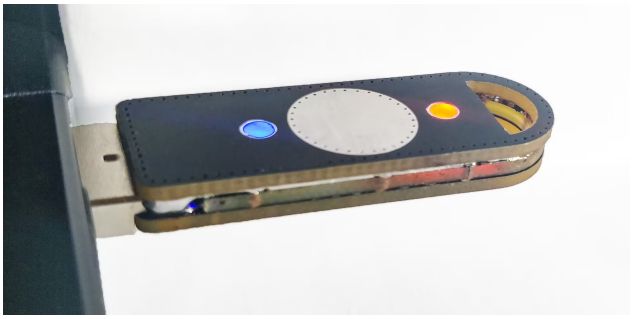
HW-electronic-key communication protocol



This device is used as an electronic token/key that unlocks locked files. Thus, only if it is available, the user can access encrypted files.

Command list:

All request commands are presented in eight-byte numeric format:

Command	Specific				CRC
1 byte	1 byte	1 byte	1 byte	1 byte	1 byte

In which the first byte specifies the command number, the next 4 are responsible for the type of the sent command, and the six byte performs the calculation of the CRC.

1. ***Check connection of the Key:***

   This command allows the computer to make sure that the HW-electronic-key is really connected to the device.

   -> PC: send request to working port “Is the key connected?”

Command	Specific				CRC
1 byte	1 byte	1 byte	1 byte	1 byte	1 byte

   -> BD: send answer to request side

Command	Response						CRC
1 byte	1 byte	1 byte	1 byte	1 byte	1 byte	1 byte	1 byte

   Responses:

   if the key was found, the next step.

   else: message “Key is not connected”.

   ** PC App sends requests to BD until Key will be installed or User stops the App.*

2. ***Get key number:***

   This command allows the computer to read HW-electronic-key serial number. Number is like a “login” that allows the PC App to recognize whether the key is really in the database.
   The key number consists of 7 bits, which are generated by the application at the first entry or by a user with a special command.

   -> PC: send request for key number

Command	Specific				CRC
1 byte	1 byte	1 byte	1 byte	1 byte	1 byte

-> BD: read and send from BD memory Key number

Command	Response						CRC
1 byte	1 byte	1 byte	1 byte	1 byte	1 byte	1 byte	1 byte

Responses:
**Here, the validity of the key in the system database is checked.*

if the key number is equal to the number in the PC App database, allow the next step.
if the key number is “empty”, send the message “WARNING: NEW KEY!”, purpose to use the command that allows writing to BD key number or automatic generation.
else: message “key is not valid”, interrupt session with message: “NOT VALID KEY-NUMBER!”.

Command allow to set Key number:

Command	Specific				CRC
1 byte	1 byte	1 byte	1 byte	1 byte	1 byte

3. ***Get the Key ID:***
This command allows the computer to read HW-electronic-key ID. Unlike the Key number, an ID is like a “password” that allows the PC App to provide access to unlock the necessary files. As well as the key number, the key ID also consists of 7 bits that are randomly generated by the program the first time it is entered, and then generated twice for security each time it is used.

-> PC: send request for key ID

Command	Specific				CRC
1 byte	1 byte	1 byte	1 byte	1 byte	1 byte

-> BD: read and send from BD memory ID number

Command	Response						CRC
1 byte	1 byte	1 byte	1 byte	1 byte	1 byte	1 byte	1 byte

if key ID is equal to ID in PC App database, allow decoding.
else: message “key is not valid”, interrupt session.

4. ***Confirmation Key:***

*This command returns "yes" if the ID of the key matches the ID in our database + it must also match the **key number.** If something is wrong, then the program will not give access to files.*

-> PC: check if Key number and ID confirmed

Command	Specific				CRC
1 byte	1 byte	1 byte	1 byte	1 byte	1 byte

-> BD: read and send from BD memory ID number

Command	Response						CRC
1 byte	1 byte	1 byte	1 byte	1 byte	1 byte	1 byte	1 byte

Responses:

if “yes”, allow PC access to encrypted file

else: “try another Key”, interrupt session

Timeout*: 1 sec - a period, which sets a wait time for command checking.*