

YSOFT USB READER CONFIGURATION TOOL

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1 DESCRIPTION

The *usbrdrtool* configuration tool is designed for USB readers v2/v3 only. The program runs in a system console. It is not a gui application, it is an application running in text mode.

Purpose

- Show information about connected USB readers.
- Set basic parameters of each reader such as USB reader class type, reader protocol, debug mode etc.
- Card testing for verifying correct reader functionality and reading distance.
- Display of card type during testing (with readers where applicable)
- Update of USB reader normal firmware.
- Update of USB reader service firmware.
- Sending of card reader configuration - card reading customizations.
- Download log from USB reader for debugging purposes.

Prerequisites

- Windows 2000 and higher
- Linux kernel 2.6.32 or higher with libc6 2.11 or higher
- Root access on Linux or possibility of sudo or ability to install udev rules
- usbfs support and libusb-1.0 library on Linux
- usbrdrtool.exe (WIN32) or usbrdtool (Linux) executable binaries

2 INSTALLATION

The program is a single executable and does not require installation on Windows or Linux

However it requires "root" privileges under Linux or the following udev rule can be used to allow regular users to have access to the USB device.

Example of /etc/udev/rules.d/99-usbv2.rules file on Ubuntu 18.04:

```
# udev rule to allow usbrdrtool to run without root under Linux
# copy this file to /etc/udev/rules.d directory

SUBSYSTEM=="usb", ATTRS{idVendor}=="214c", MODE="0666"
```

The udev service must be restarted afterwards using the following command:

```
udevadm control --reload-rules && udevadm trigger
```



Before starting usbrdrtool on Linux, make sure the file has got executable permissions by issuing the following command:

```
chmod ugo+x ./usbrdrtool
```

3 MAIN PROGRAM SCREEN

When the program is run without any command line parameter the following screen is shown:

```
YSoft USB card reader configuration utility ver. 1.27, PARTNERS release
```

```
List of available readers:
```

```
-----  
0) USB reader v2/v3 (usb keyboard class), Ser.no.: SQUB302K010BH5E  
-----
```

```
99) Exit application 100) Test mode 101) Refresh reader list
```

```
Enter number:
```

User may select reader number (0-98) to be configured or run card reader test mode by typing 100.

4 READER CONFIGURATION SCREEN

USB card reader configuration screen (reader number from the main menu)

```
USB Reader information:
Usb reader : USB reader v2/v3 (usb keyboard class)
Serial no. : SQUB302K010BH5E
Firmware ver. : 2.5.2usb
Servicefw ver.: 1.0.10svcusb
Servicefw stat: OK
USB op. mode : USB keyboard
USB kbd params: 0 ms press, 0 ms release
USB kbd layout: 0
Reader type : 76
Reader proto : 0
Debug mode : no log
Sound : Enabled
```

```
Hardware information:
HW version : 3.0.2
Serial number : SQUB302K010BH5E
Manuf. date : Wed Sep 18 09:40:38 2019
```

```
Card reader information:
LibReader ver.: 1.3.34
Reader count : 1
Reader partno : B-074
Reader descr. : Reader 3 MFX
Reader auto : YES
Reader proto. : 1220 - LF UIN + HF UIN
Reader featur.: 01000701
Reader info : FW: 2.7, type: 5, HW: 3.1, type: 7
SE: v0129 683D052026B6
LF:f:125407Hz,Q:9.7,Ampl:38.7V,caps:9,6,5.
HF:AP:10,err:42,Tun:4:18.4V,Mod:C0,28,E8.
Reader status : reader operating ok
Status message: None
```

```
Embedded reader information:
PCB ver.(type): 3.1.2 (27)
Features : 000000000
Serial no. : SQRDJ34312BBC81CE
Partnumber : B-074
Manf. date : Tue Aug 27 11:41:54 2019
Reader SW ver.: Not applicable
Req lib ver. : 1.3.32
```

```
Select action:
1) set config to defaults
2) set USB mode
3) set card reader protocol
4) set debug mode
5) set sound mode
```

```
99) save config and exit
100) exit without saving
```

Enter number:

Action 1) sets the USB reader configuration to defaults. This includes USB mode, reader protocol, debug mode and other parameters. This option does not format data that are stored on USB reader internal filesystem.

