

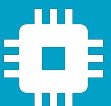


Subsystems for the
UAS intergration into
the airspace

Updater Software

Data sheet & User manual

```
ThinkPad-r480:~$ upd_app --help
UPDATER version: 10060000 (Aug 1 2023)
Usage: upd_app PORT [options]
  -readver      Reads bootloader and module versions, leaving it in lock state
  -config       Puts device in CONFIG mode
  -ub          Puts device in BOOT mode
  -update PATH  Flashes bootloader using .aff file, leaving it in lock state
  -lock 0|1    Only sets bootloader lock state
Additional options:
  -nf          Don't update components if version code in AFF match with current
  -v          Verbose output
Alternative usage: upd_app -affver PATH Reads from .aff file modules versions
Available ports: 33
/dev/ttyACM0 (Id: USB VID=303a:1001 SNR=84:F7:03:28:E9:EB, desc: Espressif US
B JTAG/serial debug unit 84:F7:03:28:E9:EB)
/dev/ttyS0 (Id: n/a, desc: ttyS0)
/dev/ttyS1 (Id: n/a, desc: ttyS1)
/dev/ttyS10 (Id: n/a, desc: ttyS10)
/dev/ttyS11 (Id: n/a, desc: ttyS11)
/dev/ttyS12 (Id: n/a, desc: ttyS12)
/dev/ttyS13 (Id: n/a, desc: ttyS13)
/dev/ttyS14 (Id: n/a, desc: ttyS14)
/dev/ttyS15 (Id: n/a, desc: ttyS15)
/dev/ttyS16 (Id: n/a, desc: ttyS16)
```



Introduction

AEROBITS Updater application is used to quickly update firmware. It is simple terminal application without additional GUI. The application can be easily integrated with own UTM system. The application also allows to update the firmware of all devices manufactured by AEROBITS.

NOTE: Check out our Micro ADS-B application in the product section (Downloads tab) if you want to update the firmware and setup device. The application also has build planes visualization, available only for Windows systems.

Features

- Easy integration with own applications
- Compatibility with Windows, Linux and Linux ARM based
- Product firmware upgrade
- Firmware version checks

For more information please contact: support@aerobits.pl.

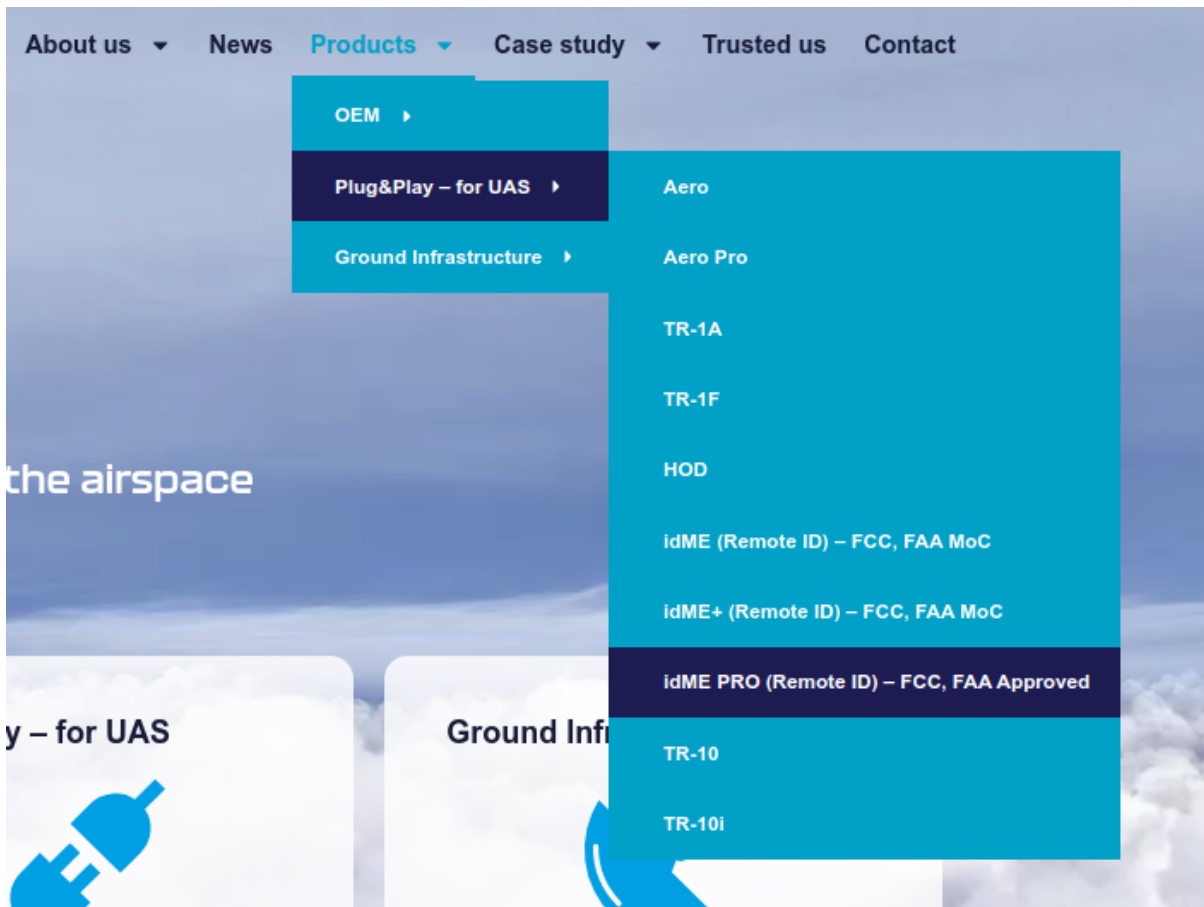
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1 Installation

