Migration from oXigen 3.1x to 4.00 and Subsequent Versions

Slot.it oXigen relies on a 2.4 GHz communication network, based on a proprietary protocol developed by Galileo Engineering, the company behind Slot.it and Policar. To retain compatibility with the next generation of integrated circuits made by Nordic Semiconductor, which the oXigen system relies on, a firmware update became necessary. This update includes a change to the speed, or bit-rate, at which data is transferred via the 2.4GHz connection.

Contemporary and future Nordic Semiconductor ICs no longer support a bit-rate of 250kbps. To safeguard the longevity of the oXigen system, a transition to a higher bit-rate is necessary. This increase in speed renders devices programmed with firmware 3.1x and earlier (with a bit-rate of 250kbps) incompatible with devices programmed with version 4.00 and onwards (with a bit-rate of 1Mbps) in terms of 2.4GHz communication.

This has resulted in the introduction of the oXigen 4.xx firmware generation.

oXigen versions 3.x and 4.x are not mutually compatible. It is imperative that all oXigen devices use either a 3.x or 4.x version. The following section outlines the specific details for performing the upgrade from 3.x to 4.x operation on various devices.

Dongle

The O204a Dongle (Old Type, Yellow Color)

The O204a Dongle functions correctly at both 250kbps and 1Mbps. Therefore, it is an essential tool, in conjunction with the PC Bootloader application, for migrating older devices (such as the O201b1 in-car chip, O202a cartridge, and SCP201l CRI) to 1Mbps or vice-versa. The firmware of the O204a dongle itself can be directly upgraded to 1Mbps with version 4.00 or later using the PC Bootloader application. However, due to speed constraints exhibited by the O204a dongle, and considering future developments of the Nordic product line (as outlined above), the introduction of its successor, the O204b dongle, became necessary.

The O204b Dongle (New Type, Blue Color)

The O204b dongle is based on a standard dongle (E104-T5040U). This device can be purchased online or in stores, and it can be activated later or bought already activated from Slot.it for convenience. It's crucial to note that the O204b dongle only operates at 1Mbps and does not function at 250kbps. Therefore, it isn't suitable for the migration of oXigen devices. However, it is the recommended device for using the oXigen system in version 4.xx.

Dongle Code	Model	Migration from 3.1x (or earlier) to 4.00 (or later) and vice-versa	Working with 3.1x (or earlier)	Working With 4.00 (or later)	Note
O204a		suitable for migration	allowed	allowed	suitable but not recommended for use with 4.00 or later
O204b		not suitable for migration	not allowed	allowed	strongly recomended for use with 4.00 or later

in-car chip type B2 / C, SCP3 and Scalextric ARC controllers, SCP3 Power Amplifier

Migration from 250kbps to 1Mbps for the latest devices (in-car chip type B2 / C, SCP3 and Scalextric ARC controllers, SCP3 Power Amplifier) should be executed by directly updating the firmware using the Slot.it app, simplifying the process significantly.

If multiple devices, either of the same type or different types, registered to one or several users, need to be updated consecutively, the nRF DFU (nRF Device Firmware Update) app could prove very useful. This app is available for both Android devices on Google Play and iOS devices on the Apple App Store.

in-car chip type B1, SCP oXigen cartridge, universal SCP radio interface - CRI

Migration of the oldest devices

- in-car chip B1 type - O201b1

- oXigen cartridge - O202a

- universal SCP radio interface – CRI - SCP201l

should be performed exclusively via the PC Bootloader and the O204a dongle.

Please note that these are 'legacy' devices which may not be supported and have shown a propensity to become 'bricked', rendering them unresponsive and essentially useless. Specifically, any bricked B1 chips cannot be restored. While oXigen cartridges and CRI can be restored through factory reprogramming, it necessitates sending them back to us, at the users' expense.

Earlier chips (A, B) are not upgradable to oXigen 4.

The migration process from firmware version 3.1x to 4.00 and vice-versa can be executed in two ways: 'automatic' and 'manual'.

Both methods involve the same procedural steps:

- In 'automatic' execution, the user only needs to interact with the oXigen device being updated. The firmware versions are loaded automatically, requiring no user intervention.

- In 'manual' execution, the user is required to sequentially select the firmware versions to be loaded onto both the oXigen device and the O204a dongle.

Migration from 3.1x to 4.00 firmware version (from 250kbps to 1Mbps)

Requires dongle O204a and oXigen target device to migrate

Procedure (each step requires the use of the PC Bootloader application)

'automatic' execution

1. Upgrade the dongle to firmware version 3.12

2. Connect the oXigen target device to migrate through the PC Bootloader application

3. Click on button

4. Follow the instructions that will be provided by the PC Bootloader and boot the oXigen device as prompted

'manual' execution

1. Upgrade the dongle to firmware version 3.12.

2. Connect the oXigen target device to be migrated using the PC Bootloader application.

3. Upgrade the target device to firmware version 3.20z (be aware of the release! 'z' denotes a 'midwife' release, not a general-purpose one). Firmware 3.20z switches the device to 1Mbps mode, but requires additional steps.

4. Upgrade the dongle to firmware version 4.00 or later.

5. Upgrade the target device to the most recent release of 4.00 or later (for 'normal' operation). Now, the target device operates at 1Mbps and can be used with either the O204a or O204b dongle, provided that the dongle is running on firmware 4.00 or later.

If the procedure fails at any point, follow these steps:

1. Try to connect to the oXigen device to be updated using the PC Bootloader application with the dongle programmed with version 3.12.

2. If the connection fails, retry the connection by reprogramming the dongle with version 4.00 or later.

3. Once the device is connected, carry out the 'manual' execution from the point corresponding to the current firmware version loaded on the device to be updated.

Migration from 4.xx to 3.16 firmware version (from 1Mbps to 250kbps)

Requires dongle O204a and oXigen target device to be migrated

Procedure (Each step requires the use of the PC Bootloader application):

'automatic' execution

1. Upgrade the dongle to firmware version 4.00 or later.

2. Connect the oXigen target device to be migrated using the PC Bootloader application.

3. Click on button.

4. Follow the instructions given by the PC Bootloader and boot the oXigen device as prompted.

'manual' execution

1. Upgrade the dongle to firmware version 4.00 or later.

2. Connect the oXigen target device to be migrated using the PC Bootloader application.

3. Upgrade the target device to firmware version 3.16z (be aware of the release! 'z' denotes a 'midwife' release, not a general-purpose one). Firmware 3.16z switches the device to 250kbps mode, but requires additional steps.

4. Upgrade the dongle to firmware version 3.12.

5. Upgrade the target device to the 3.0x or 3.1x firmware release (for 'normal' operation). Now, the target device operates at 250kbps and can only be used with the O204a dongle, with firmware 3.12 or earlier, as usual.

If the procedure fails at any point, follow these steps:

1. Try to connect to the oXigen device to be updated using the PC Bootloader application with the dongle programmed with version 4.00 or later.

2. If the connection fails, retry the connection by reprogramming the dongle with version 3.12.

3. Once the device is connected, carry out the 'manual' execution from the point corresponding to the current firmware version loaded on the device to be updated.