Action 2) sets USB mode. Default is USB keyboard as it is the most commonly used. However for KM embedded card readers or standard serial card readers a different USB mode can be used.

Action 3) sets card reader protocol. For some card readers it is necessary to enable support for another card types. Default card reader protocol is 0 which means that the reader default protocol will be used. If invalid card reader protocol is selected then the default protocol will be used. Please see "Y Soft Card Readers Protocols x.y.z.pdf" in USB firmware installation package for more details about card reader protocols.

Action 4) enables debugging in case something goes wrong with the reader (for example hangup or reboot or anything similar).



Please note that debugging enabled causes wear-out of the internal flash so enable it only in cases when it is necessary.

Please remember to disable it as soon as you are finished with debugging.

Action 5) enables or disables sound on the USB reader.



Please note that there is no visual identification of successful card reading on USB v2 so users in some cases cannot guess what may be wrong if the card reader makes no sound

Action 99) returns user to the previous menu. If any changes are made, the card reader is rebooted and the changes are applied.

Action 100) returns user to the previous menu. If any changes in settings are made they are discarded and original settings remain.

5 CARD TESTING SCREEN

Card testing screen (100 from the main menu):

```
Card testing:
```

```
-----  
SQUB302Y000DBEE, usb KBD, B-065 Reader 3 MF+, 1220 - LF UIN + HF UIN  
CARD: 'none'  
SQUB302K010BH5E, usb KBD, B-074 Reader 3 MFX, 1220 - LF UIN + HF UIN  
CARD: 'none'  
-----
```

```
(CTRL+C to exit)
```

Multiple card readers can be tested at once. The screen automatically recognizes disconnected and newly connected readers so it may be used for multiple card reader testing.

If the connected reader supports card presence detection then the card number and type is visible only when the card is placed at the card reader.

If the connected reader does not support card presence detection, a "tmout" is displayed next to CARD. The card number will be automatically erased after a couple of seconds of inactivity. This feature is intended to make sure that the reader works properly and card numbers are read correctly every time a card is placed.

Please note that displaying the correct card type depends on card reader used and card reader protocol set. Before using *usbrdrtool* as a tool for customer card testing please consult USB card reader testing guidelines. **With some card readers and improper reader protocol setting a wrong chip identification may occur.**

It is also possible to start the card testing screen directly by specifying -t command line option to the *usbrdrtool* application.

6 COMMAND LINE PARAMETERS

When the program is run with -h parameter, the following help screen is shown:

```
YSoft USB card reader configuration utility ver. 1.27
Usage: usbrdrtool -<parameter> <value> ...
Parameters:

-i input file (otherwise stdin)
-o output file (otherwise stdout)

-l list all configurable readers
-r select reader number to configure, if not specified then first reader will
be used
-s select serial number of reader to configure

-k reset the usb device after successful operation
-u update standard firmware (file on stdin or input file)
-w update service firmware (file on stdin or input file)
-m send card reader custom configuration (file on stdin or input file)
-p set reader protocol (will clear card reader custom configuration without
asking)
-c send configuration (file on stdin or input file)
-g get configuration (data on stdout or output file)
-d reset reader to defaults (will clear card reader custom configuration
without asking)
-X perform reader module firmware check and update if necessary (file on
stdin or input file)
-q show progress bar during the given operation
-j get log (data on stdout or output file)

-h this help screen
-v verbose operation
-t start card testing mode

Examples of use:

Update of normal firmware:
usbrdrtool -u -i usb2-2.0.0.fw -k
Update of service firmware:
usbrdrtool -l -i usb2_service_1.0.3.fw -k
Download of log (when logging enabled):
usbrdrtool -j
```

If reader serial number (-s parameter) or reader number (-r parameter) is not specified then the first found reader is used for the specified operation.

7 BASIC COMMAND LINE FUNCTIONS

7.1 (-U) UPDATE OF FIRMWARE

Update of firmware can be done by issuing the following command on Linux:

```
sudo ./usbrdrtool -q -u -i usb2-2.0.1.fw -k
```

or on Windows:

```
usbrdrtool.exe -q -u -i usb2-2.0.1.fw -k
```

'-k' option will cause the new firmware to be booted after successful update.
'-q' option will display a progress bar.

