

Stream 2 Build Notes:

Find supporting materials here (start with the README.txt file): <http://www.earth.org.uk/OpenTRV/Launchpad/20160321Workshop/> or http://earth.org.uk/_lpw

1. Configuring the Arduino IDE
 1. Download 1.6.5 or latest IDE (avoid 1.6.6) from arduino.cc.
 2. For Arduino IDE (auto)-configuration:
 1. Copy the following URL into the 'Additional Boards Manager URLs' box in Preferences:
https://raw.githubusercontent.com/opentrv/OpenTRV-Config/master/Arduino/package_opentrv_index.json
 2. Open Tools>Boards>Boards Manager. 'OpenTRV V0p2' should be listed at the bottom. If not, close Boards Manager and try opening it again.
 3. Click install.
 4. Select Tools>Boards>OpenTRV V0p2
2. Downloading the code
 1. Either get <https://github.com/opentrv/OTRadioLink> and <https://github.com/DamonHD/OpenTRV> from GitHub at tag 20160316-CONFIG_REV14_WORKSHOP-BETA and talk to us about minor adjustments before proceeding, or else use the ZIP files provided in the workshop materials directory above...
 2. If using the above ZIP files the unpack the V0p2_Main.UNPACK_THIS.zip file somewhere such as your home directory, and open the .ino file within it with the IDE, then offer the OTRadioLink.zip file to the IDE via Sketch -> Include Library -> Add .ZIP Library.
3. Configuring TTN keys

In function void OTRN2483Link::setKeys(const uint8_t *appKey, const uint8_t *networkKey)

Change this:

```
print(MAC_APPSKEY);  
print("00000000000000000000000000000000"); // TODO this will be stored as number in config
```

To read

```
print(MAC_APPSKEY);  
print("2B7E151628AED2A6ABF7158809CF4F3C"); // TODO this will be stored as number in config
```

This will change the Application session key to The Things Network

And in the same function, change

```
print(MAC_NWKSKEY);  
print("00000000000000000000000000000000"); // TODO this will be stored as number in config
```

To read

```
print(MAC_NWKSKEY);
```

```
print("2B7E151628AED2A6ABF7158809CF4F3C"); // TODO this will be stored as number in config
```

This will change the Network session key to The Things Network. If you want to transmit data encrypted with a key only known to yourself over TTN, change this key to something else. If you want the data to be decryptable by anyone, use The Things Network key here.

4. Configuring node id

In function void OTRN2483Link::setDevAddr(const uint8_t *address)

Change print("0201110A"); // TODO this will be stored as number in config

replacing 0201110A with the value on the sticker on your board.

5. Compile and build:

1. Having loaded OTRadioLink.zip and opened V0p2_Main.ino, try the "Verify" (tick) icon to see that everything compiles.
2. Plug in your FTDI cable to the laptop and select it in the IDE under Tools -> Port.
3. Open Tools -> Serial Monitor and select "Newline" and 4800 baud at the bottom of the screen.
4. Now plug in the FTDI and power (carefully!) at the board, with batteries in and the FTDI plugged in at
5. Press the -> "Upload" button and after a couple of minutes your code should be on the board (and will stay there even when you unplug the power). Watch out for errors in the bottom half of the IDE window. If you see some try Select Tools>Boards>OpenTRV V0p2 and unplugging and replugging your FTDI cable. Rinse and repeat. Call for help if stuck!
6. Reopen the Serial Monitor if need be and you should see a banner starting "OpenTRV ..."