1.1 Installation

1. Go to [Aerobits website](#) search your product on list.



2. At the bottom of the page, look for Updater tab and click, search Updater app for your system and download it.

Downloads:

▶ Firmware

▶ Model 3D

▶ Technical documentation

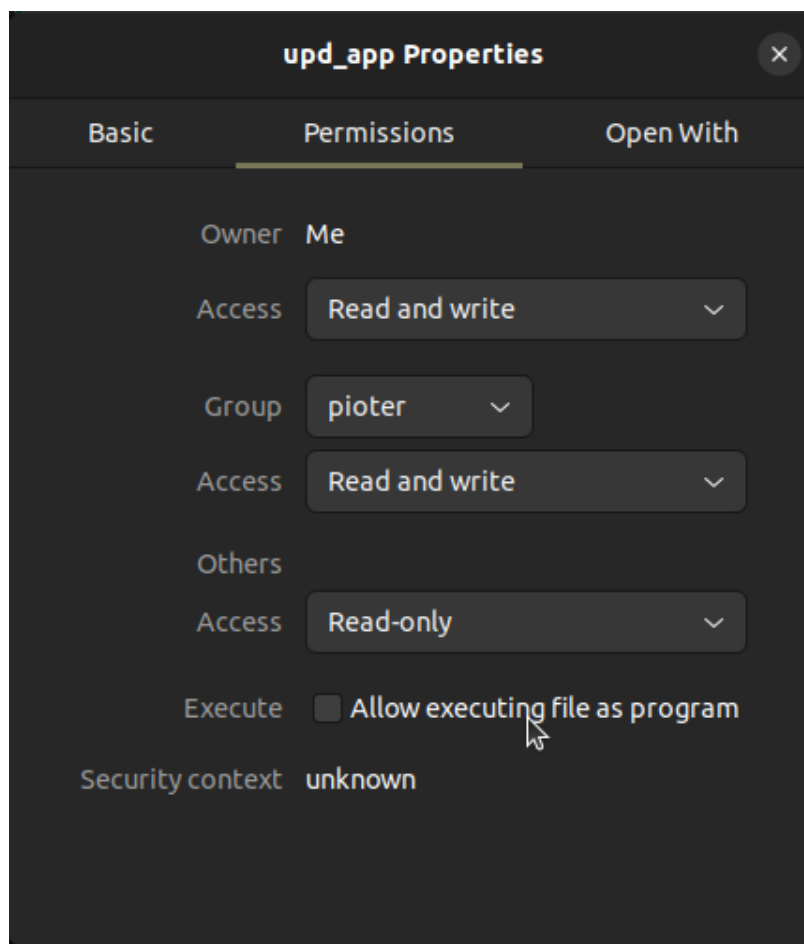
▶ Micro ADS-B

▲ Updater

Windows

Name
UpdaterApp_v1.6.6_win.zip
Download Copy Link
UpdaterApp_v1.6.4_win.zip
Download Copy Link