7.2 (-W) UPDATE OF SERVICE FIRMWARE

Update of service firmware can be done by issuing the following command on Linux:

```
sudo ./usbrdrtool -q -w -i usb2_service-1.0.1.fw -k
```

or on Windows:

```
usbrdrtool.exe -q -w -i usb2_service-1.0.1.fw -k
```

'-k' option will cause the new firmware to be rebooted after successful update.
'-q' option will display a progress bar.

7.3 (-M) SEND OF CARD READER CONFIGURATION

Send of card reader configuration can be done by issuing the following command on Linux:

```
sudo ./usbrdrtool -m -i cfg_xxxxxxxx.bin
```

or on Windows:

```
usbrdrtool.exe -m -i cfg_xxxxxxxx.bin
```

The USB reader will be automatically rebooted if needed.

7.4 (-P) SET READER PROTOCOL

This is equivalent of the set card reader protocol action on the reader configuration screen. Please see "Y Soft Card Readers Protocols x.y.z.pdf" in USB firmware installation package for more details about card reader protocols.

```
sudo ./usbrdrtool -p 1210
```

or on Windows:

```
usbrdrtool.exe -p 1210
```

7.5 (-D) RESET READER TO DEFAULTS

This is equivalent of the set config to defaults action on the reader configuration screen

```
sudo ./usbrdrtool -d
```

or on Windows:

```
usbrdrtool.exe -d
```

7.6 (-J) DOWNLOAD OF LOG

```
sudo ./usbrdrtool -j -o USBLOG.TXT
```

or on Windows:

```
usbrdrtool.exe -j -o USBLOG.TXT
```


Please note that logging must be enabled before using this function otherwise empty log is created

7.7 (-v) EXTENDED DEBUG MODE

By specifying '-v' (errors only) or '-v -v' (debug) on command line an extended debug mode is enabled. This may provide developers with important information in case anything during *usbrdrtool* operation fails.

8 ADVANCED COMMAND LINE FUNCTIONS

The advanced configuration options are intended for batch processing.

 usbrdrtool ver >= 1.22 needed for get/set operations below

8.1 (-L) LIST ALL CONFIGURABLE READERS

Provide a list of configurable card readers suitable for batch processing

```
c:\Temp>usbrdrtool.exe -l
0 "USB reader v2/v3 (usb keyboard class)" "SQUB302K010BH5E"
1 "USB reader v2/v3 (usb keyboard class)" "SQUB302Y000DBEE"
```

8.2 (-G) GET CONFIGURATION

Get configuration values from the reader. For a list of configuration options see [reader configuration options](#) below.

```
c:\Temp>usbrdrtool.exe -g
FWVERSION=2.5.2usb
FWVERSION_MAJOR=2
FWVERSION_MINOR=5
FWVERSION_SUBVERSION=2
SERVICE_VER=1.0.10svcusb
SERVICE_MAJOR=1
SERVICE_MINOR=0
SERVICE_SUBVERSION=10
SERVICE_STATUS=1
LIBREADER_VER=1.3.34
LIBREADER_MAJOR=1
LIBREADER_MINOR=3
LIBREADER_SUBVERSION=34
DEMO=0
DEBUG=0
USBMODE=1
SOUND=0
READER=76
READERDETECTED=76
READERPROTOCOL=0
READERPROTOCOLTMP=0
READERPROTOCOLUSED=1220
KBDPRESSDLY=0
KBDRELEASEDLY=0
KBDLAYOUT=0
KMMODE=0
CARDPRESENCE=0
CARDOUT=DEADBEEFFEED
CFGCARDDISABLE=0
SERIALMODE=0
SERIALMODE_ENTER=0
RGBLEDIDLE=00000000
RGBLEDERROR=00000000
RGBLEDPRESENT=00000000
RGBLEDPGMING=00000000
RGBLEDVCFW=00000000
RGBLEDBUSY=00000000
HWCFG_MAJOR=3
HWCFG_MINOR=0
HWCFG_SUBVERSION=2
HWCFG_SERIAL=SQUB302K010BH5E
HWCFG_MAN_DATE=1568792438
HWCFG_BATCH=0
HWCFG_FEATURES=0
HWCFG_CFGVER=1
```

8.3 (-C) SET CONFIGURATION

For a list of configuration options see [reader configuration options](#) below.

