



User Manual

IDENTIVE Technologies AG

DFU Console Application

Multi-x Series

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Applicable to: Identive Multi-x Series Devices

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Contents

1	Abbreviations.....	4
2	Introduction.....	4
2.1	<i>Supported devices</i>	<i>4</i>
3	Command syntax.....	4
3.1	<i>Examples</i>	<i>5</i>
4	Application Description	5
4.1	<i>Limitations</i>	<i>6</i>
5	Log file.....	6
6	Screenshots of various update scenarios.....	7
6.1	<i>Successful update.....</i>	<i>7</i>
6.2	<i>Silent update</i>	<i>7</i>
6.3	<i>Failed update using wrong firmware file</i>	<i>8</i>
6.4	<i>Failed update on a CCID based reader</i>	<i>8</i>

1 Abbreviations

Abbreviation	Description
Bps	Bits per second
COM	Serial port interface
DFU	Device Firmware Upgrade
ISO	International Organization for Standardization
PC/SC	Personal Computer / Smart Card
USB	Universal Serial Bus

2 Introduction

dfu.exe is a console application used for upgrading the firmware for the Identive Multi-ISO and Multi-Slot devices under Windows platform. In case of USB devices, it works either with the DFU or with the PC/SC driver provided by Identive. In case of serial devices, it works if the device is connected to a serial port or to a virtual serial port of the machine/host.

2.1 Supported devices

Part Number	Reader Description
AMIX2US00	Multi-ISO Reader – USB ¹⁾
AMIX23205	Multi-ISO Reader – RS232
AMSC-xx	Multi-Slot Core Reader V2 – USB

Note:

- 1) The application works only with readers with PC/SC (USB). Updating CCID based readers (reader with CCID or CCID+HID firmware) is not supported.

3 Command syntax

The following is the general command syntax of the application

```
><dfu> [/<switch>] [<filename>.bin] [COM<x>] [Baudrate]
```

Where,

“dfu” is the Application Name

“[/<switch>]” is optional. It accepts the following switches

“/h” -> Display this help

“/s” -> Silent Mode

“<filename>.bin” is the binary file to be sent to the device.

“[COM<x>]” is the COM port number to which the serial device is connected. This is an optional field

“[<Baudrate>]” is the baudrate at which the serial device would be communicated. This is a mandatory field if COM<x> field exists.

3.1 Examples

Using the above syntax, *the application* can be launched from the command-line in one of the following ways:

```
>dfu sample.bin
```

Downloads the contents of the sample.bin file to the device

```
>dfu /s sample.bin
```

Downloads the contents of the sample.bin file to the device under Silent Mode i.e., No User Intervention is required

```
>dfu sample.bin COM1 9600
```

Downloads the contents of the sample.bin to the serial device connected to COM1 @ 9600bps

```
>dfu /s sample.bin COM1 9600
```

Downloads the contents of the sample.bin to the serial device connected to COM1 @ 9600bps under Silent Mode i.e., No User Intervention is required.

```
>dfu /h
```

This displays the help message on the usage of "dfu" application

Note:

1. If the user inputs the bin file with its absolute path, care must be taken to type the file path within quotes (" ") if the file path contains any space character (' ')

4 Application Description

The application expects the arguments viz., the application name, binary file name.

On choosing the bin file, the application performs the following operations namely,

1. Checks for the presence of the binary file,
2. Searches for an active reader with a specific driver key in the registry.
3. Opens the binary file
4. Checks if the binary file is meant for the device which is connected
5. Checks for the validity signatures in the binary file
6. If the device is in functional mode, issues the command to make the device jump to DFU mode
7. Issues the download command to the device
8. Issues the command to make the device jump to functional mode
9. Closes the binary file

Once the download is finished, one can access a log file named *dfu.log* which is generated in the same application path. It can be used for debugging.

When calling dfu.exe from a different application, one can use the following exit codes for retrieving the status of the application.

Exit Code	Remarks
0x00	Passed
0x01	Failed

4.1 Limitations

1. The application supports only one device at a time.
2. Updating CCID based readers (reader with CCID or CCID+HID firmware) is not supported.

5 Log file

During the execution of the application, a log file *dfu.log* would be created & maintained in the application directory that shows the status of the execution process. The following is an example entry for a successful firmware update:

```
Wed Aug 14 14:25:20 2013

Path      : C:\
argc      : 2
argv [0]  : dfu
argv [1]  : ARYGON_MISO_HF_USB_COMPLETE_FW_REL_VER1.20.bin

Getting device handles...
Opening file "C:\ARYGON_MISO_HF_USB_COMPLETE_FW_REL_VER1.20.bin"... PASSED
Reading the bin file...
Verifying the hardware version... PASSED
Issuing AltDownload command... PASSED
Starting the download process...
Opening file "C:\ARYGON_MISO_HF_USB_COMPLETE_FW_REL_VER1.20.bin"... PASSED
Reading the bin file...
Number of bytes in the firmware = E100h
Validating SIGN#1... PASSED
Validating SIGN#2... PASSED
Validating Firmware Type... PASSED
Downloading firmware... PASSED
Issuing detach command... PASSED
Freeing up allocated memory...
```

6 Screenshots of various update scenarios

6.1 Successful update

```
C:\>dfu ARYGON_MISO_HF_USB_COMPLETE_FW_REL_VER1.20.bin

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Getting device handles...
Opening file "C:\ARYGON_MISO_HF_USB_COMPLETE_FW_REL_VER1.20.bin"... PASSED
Reading the bin file...
Verifying the hardware version... PASSED
Issuing AltDownload command... PASSED
Starting the download process...

-----
KINDLY DONOT UNPLUG THE READER DURING THE DOWNLOAD PROCESS
-----

Opening file "C:\ARYGON_MISO_HF_USB_COMPLETE_FW_REL_VER1.20.bin"... PASSED
Reading the bin file...
Validating SIGN#1... PASSED
Validating SIGN#2... PASSED
Validating Firmware Type... PASSED
Downloading firmware... PASSED
Issuing detach command... PASSED
Freeing up allocated memory...
For more info, see "dfu.log" in the current path...
Press any key to exit...
```

6.2 Silent update

```
C:\>dfu /s ARYGON_MISO_HF_USB_COMPLETE_FW_REL_VER1.20.bin

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C:\>
```

6.3 Failed update using wrong firmware file

```
C:\>dfu ARYGON_MISO_HF_SERIAL_COMPLETE_FW_REL_VER1.15.bin

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Getting device handles...
Opening file "C:\ARYGON_MISO_HF_SERIAL_COMPLETE_FW_REL_VER1.15.bin"... PASSED
Reading the bin file...
Verifying the hardware version... PASSED
Issuing AltDownload command... PASSED
Starting the download process...

-----
KINDLY DONOT UNPLUG THE READER DURING THE DOWNLOAD PROCESS
-----

Opening file "C:\ARYGON_MISO_HF_SERIAL_COMPLETE_FW_REL_VER1.15.bin"... PASSED
Reading the bin file...
Validating SIGN#1... PASSED
Validating SIGN#2... PASSED
Validating Firmware Type... FAILED
ERROR: The binary is not valid
Freeing up allocated memory...
For more info, see "dfu.log" in the current path...
Press any key to exit...
```

6.4 Failed update on a CCID based reader

```
C:\>dfu MISO_FNCFW_COMPLETE_CCID_HIDUID_REL_VER1.23.bin

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Getting device handles...
ERROR: Device not found!
Freeing up allocated memory...
For more info, see "dfu.log" in the current path...
Press any key to exit...
```