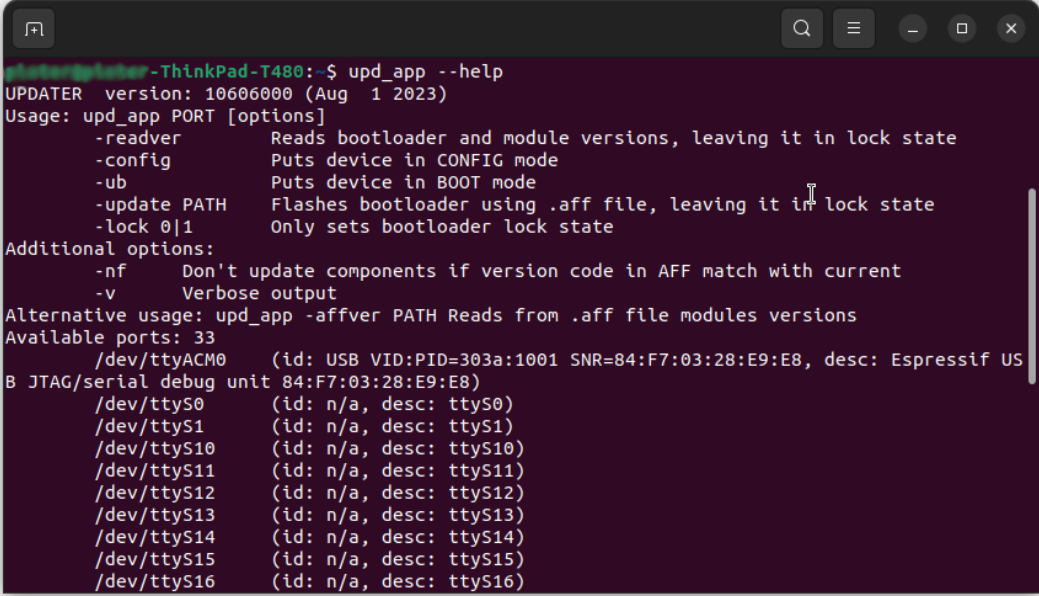
3. After download allow executing file as program in your system. For example on Linux just right click on app, go to permission tab and allow execute.