Set a single configuration option:

```
c:\Temp>echo "USBMODE=2" | usbrdrtool -c -k
```

Set multiple configuration options:

```
c:\Temp>(echo "USBMODE=1" & echo "READERPROTOCOL=1212") | usbrdrtool -c -k
```

Use template with VARIABLE=VALUE per line text file:

```
c:\Temp>usbrdrtool -i template.txt -c -k
```

template.txt:

```
USBMODE=2  
READERPROTOCOL=1212
```

8.4 WINDOWS BATCH PROCESSING EXAMPLES

Configure all connected USB readers to USB keyboard:

```

@echo off

rem #####
rem # Specify configuration option to set
rem #####
set ACTION="USBMODE=1"

echo Configuring all connected readers

rem #####
rem # Go through list of connected card readers serial numbers
rem #####
for /f delims^=^" tokens^=^4 %i in ('usbrdrtool.exe -l') do (

    echo Configuring %i...

    rem #####
    rem # call set configuration for given ACTION using reader
    rem # with serial number specified in -s parameter
    rem #####
    echo %ACTION% | usbrdrtool.exe -c -s %i -k

    rem #####
    rem # Check return code
    rem #####
    IF ERRORLEVEL 1 (
        echo Config of USB reader %i FAILED
    ) ELSE (
        echo Config of USB reader %i SUCCESSFUL
    )
)
pause

```

Update the connected USB readers only if they do not have the requested version installed already. You can tune the condition and the command to run to suit your needs also for other commands:


```

@echo off

rem #####
rem # Specify firmware version and file to update
rem #####
set REQUESTED_VERSION=2.6.0usb
set FILENAME=usb2-2.6.0.fw

rem #####
rem # Go through list of connected card readers serial numbers
rem #####
for /f delims^=^" tokens^=^4 %%i in ('usbrdrtool.exe -l') do (

    rem #####
    rem # For each serial number parse configuration values
    rem #####
    for /f "delims== tokens=1,2" %%a in ('usbrdrtool.exe -g -s %%i') do (

        rem #####
        rem # Run the command only if requested version is not
        rem # already installed
        rem #####
        if %%a==FWVERSION if NOT %%b==%REQUESTED_VERSION% (
            echo Updating %%i...

            rem #####
            rem # Update the firmware with provided file,
            rem # display progress bar
            rem #####
            usbrdrtool.exe -q -u -s %%i -i %FILENAME% -k

            rem #####
            rem # Check return code
            rem #####
            IF ERRORLEVEL 1 (
                echo Update of USB reader %%i FAILED
            ) ELSE (
                echo Update of USB reader %%i SUCCESSFUL
            )
        )
    )
)
pause

```

Reset all connected readers to default values:

```

@echo off

echo Configuring all connected readers

rem #####
rem # Go through list of connected card readers serial numbers
rem #####
for /f delims^="^ tokens^=^4 %%i in ('usbrdrtool.exe -l') do (
    echo Configuring %%i...

    rem #####
    rem # call set default using reader with serial number
    rem # specified in -s parameter
    rem #####
    usbrdrtool.exe -d -s %%i -k

    rem #####
    rem # Check return code
    rem #####
    IF ERRORLEVEL 1 (
        echo Config of USB reader %%i FAILED
    ) ELSE (
        echo Config of USB reader %%i SUCCESSFUL
    )
)
pause

```

Set given custom configuration to all connected readers:

```

@echo off

rem #####
rem # Specify card reader configuration
rem #####
set CUSTOMCFG=cfg_20210128_1032.bin

echo Configuring all connected readers

rem #####
rem # Go through list of connected card readers serial numbers
rem #####
for /f delims^=^^ tokens^=^4 %%i in ('usbrdrtool.exe -l') do (

    echo Configuring %%i...

    rem #####
    rem # Configure the card reader with serial number specified
    rem # in -s parameter, display progress bar
    rem #####
    usbrdrtool.exe -q -m -k -i %CUSTOMCFG% -s %%i

    rem #####
    rem # Check return code
    rem #####
    IF ERRORLEVEL 1 (
        echo Config of USB reader %%i FAILED
    ) ELSE (
        echo Config of USB reader %%i SUCCESSFUL
    )
)
pause

