be displayed on any terminal program (for ex. Hyperterminal).

Syntaxes

In this document all control characters are written in bold-style (ex. **CR** corresponds on booting in serial to the value 13dec or rather 0Dhex).

The constant alphanumerical strings are indicated between quotation marks (ex. "3").

The variable parameters are concluded between the characters < e >, the signification of the parameters will be specified after the description of each command

Structure of the commands

This protocol has been developed for a very simple administration of the communication.

Generally the commands and the answers are forwarded as single ACSII characters and the controller adds **CR** + **LF** (Carriage Return + Line Feed) to each answer.

Ex.	"X" <DATI>
CR	character ascii 13dec (0D hex) for Carriage Return.
LF	character ascii 10dec (0D hex) for Line Feed.

II. Commands

In the following table are specified all the commands that are accepted from the controler.

On each command the controller responds to the host apart from explicit indicated cases.

The activation of the green led indicates the correct execution of a reading or writing command.

Recapitulation

Command	Description
'x' . 'z'	Reset
'v'	Version request
'c'	Reading continues
'l'	Login
'r'	Read page
'w'	Write page
'd'	Denomination of led
'p'	Antenna power off

Error codes

The following table shows all error messages returned from the controller.

Code	Description
'?'	Command not valid
'N'	Command not executed
'S'	Continuous read stopped

III. Description of the command

Reset

"x" or "z"

This command executes a reset software. The forwarding of this command causes a reset of the controller and of possible transponders in the reading-zone.

If the command has been received correctly, the controller answers as following:

"MULTITAg-125 a.01" **CR LF** and enters into the continuous read mode.

Get Version

"v"

This command requests the currently implemented firmware from the controller.

If the command has been received correctly, the controller answers as following:

"MULTITAG-125 a.01" **CR LF**

Continuous read (default function mode after power on)

"c"

Following this command, the controller reads and forwards continuously the serial number of the transponder that remains in the reading zone. This command can be interrupted by forwarding any character to the controller. The reader supports different types of tags even if only one type of tag at a time can be identified. In this reading mode the controller effects a fast scanning of all the designated tags and forwards the serial number of the identified tag via serial-line

If the command has been received correctly, the controller answers as following:

<IdTipo> <SerialNumber>

<IdTipo>

one-digit character string identifies the single type of the tag. Can be used in order to determine the type of the tag presented to the reader and control tag specific commands.

The different types of supported transponders have UID in different lengths, for example the tags EM4x02 use an UID of 5 bytes whereas Hitag 1 and Hitag 2 use only 4 bytes.

The following table shows a list of specified IdTipo of all the supported tags

IdTipo	Description	Length UID
"U"	EM 4x02	5 bytes
"T"	EM 4x50	4 bytes
"Z"	ISO FDXB	8 bytes
"h"	HITAG 1	4 bytes
"H"	HITAG 2	4 bytes

<SerialNumber> n-digit alphanumerical string.

Login

"l" <Password>

This command is necessary for the authentication for tags of the type EM 4x50 and HITAG 2.

For the transponder EM 4x50 the command signification of the Login is the same as described on the datasheet of this transponder: it is necessary to forward the Login-command followed by the Password in order to have access to the protected memory area.

For example it is necessary to forward this command in order to execute the scripture of the password onto the transponder of the type EM4X50.

Keep in mind that, as described in the respective datasheet, the Password on EM4X50 is the Longword n°00 and that it can not be read but only written if it (the current) is known.

For the transponder HITAG2 it is necessary to know the password before any access in reading or writing is possible.

In both cases the login is effected automatically with the default values based on the ultimate identified type of tag.

<Password>

4-bytes alphanumerical string represents the code used for the login

If the command has been received correctly, the controller answers as following:

"L" **CR LF** In case of successfully effected login

or

"N" **CR LF** In case of Error. Password wrong or tag removed from the reading zone

Read page

"r" <PageAddr>

This command allows the reading of a block of data of a tag.

The dimension of the data returned by an answer depends on the type of tag used.

The valid values of the number of the requested page depend also on the type of tag in use.

The reading command of page 00 in case of tags of the type EM 4x02 and ISO FDXB returns the serial number of the tag.

<PageAddr> 1-byte numerical string represents the number of the page to read

If the command has been received correctly, the controller answers as following:

<IdTipo><SerialNumber> **CR LF** In case of correctly received reading

or

"N" **CR LF** In case of Error or tag removed from the reading zone

Write page

"w" <PageAddr> <Dati>

This command allows the writing of a block of data of a tag.

After typing in the data, they will be automatically reread in order to verify the correct writing.

Not all types of tags support the writing.

<PageAddr> 1-byte numerical string represents the number of the page to write

<Dati> n-byte alphanumeric string represents the data to write

Type of tag	Byte	Description
Hitag 1	4	48 pages of 4 byte each
Hitag 2	4	8 pages of 4 byte each
EM 4x05	4	32 pages of 4 byte each
EM 4x02	-	Not supported
ISO FDXB	-	Not supported

If the command has been received correctly, the controller answers as following:

"w" <Dati> **CR LF** in case of successfully effected writing

or

"N" **CR LF** in case of error. Writing failed due to bad transmission conditions or false dimensions of <Dati> relating to the characteristics of the tag.

Example:

w0412345678 **CR LF** writes the data 12345678 on page 04 of the tag

Set LED

"d" <StatoLed>

This command allows the administration of the led. The user is able to set the state of the led manually.

<StatoLed> 1-byte alphanumeric string represents the parameter of the activation of the led

Command	Description
"dg"	Activates the green led and deactivates the red led
"dr"	Activates the red led and deactivates the green led
"dn"	Deactivates both leds

If the command has been received correctly, the controller answers as following:

"DG" **CR LF** on the command "dg"

"DR" **CR LF** on the command "dr"

"DN" **CR LF** on the command "dn"

Example:

dr Answer "DR **CR LF**" and activation of the red led

ANTENNA power off

"p"

This command switches off the antenna power.

The controller enters the stand-by mode, the consumption of the controller is reduced down to ca 40mA.

All the tags presented in the area of the antenna are shut off and reset.

If the pin 16 (Enable) is set to logic low (0V) the entire controller is in Stand-by.

In this function mode the antenna is switched off and all serial commands are ignored.

In order to exit this mode one has to change the pin 16 (Enable) from logic low or set it to logic high (which means: Enable=Open or +5V => Enable controller).

After carrying out this operation the controller starts to work in function mode "Continuous read".

If the command has been received correctly, the controller answers as following:

"P" **CR LF** confirms the acceptance of the command

Power on is only performed sending a reset command ("x" or "z")

Example:

p Answer "P" **CR LF** and the controller passes into stand-by mode



IV. Conformity

The controller STICK-LF-ASS complies with the following requirements:

- FCC (Federal Communications Commission) Part 15

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC ID: S6A-STICK-LF-ASS