2 Quick start

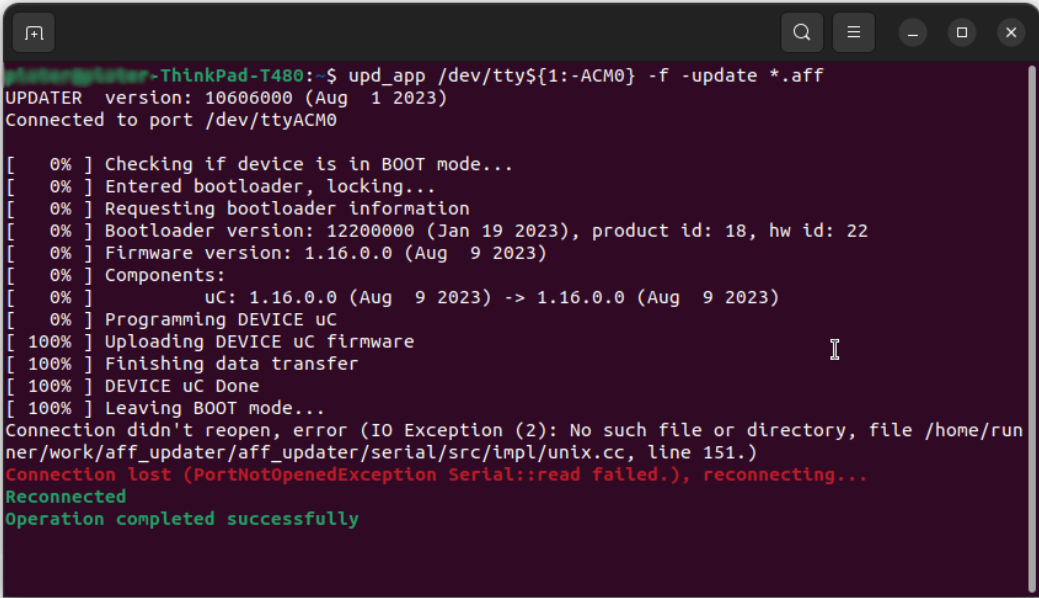
2.1 Basic functionality

- Launch application in CMD with `--help` argument. Updater app will show all necessary options.



```
root@ThinkPad-T480:~# upd_app --help
UPDATER version: 10606000 (Aug 1 2023)
Usage: upd_app PORT [options]
  -readver      Reads bootloader and module versions, leaving it in lock state
  -config       Puts device in CONFIG mode
  -ub           Puts device in BOOT mode
  -update PATH  Flashes bootloader using .aff file, leaving it in lock state
  -lock 0|1     Only sets bootloader lock state
Additional options:
  -nf          Don't update components if version code in AFF match with current
  -v           Verbose output
Alternative usage: upd_app -affver PATH Reads from .aff file modules versions
Available ports: 33
/dev/ttyACM0   (id: USB VID:PID=303a:1001 SNR=84:F7:03:28:E9:E8, desc: Espressif US
B JTAG/serial debug unit 84:F7:03:28:E9:E8)
/dev/ttyS0    (id: n/a, desc: ttyS0)
/dev/ttyS1    (id: n/a, desc: ttyS1)
/dev/ttyS10   (id: n/a, desc: ttyS10)
/dev/ttyS11   (id: n/a, desc: ttyS11)
/dev/ttyS12   (id: n/a, desc: ttyS12)
/dev/ttyS13   (id: n/a, desc: ttyS13)
/dev/ttyS14   (id: n/a, desc: ttyS14)
/dev/ttyS15   (id: n/a, desc: ttyS15)
/dev/ttyS16   (id: n/a, desc: ttyS16)
```

- You can see device under port `/dev/ttyACM0` if you want update device just type command like below.



```
root@ThinkPad-T480:~# upd_app /dev/tty${1:-ACM0} -f -update *.aff
UPDATER version: 10606000 (Aug 1 2023)
Connected to port /dev/ttyACM0

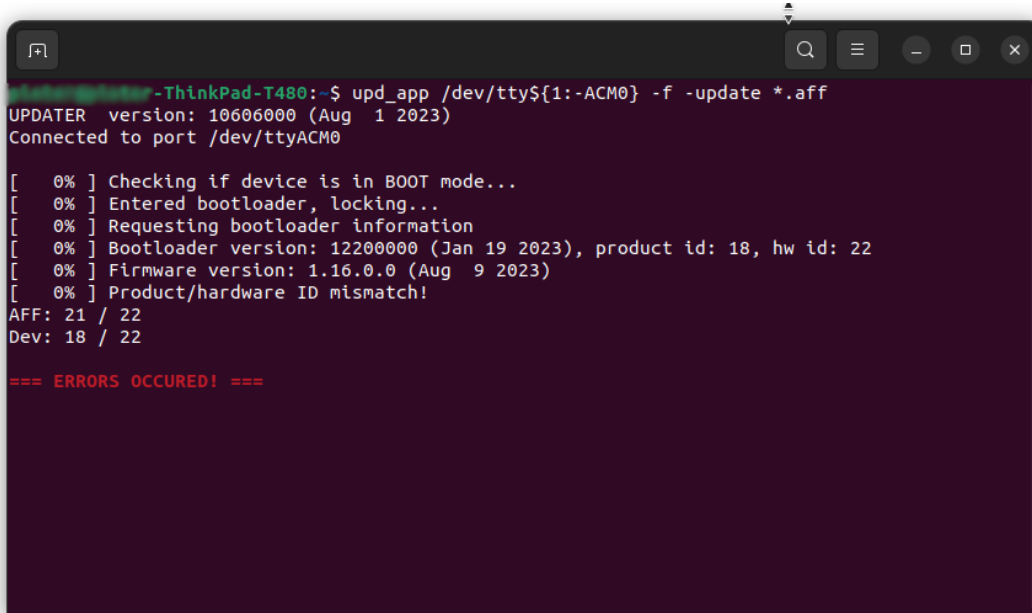
[ 0% ] Checking if device is in BOOT mode...
[ 0% ] Entered bootloader, locking...
[ 0% ] Requesting bootloader information
[ 0% ] Bootloader version: 12200000 (Jan 19 2023), product id: 18, hw id: 22
[ 0% ] Firmware version: 1.16.0.0 (Aug 9 2023)
[ 0% ] Components:
[ 0% ]         uc: 1.16.0.0 (Aug 9 2023) -> 1.16.0.0 (Aug 9 2023)
[ 0% ] Programming DEVICE uc
[ 100% ] Uploading DEVICE uc firmware
[ 100% ] Finishing data transfer
[ 100% ] DEVICE uc Done
[ 100% ] Leaving BOOT mode...
Connection didn't reopen, error (IO Exception (2): No such file or directory, file /home/run
ner/work/aff_updater/aff_updater/serial/src/impl/unix.cc, line 151.)
Connection lost (PortNotOpenedException Serial::read failed.), reconnecting...
Reconnected
Operation completed successfully
```