```

8.5 LINUX SHELL PROCESSING EXAMPLES

Configure all connected USB readers to USB keyboard:

```
#!/bin/sh

#####
# Specify configuration option to set
#####
ACTION="USBMODE=1"

echo Configuring all connected readers

#####
# Go through list of connected card readers serial numbers
#####
./usbrdrtool -l | while IFS=\" read ID TYPE SPACE SERNO; do

    echo Configuring $SERNO...

    #####
    # call set configuration for given ACTION using reader
    # with serial number specified in -s parameter
    #####
    echo $ACTION | ./usbrdrtool -c -s $SERNO -k

    #####
    # Check return code
    #####
    ERROR=$?
    if [ $ERROR -ne 0 ]; then
        echo Config of USB reader $SERNO FAILED
    else
        echo Config of USB reader $SERNO SUCCESSFUL
    fi
done
```

Update the connected USB readers only if they do not have the requested version installed already. You can tune the condition and the command to run to suit your needs also for other commands:

```
#!/bin/sh

#####
# Specify firmware version and file to update
#####
REQUESTED_VERSION=2.6.0usb
FILENAME=usb2-2.6.0.fw

#####
# Go through list of connected card readers serial numbers
#####
./usbrdrtool -l | while IFS=\" read ID TYPE SPACE SERNO; do

#####
# For each serial number parse configuration values
#####
./usbrdrtool -g -s $SERNO | while IFS=\" read VAR DATA; do

#####
# Run the command only if requested version is not
# already installed
#####
if [ \"$VAR\" = \"FWVERSION\" -a \"$DATA\" != \"$REQUESTED_VERSION\" ]; then
    echo Updating $SERNO...

#####
# Update the firmware with provided file,
# display progress bar
#####
./usbrdrtool -q -u -s $SERNO -i $FILENAME -k

#####
# Check return code
#####
ERROR=$?
if [ $ERROR -ne 0 ]; then
    echo Update of USB reader $SERNO FAILED
else
    echo Update of USB reader $SERNO SUCCESSFUL
fi
fi
done
done
```

Reset all connected readers to default values:

```
#!/bin/sh

echo Configuring all connected readers

#####
# Go through list of connected card readers serial numbers
#####
./usbrdrtool -l | while IFS=\" read ID TYPE SPACE SERNO; do

    echo Configuring $SERNO...

    #####
    # call set default using reader with serial number
    # specified in -s parameter
    #####
    ./usbrdrtool -d -s $SERNO -k

    #####
    # Check return code
    #####
    ERROR=$?
    if [ $ERROR -ne 0 ]; then
        echo Config of USB reader $SERNO FAILED
    else
        echo Config of USB reader $SERNO SUCCESSFUL
    fi
done
```

Set given custom configuration to all connected readers:

```
#!/bin/sh

#####
# Specify card reader configuration
#####
CUSTOMCFG=cfg_20210128_1032.bin

echo Configuring all connected readers

#####
# Go through list of connected card readers serial numbers
#####
./usbrdrtool -l | while IFS=\" read ID TYPE SPACE SERNO; do

    echo Configuring $SERNO...

    #####
    # Configure the card reader with serial number specified
    # in -s parameter, display progress bar
    #####
    ./usbrdrtool -q -m -k -i $CUSTOMCFG -s $SERNO

    #####
    # Check return code
    #####
    ERROR=$?
    if [ $ERROR -ne 0 ]; then
        echo Config of USB reader $SERNO FAILED
    else
        echo Config of USB reader $SERNO SUCCESSFUL
    fi
done
```

9 USB V2/V3 READER CONFIGURATION OPTIONS

Variable	Supported from firmware	Read	Write	Example (RO) / Default (RW)	Description
FWVERSION	2.0.0	✓	✗	2.3.1usb	Version of main firmware
FWVERSION_MAJOR	2.4.0	✓	✗	2	Numeric major version of main firmware
FWVERSION_MINOR	2.4.0	✓	✗	4	Numeric minor version of main firmware
FWVERSION_SUBVERSION	2.4.0	✓	✗	0	Numeric subversion of main firmware
SERVICE_VER	2.0.0	✓	✗	1.0.10svcusb	Version of service firmware
SERVICE_MAJOR	2.4.0	✓	✗	1	Numeric major version of service firmware
SERVICE_MINOR	2.4.0	✓	✗	0	Numeric minor version of service firmware
SERVICE_SUBVERSION	2.4.0	✓	✗	10	Numeric subversion of service firmware
SERVICE_STATUS	2.0.0	✓	✗	1	Service firmware is OK
LIBREADER_VER	2.4.0	✓	✗	1.3.23	Version of LibReader
LIBREADER_MAJOR	2.4.0	✓	✗	1	Numeric major version of LibReader
LIBREADER_MINOR	2.4.0	✓	✗	3	Numeric minor version of LibReader
LIBREADER_SUBVERSION	2.4.0	✓	✗	23	Numeric subversion of LibReader
DEBUG	2.0.0	✓	✓	0	Debug mode: 0 - Logging disabled 1 - Log only errors 2 - Log everything

