

# Quickstart

go2DECODE provides in interaction with its underlying components a powerful tool for automatic detection, demodulation and decoding of many different signal types and modems. The modems to be detected by the software are predefined by a list which the user himself defines. In addition, go2DECODE provides many helpful tools and displays for analyzing unclassified signals.

This tutorial is intended to provide you with a first quick introduction to go2DECODE and familiarize with the handling of the software in principle. To do this a signal is loaded as an example, which is automatically detected and decoded.

# User Interface

After the software start the user interface should look like the one shown in Figure 1. If the software has already been used or some settings have been changed, you should reset the setting and the user interface to a defined initial state. To do this select **<File><Reset settings>** in the menu bar. It's possible to align and scale single windows and displays in go2DECODE manually or automatically via the menu item **<Windows>**.

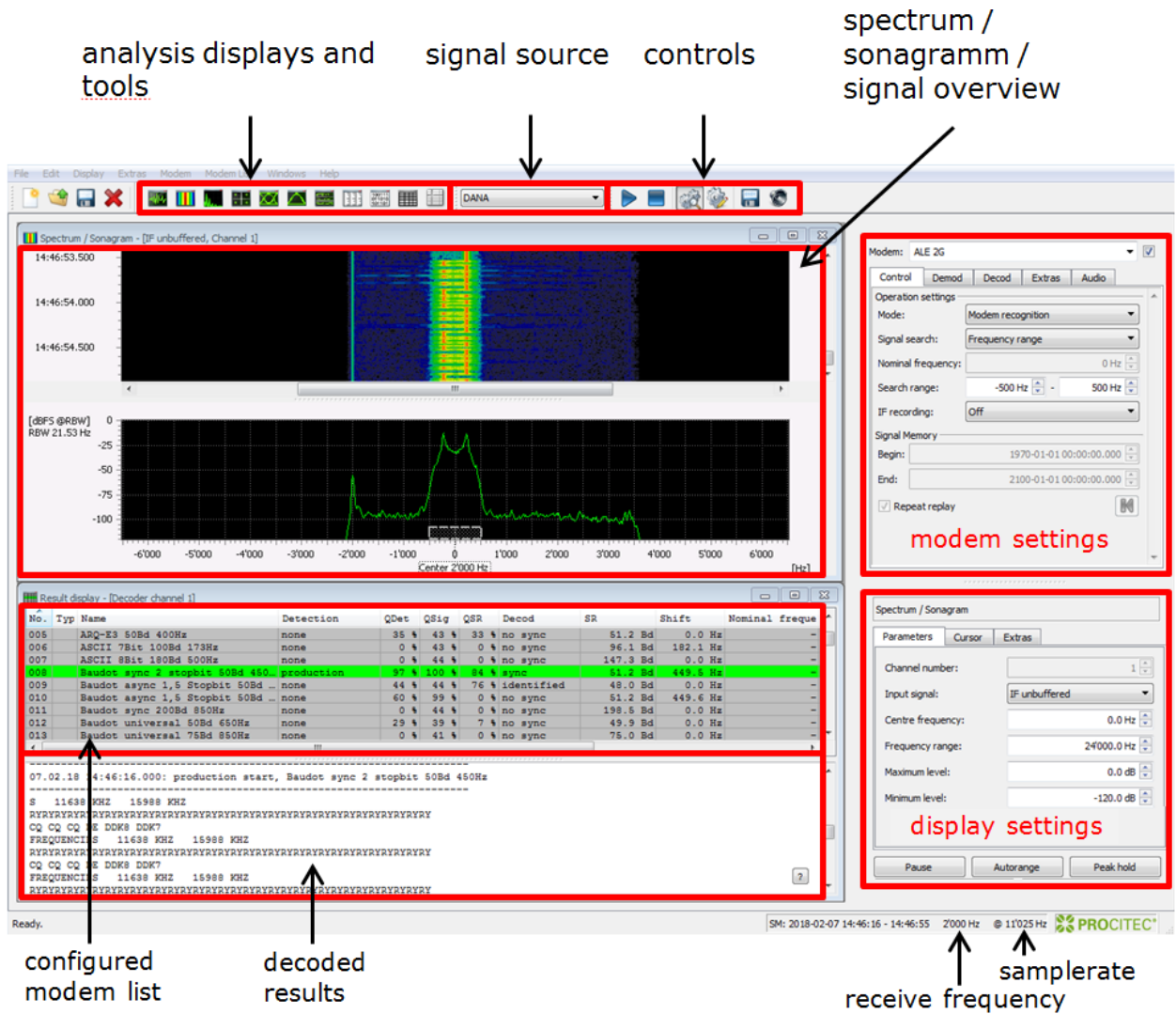


Figure 1: User interface of go2DECODE

## Modem lists

Initially a modem list should be loaded in go2DECODE. A modem describes an actual signal transmission method. This includes the demodulator, its parameterization and the decoder. Basically the demodulator converts the received radio signal into plain bits, the decoder extracts the information respectively the wanted data from these bits and converts it into a human readable representation.

