gr-soapy: A handy SDR hardware interface module for GNU Radio

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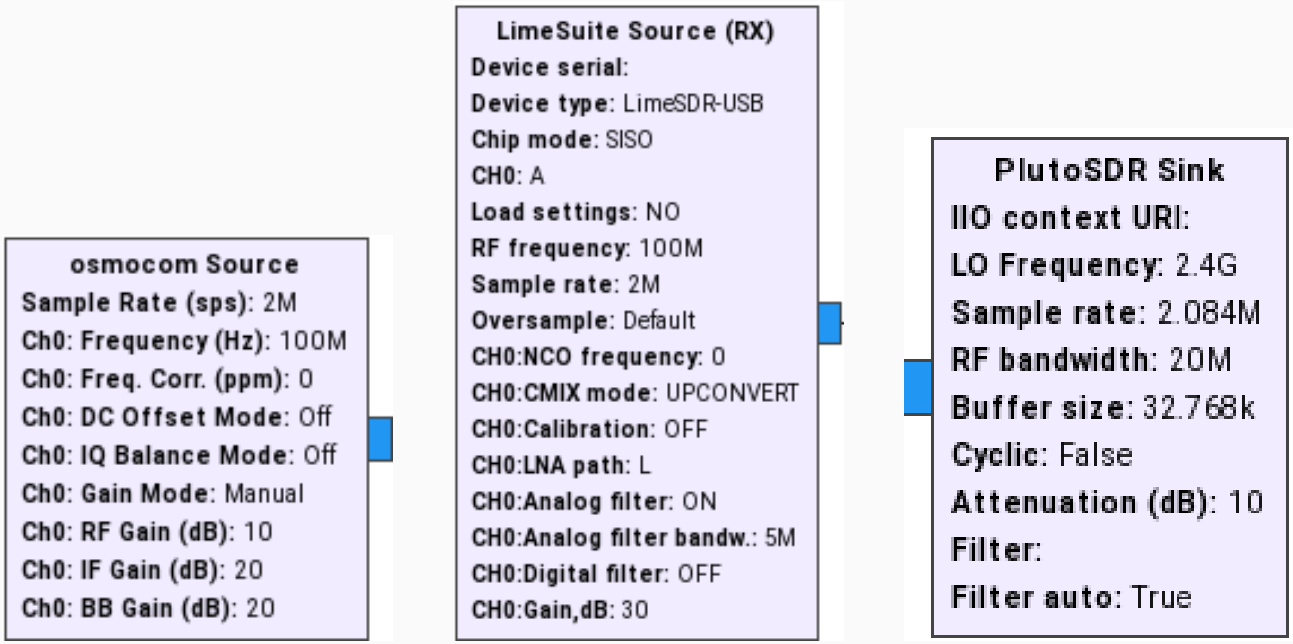
Roadmap

- Motivation
- Introduction to SoapySDR & gr-soapy
- gr-soapy Features
- Maintaining gr-soapy
- Conclusion

Motivation

- Plenty SDR devices with different blocks
- Need to change devices in the same flowgraph
- Hard for the inexperienced users to use a generic block



Introduction to SoapySDR & gr-soapy

SoapySDR

- Open source C/C++ API to interface with SDR devices
- Direct support to hardware with SoapySDR modules
- Remote access to SDR devices

gr-soapy

- OOT module for GNU Radio
- Source & sink blocks using SoapySDR API
- Dynamic xml fields for each supported device