Variable	Supported from firmware	Read	Write	Example (RO) / Default (RW)	Description
USBMODE	2.0.0	✓	✓	1	USB Mode of operation 0 - Serial (UART) reader 1 - USB keyboard 2 - KM USB reader 3 - USB COM port emulation 4 - SHARP USB reader 5 - USB CCID (SmartCard readers only) 6 - EPA reader (Read only option) 7 - HP USB reader 8 - Reader tester (manufacturing) 9 - USB serial bridge to reader module (service only) 10 - HID RAW reader 11 - BLE test server (maufacturing)
SOUND	2.0.0	✓	✓	0	0 - Sound enabled 1 - Sound disabled
READER	2.0.0	✓	✗	61	Reader type
READERPROTOCOL	2.0.0	✓	✓	0	Configured card reader protocol.
READERPROTOCOLUSED	2.1.7	✓	✗	0	Actually used card reader protocol.
RDRCFG_CSUM	2.2.0	✓	✗	2295CEDD	Custom configuration checksum
READERSTATUS	2.7.0	✓	✗	1	Current status of card reader module: 0 - unknown 1 - driver operating ok 2 - driver initializing 3 - driver initialization error 4 - fimware update in progress 5 - fimware update failed 6 - firmware update is needed 7 - driver initialization error - self test failed 100 - reader not compatible with firmware 101 - no reader detected

Variable	Supported from firmware	Read	Write	Example (RO) / Default (RW)	Description
KBDPRESSDLY	2.0.16	✓	✓	0	Key press delay in ms (USB keyboard mode only)
KBDRELEASEDLY	2.0.16	✓	✓	0	Key release delay in ms (USB keyboard mode only)
KBDLAYOUT	2.0.16	✓	✓	0	Keyboard layout (USB keyboard mode only): 0 - Legacy, numbers on Num pad 1 - EN US
KMMODE	2.0.19	✓	✓	0	KM Mode (KM USB mode only) 0 - Legacy 1 - AU201 compatible
CARDPRESENCE	2.2.6	✓	✓	0	0 - Send card out card number in continuous modes 1 - Disable card out number sending in continuous modes
CARDOUT	2.2.6	✓	✓	DEADBEEFFEED	Card number to send on card out when card presence check is enabled
CFGCARDDISABLE	2.4.0	✓	✓	0	Disable processing of Y Soft configuration cards
SETDEF CFG	2.4.0	✗	✓	0	Writing 1 to this variable will cause the reset to defaults function

Variable	Supported from firmware	Read	Write	Example (RO) / Default (RW)	Description								
SERIALMODE	2.5.1	✓	✓	0 (fallback to 9600, None par.)	<div>UART Setting for Serial mode</div> <div>Bytes in configuration word:</div> <table><tr><th>3</th><th>2</th><th>1</th><th>0</th></tr><tr><td>Flags: 0x0 - None parity 0x01 - Odd parity 0x02 - Even parity 0x0 - 1 stop bit 0x40 - 2 stop bits</td><td>Baud rate MSB</td><td>Baud rate</td><td>Baud rate LSB</td></tr></table>	3	2	1	0	Flags: 0x0 - None parity 0x01 - Odd parity 0x02 - Even parity 0x0 - 1 stop bit 0x40 - 2 stop bits	Baud rate MSB	Baud rate	Baud rate LSB
3	2	1	0										
Flags: 0x0 - None parity 0x01 - Odd parity 0x02 - Even parity 0x0 - 1 stop bit 0x40 - 2 stop bits	Baud rate MSB	Baud rate	Baud rate LSB										
SERIALMODE_ENTER	2.5.1	✓	✓	0	<div>Card number entering sequence for Serial mode</div> <div>0 - <CR><LF></div> <div>1 - <CR></div> <div>2 - <LF></div> <div>3 - None</div>								