- After update Updater print information about operation status.

3 General information

3.1 Problems

3.1.1 Update error



```
-ThinkPad-T480:~$ upd_app /dev/ttyACM0 -f -update *.aff
UPDATER version: 10606000 (Aug 1 2023)
Connected to port /dev/ttyACM0

[ 0% ] Checking if device is in BOOT mode...
[ 0% ] Entered bootloader, locking...
[ 0% ] Requesting bootloader information
[ 0% ] Bootloader version: 12200000 (Jan 19 2023), product id: 18, hw id: 22
[ 0% ] Firmware version: 1.16.0.0 (Aug 9 2023)
[ 0% ] Product/hardware ID mismatch!
AFF: 21 / 22
Dev: 18 / 22

=== ERRORS OCCURED! ===
```

- Make sure you choose right firmware.
- Check port and spelling.

4 Update over CAN

This section is only relevant for devices which support update over CAN.

The CAN bootloader respects the device settings and loads the CAN bitrate, DMC address and TMC address from device memory. The values of DMC and TMC addresses should be provided to the updater app.

For supported devices, it is possible to perform a firmware update using the ARINC825 interface. The updater requires a SocketCAN compatible CAN adapter. The update is only possible on Linux due to SocketCAN availability.

First, you should configure a SocketCAN interface, which may be done the following way:

```
sudo slcand -o -s8 -t hw /dev/ttyACM0 slcan0
sudo ip link set up slcan0
sudo ip link set slcan0 txqueuelen 1024
```

which configures a SocketCAN interface with a 1M bitrate. The device bitrate may be changed using the settings. The interface bitrate is changed by the `slcand` command.

The command syntax for update over CAN is fairly similar. As port name, specify the name of the interface. You should also specify:

- `-dmc <value>` - the device DMC address, which is set with `AT+DMC_ADDRESS`
- `-tmc <value>` - the device TMC address, which is set with `AT+SERVER_ID`

The final command should look like this:

```
upd_app slcan0 -update FW_PR36_HW37_2_89_1_243D.aff -dmc 23 -tmc 17
```

4.1 Bootloader CAN frames

While this frames are documented to avoid ID collisions, they should be considered an implementation detail of the updater and should not be transmitted by the end user.

4.1.1 Bootloader reboot frame

Received on DMC during runtime. Accepted on port 61. It's contents should be a "NODATA" frame. The device will reply with a "NODATA" frame, acknowledging the reception and close the connection.

This will cause the device to reboot into the bootloader with a locked state.

4.1.2 Bootloader data frames

During the update process, the bootloader and updater exchange data using the TMC channel with the following parameters:

- updater ID: fixed, 15
- device ID: as set with `AT+SERVER_ID` setting
- function ID: 127, Temporary Test and Maintenance

The frames are variable length `OPAQUE` frames.

Please read carefully

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