gr-soapy Features

General Options

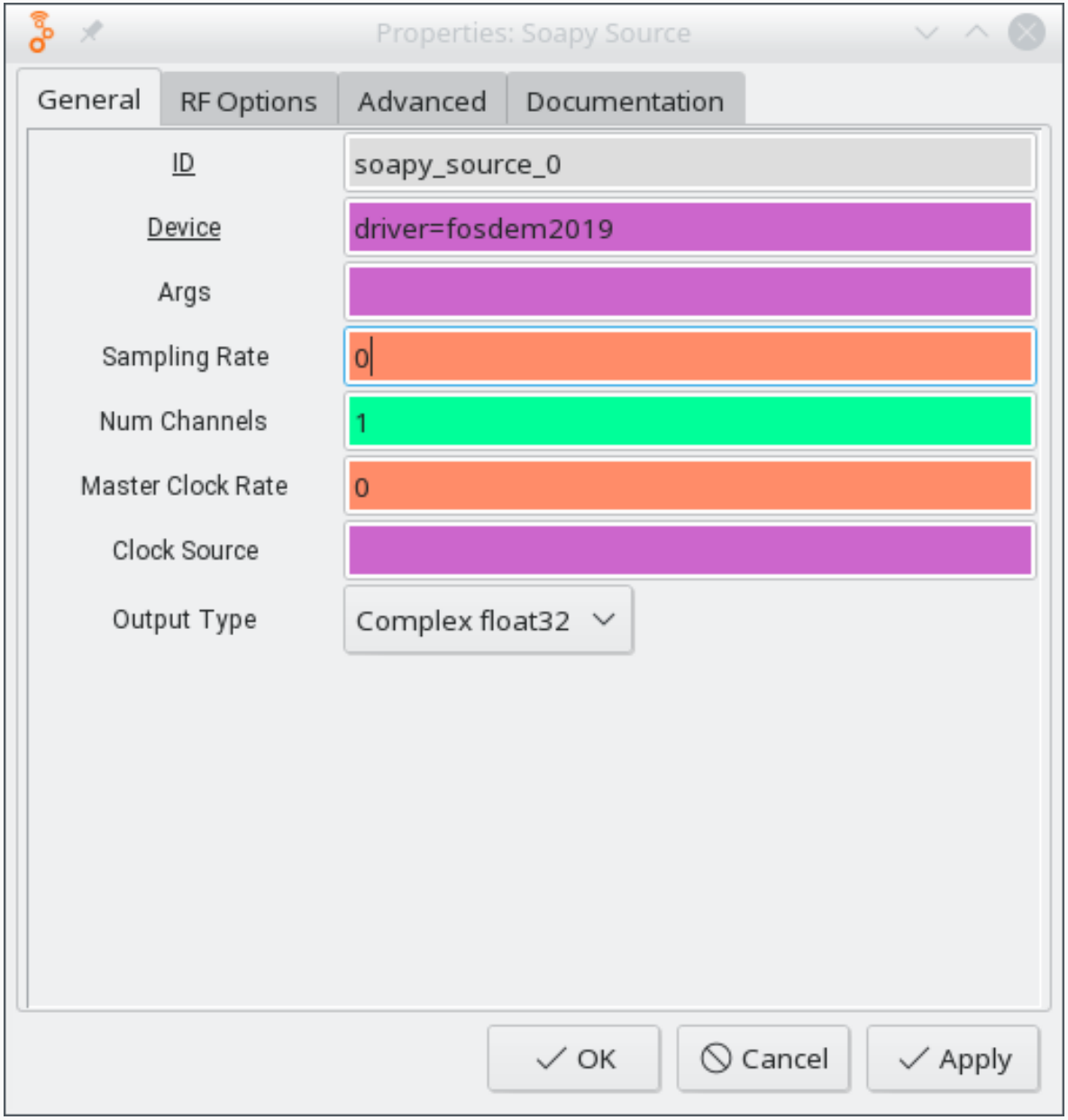
- Device driver & arguments
- Sampling Rate
- Number of Channels
- Clock Source & Rate
- Stream Format

RF Options

- Center Frequency
- NCO Frequency
- Gain Mode
- Gain Values
- Automatic Gain Control
- Antenna
- Filter Bandwidth
- Automatic DC Offset
- DC Offset Correction
- Frequency Correction
- IQ Balance Correction

