



**R-DT-EVO-TEMIC-USB, R-STICK-EVO-TEMIC
125 kHz RFID Devices
for TEMIC LF RFID Tags**

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1 Introduction

1.1 Communication Settings

Default baud rate: 9600 bps

Address: 001

1.2 Commands Available

Controller:

>Logical reset

<Firmware Version Request

Management of transponders:

>Emulate the 5557 as EM 4x02

>Reading a single EM 4x02

>Write a Block

>Write a Block with password

>Send a wake-up command (AOR)

<Read a Block

<Read a Block with password

>Send a command Reset

Binary Protocol Mode

Es. **EOT EOT STX ADDS1/ADDP1 ADDS2/ADDP2 "X" <DATA> ETX BCC**

EOT ASCII 04h - to reset the communication. OPTIONAL

STX Start Of Transmission - ASCII 02h

ADDP1

ADDP2 individual address (polling) of the recipient terminal.

ADDS1

ADDS2 individual address (selecting) of the recipient terminal.

ETX End Of Text - ASCII 03h

BCC Block Check Character, It composed by XORing each byte of the frame including **STX** and **ETX**.

In binary protocol mode all data transmitted must match a specified instruction frame.

EOT	STX	ADDP1	ADDP2	ADDS1	ADDS2	ETX	BCC

This protocol was designed for easy handling. Each terminal has an address between 001 and 255, on multipoint communication the terminal address is defined by two ASCII characters, included between '0' and '?' (between 30 and 3f hexadecimal) on selecting mode case.

On polling mode case, the first character is equal to the first selecting character. The second character, instead, is the result of the second selecting character after changing the tens value from 3 to 2.

For example: the selecting address of 53 it is 35 (33,35, hexadecimal). The polling address is "3%"(33,25 hexadecimal). In case of global selecting the two characters become "" (60,60 hexadecimal).

The first time, we suggest to connect the terminal to the PC and send to it a "Set Setup" command (on global setting). The terminal will apply the new settings after restarting it (or after a logical reset command). It is necessary to turn OFF and ON the terminal to apply correctly the command.

2 Selecting Commands

2.1 Feedback to selecting and polling commands

For each **selecting** received, the electronic board responds with the following syntax:

STX ADDS1 ADDS2 < CommandType > <RESULT> ETX BCC where
 <CommandType> Command Type
 < RESULT> alphanumeric string of 1 character, command result
 values:

"0"	right
"1"	command does not exist
"2"	data format error
"5"	wrong BCC
"6"	no TAG found
"..."	other errors

If the message analysis detects an error, the "0" character changes to indicate the error, the new value will be related with the found error. The error message will be send if **STX** and **ETX** have been correctly received. **ADDS1-ADDS2** have to be correctly received too.

If there is not a feedback from the terminal, when the timeout period elapsed the master have to resend the command.

2.2 Logical Reset

STX ADDS1 ADDS2 "2" ETX BCC where

"2" command type 'Logical Reset'.

It will be send after '*Set Setup*' or '*Set Setup Serial*' to apply the changes. The terminal will not respond to this command. The logical reset is the same to shutdown and subsequent restarting of the terminal.

2.3 5557 emulation mode on 4x02

With this command you can program a 5557 as a EM 4x02.

STX ADDS1 ADDS2 "5" <CODE><ENCODING> ETX BCC

"5" command type '5557 to 4x02'.

<CODE> string of 10 character. Hexadecimal code for the transponder (apromix encoding)

<ENCODING> encoding type - between "0" and "2".

"0" – Apromix

The default expiry timeout is 100 milliseconds

2.4 Standard Block Writing

This command allows you to write a single block of page "0" (when the PWD tag is set to "0").

STX ADDS1 ADDS2 "6" <LOCK> <DATA> <ADDR> ETX BCC

"6" command type 'Standard Block Writing'.

<LOCK> string of 1 character - Lock bit value, valid values "0" and "1"

(ATTENTION, after set to 1 a value it cannot be reset to 0 and the block cannot be changed.)