Variable	Supported from firmware	Read	Write	Example (RO) / Default (RW)	Description																																																																																																																
RGBLEDIDLE ¹ RGBLEDERROR ¹ RGBLEDPRESENT ¹ RGBLEDPGMING ¹ RGBLEDVCFW ¹ RGBLEDBUSY ¹	2.4.0	✓	✓	8000FF00 80FF0000 80FFFFFF 800000FF 80FFFF00 80FF8000	One byte configuration + 3 byte RGB setting for LED color Bits in configuration byte: <table><tr><th>7</th><th>6</th><th>5</th><th>4</th><th>3</th><th>2</th><th>1</th><th>0</th></tr><tr><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr><tr><td>c</td><td>r</td><td>r</td><td>r</td><td>r</td><td>r</td><td>r</td><td>r</td></tr><tr><td>o</td><td>u</td><td>u</td><td>u</td><td>u</td><td>u</td><td>u</td><td>u</td></tr><tr><td>n</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>f</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>g</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>e</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>n</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>a</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>b</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>e</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>d</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	7	6	5	4	3	2	1	0	1	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	c	r	r	r	r	r	r	r	o	u	u	u	u	u	u	u	n								f								g								e								n								a								b								e								d							
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HWCFG_MAJOR	2.0.0	✓	✗	3	Major version of hardware																																																																																																																
HWCFG_MINOR	2.0.0	✓	✗	0	Minor version of hardware																																																																																																																
HWCFG_SUBVERSION	2.0.0	✓	✗	2	Subversion of hardware																																																																																																																
HWCFG_SERIAL	2.0.0	✓	✗	SQUB302Y007AA8E	Serial number																																																																																																																
HWCFG_MANDATE	2.0.0	✓	✗	1503564128	Manufacture timestamp (Unix epoch)																																																																																																																

¹ - Only USB v3 has got a LED

10 USB V2/V3 BEEP CODES

Beep code	Meaning	Product			
		UL	NCR	USBv2/v3	EPA
-	Card read error. Please try placing the card again or use the different card.	✓	✓	✓	✓
. -	Terminal validation failed. Server reports that the terminal is not registered on SafeQ. Please consult administrator manual.	✓			
--	No print job waiting in queue.	✓			
.. -	User quota has exceeded.	✓			
-. -	User validation failed. User entered either invalid pin or user card is not registered in the system.	✓			
. - -	Received error or warning message from server.	✓	✓		
---	Connection to SafeQ server failed.	✓	✓		
...	Card to Card Activation Code assignment failed. User probably entered unknown Card Activation Code.	✓			
... -	Hardware configuration damaged, cannot continue in booting.	✓	✓	✓	✓
-... -	Maximum number of update attempts reached but no valid firmware detected.	✓	✓		
. - . -	Update of firmware failed.	✓	✓		
- - . -	Software configuration cannot be saved. Probably faulty onboard eeprom.	✓	✓	✓	✓
... - -	Software configuration damaged, loading defaults.	✓	✓	✓	✓

Beep code	Meaning	Product			
		UL	NCR	USBv2/v3	EPA
- . - -	Maximum number of update attempts reached, resuming normal boot.	✓	✓		
. - - -	Firmware damaged.	✓	✓	✓	✓
- - - -	Network init failed.	✓	✓		
. . . .	Keyboard PCB failure.	✓	✓		
- . . .	No reader connected and reader required for correct functionality.	✓	✓	✓	✓
. . . .	Update of firmware failed. Error in server response, SafeQ server is probably not configured correctly.	✓	✓		
- - . .	Update of firmware failed. Cannot connect to SafeQ server.	✓	✓		
. . . .	No blocking cable connected and blocking cable required for correct functionality.	✓			
- . . .	Service firmware damaged, restore required otherwise correct functionality is not guaranteed.	✓	✓	✓	✓
. - - .	Error in reader power-up sequence			✓	✓
- - . .	Firmware incompatible with reader module. Please use the latest tools and re-run the normal firmware update.	✓	✓	✓	✓
- . . . -	Debug firmware, not for public release!	✓	✓	✓	✓
. - . . -	Service firmware is not compatible with hardware. Please update to compatible version.	✓	✓	✓	✓
- - . . -	Error in communication with MFP.				✓
. . . . -	Reader module firmware update required. Please use the latest tools and re-run the normal firmware update.			✓	✓