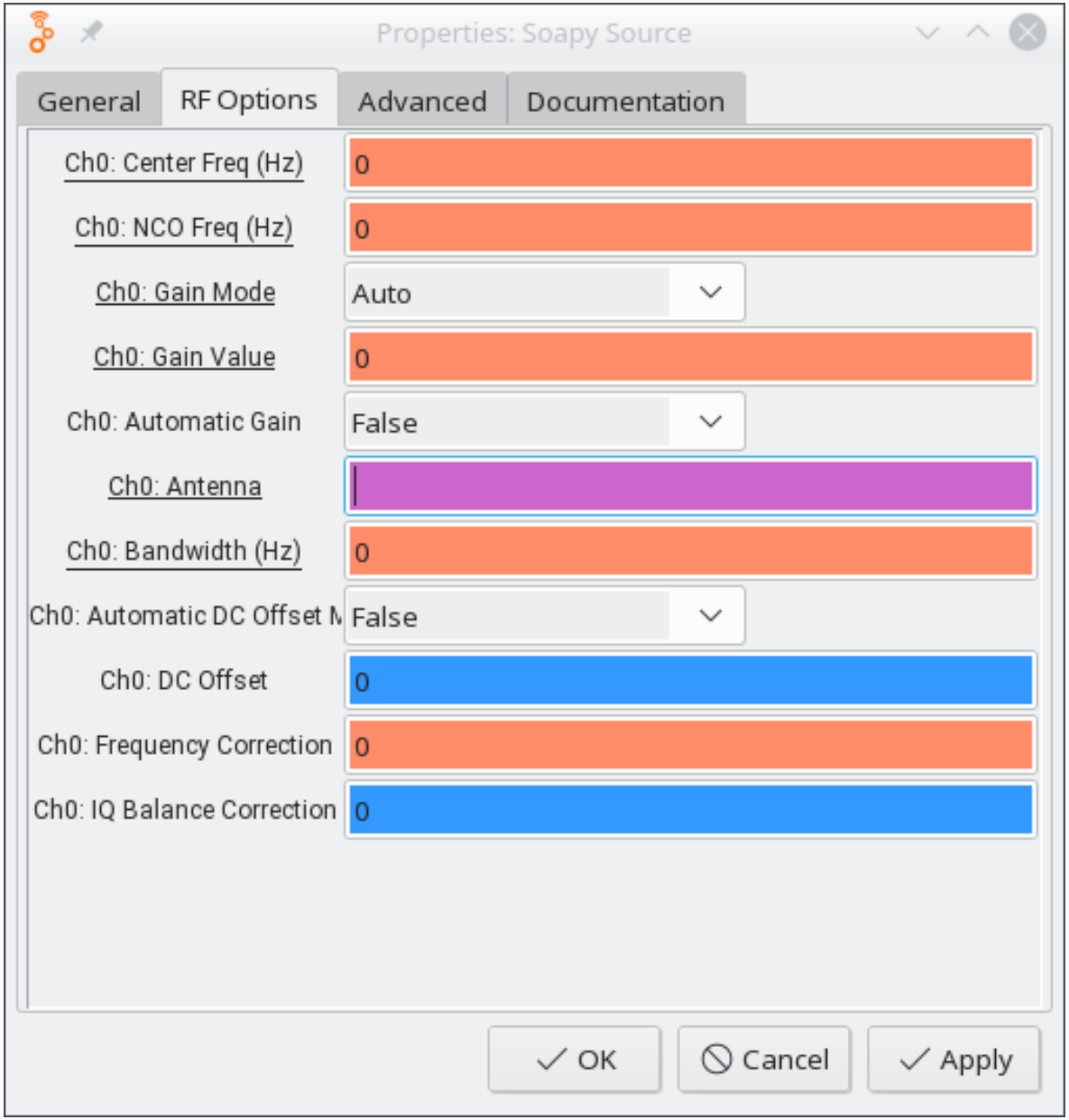
gr-soapy Features

Generic gr-soapy General Tab



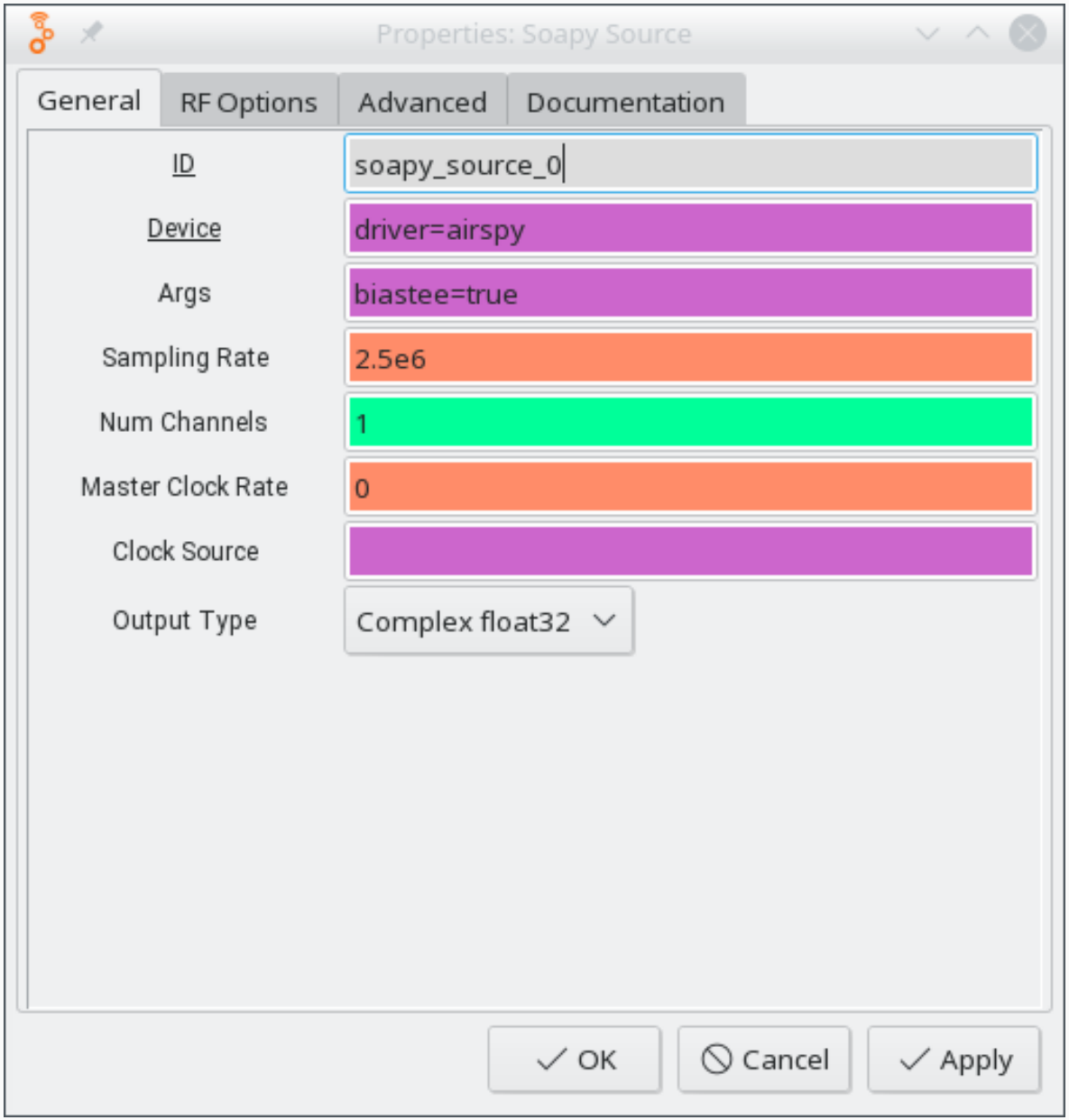
gr-soapy Features

Generic gr-soapy RF Tab



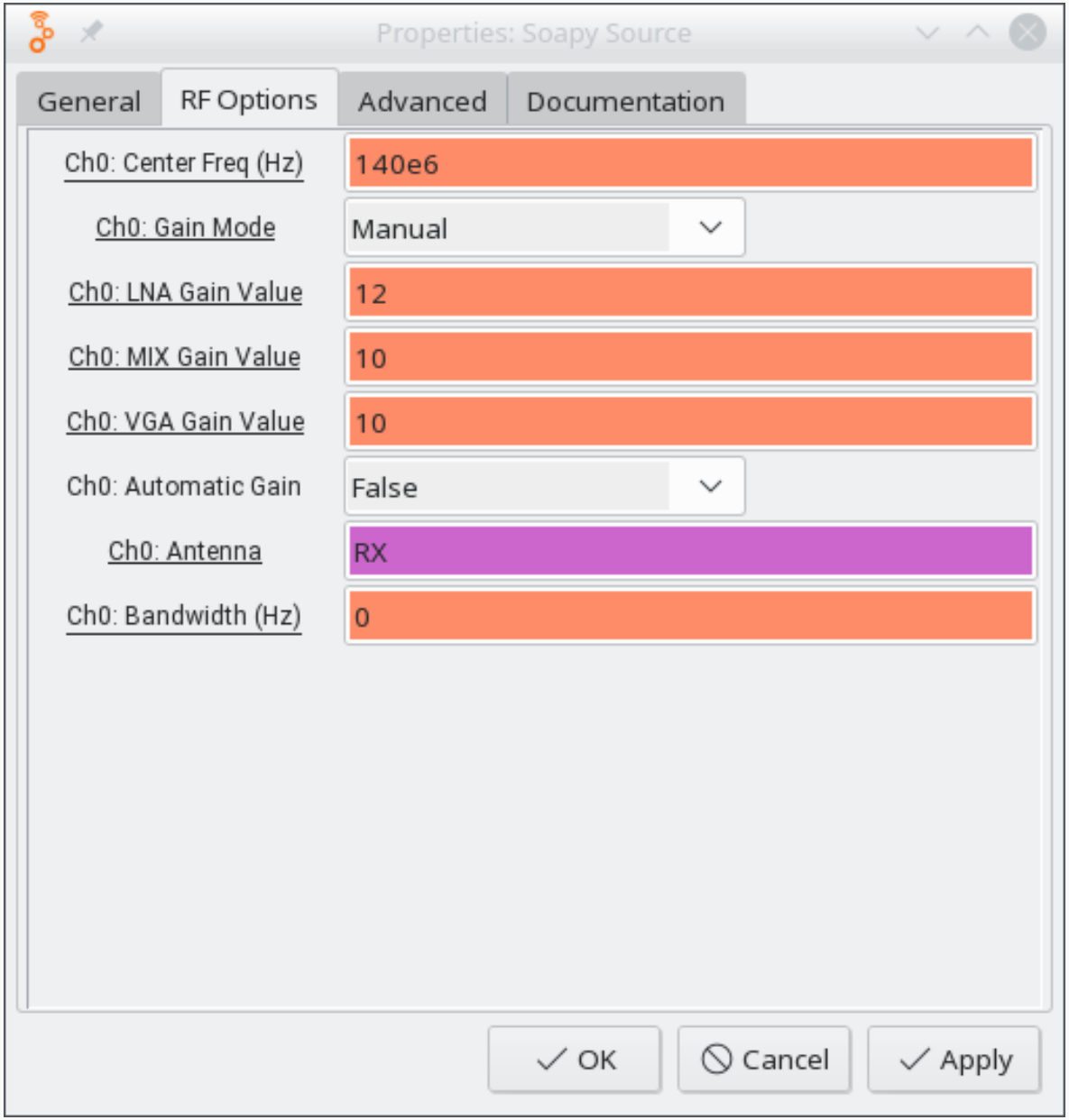
gr-soapy Features

Airspy gr-soapy General Tab



gr-soapy Features

Airspy gr-soapy RF Tab



Maintaining gr-soapy

gr-soapy is easily maintainable & expandable

- One xml to rule them all
- Simple to support new devices through the xml
- Easy to add new SoapySDR API functions
- New devices can be configured as soon as a new module is released
- Easy to create a module for a new device

Conclusion

Why use gr-soapy

- Soapy is a robust API
- gr-soapy is a convenient way to configure SDR devices
- Easily maintainable & expandable
- Soapy is an active project

Not everything is perfect

- Not all modules are created equally
- Xml file can be overwhelming
- Easy to create a bug in the xml


gr-Soapy