<DATA> string of 8 characters, hexadecimal, data to write on the block. valid value
 "0123456789ABCDEF"

<ADDR> string of 1 character - block to write, valid values from "0" to "7".
The page is always "0", the "1" page cannot be written.

The default expiry timeout is 100 milliseconds

2.5 Block Write Protected

This command allows you to write a single block of page "0" when the PWD tag is set to "1".

STX ADDS1 ADDS2 "7" <PSW> <LOCK> <DATA> <ADDR> ETX BCC

"7" command type 'Block write Protected'.

<PSW> string of 8 characters, hexadecimal, password to write, valid value "0123456789ABCDEF"

<LOCK> string of 1 character - Lock bit for the selected block, valid values "0" and "1"
(ATTENTION, after set to 1 a value it cannot be reset to 0 and the block cannot be changed.)

<DATA> string of 8 characters, hexadecimal, data to write on the block, valid values
"0123456789ABCDEF".

<ADDR> string of 1 character - block to write, valid values from "0" to "7".
The page is always "0", the "1" page cannot be written.

The default expiry timeout is 100 milliseconds

2.6 Wake-up Command (AOR)

This command allows you to enable the transponder modulation if the bit AOR was set to "1".

STX ADDS1 ADDS2 "8" <PSW> ETX BCC

"8" command type 'Wake-up'.

<PSW> string of 8 characters, hexadecimal, password valid value "0123456789ABCDEF"

The default expiry timeout is 100 milliseconds.

2.7 Reset Tag

Send to the transponder a reset command.

STX ADDS1 ADDS2 "9" ETX BCC

"9" command type 'Reset tag'.

The default expiry timeout is 100 milliseconds

3 Polling

3.1 Software Version Request

STX ADDP1 ADDP2 "2" ETX BCC where
"2" polling of request version.

If the polling message is correctly received, the electronic board answers as follow:

STX ADDP1 ADDP2 "2" <VVVVVVVVVVVVVVVV> ETX BCC

<VV..VV> alphanumeric text of 16 characters (at the moment "A& T5557 V.1.00"). "V.1.00" is the firmware version.

The default expiry timeout is 100 milliseconds

3.2 Reading Single EM4x02

Single UID reading of an EM4x02. (if the Tag is present in the reading area)

STX ADDP1 ADDP2 "3" <ENCODING > ETX BCC

"3" command type 'Reading Single EM4x02'.

<ENCODING> encoding type from 0 to 1. 0 – Apromix

If the polling message is correctly received, the electronic board answers as follow:

STX ADDP1 ADDP2 "3" "U" <CODE> ETX BCC where

<CODE> string of 10 characters - the UID tag.

The default expiry timeout is 100 milliseconds

3.3 Standard Block Reading

This command allows you to read a single block when the PWD tag is set to "0".

STX ADDP1 ADDP2 "4" <PAGE> <ADDR> ETX BCC

"4" command type 'Standard Block Reading'.

<PAGE> string of 1 character, page belongs to the block to read, valid values from "0" to "1"

<ADDR> string of 1 character, block to read, valid values from "0" to "7"

If the polling message is correctly received, the electronic board answers as follow:

STX ADDP1 ADDP2 "4" <DATA> ETX BCC ove <DATA> contents of the requested block.

The default expiry timeout is 100 milliseconds

3.4 Block Read Protected

This command allows you to read a single block when the PWD tag is set to "1".

STX ADDP1 ADDP2 "5" <PSW> <PAGE> <ADDR> ETX BCC

"5" command type 'Block Read Protected'.

<PSW> string of 8 characters, hexadecimal, password valid values "0123456789ABCDEF"

<PAGE> string of 1 character, page belongs to the block to read, valid values "0" and "1"

<ADDR> string of 1 character, block to read, valid values from "0" to "7".

If the polling message is correctly received, the electronic board answers as follow:

STX ADDP1 ADDP2 "5" <DATA> ETX BCC <DATA> contents of the requested block..

The default expiry timeout is 100 milliseconds.