The installation already includes a lot of modems and modem lists. By default, a preset modem list is loaded at the beginning. If this is not the case, you can use the menu item **<Modem list><Load modem list...>** to load the list "default\_HF.cmf". The file is located in the install folder under /modems/HF. It is also possible to add the list via drag-and-drop.

A modem list can be edited by hand. Individual modems from files are added to the existing list via the menu item **<Modem><Load modem from file...>**. Though, it is recommended to select new included modems via **<Modems><New Modem...>**. As shown in Figure 2, multiple modems can be selected simultaneously. Depending on the installed software package there are different numbers of modems for selection.

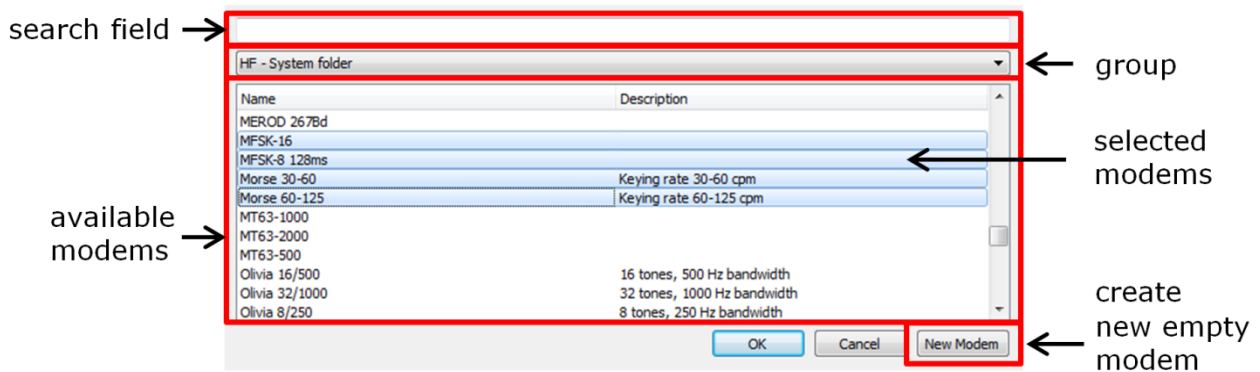



Figure 2: Modem selection

## Settings

go2DECODE can be operated in the two different modes *modem recognition* and *production*. *Modem recognition* is used to automatically search for the correct modem matching the input signal. All modems in the list are active and used for the search. In contrast, in *production* mode only the selected modem is active and applied to the input signal, regardless of whether the modem is matching the signal.

In this example the modem for a given signal is to be searched, therefore the mode must be set to *modem recognition*. This setting is located in the upper right area under the tab **<Control>** or can be activated by clicking on the icon  in the menu bar.

The actual receive frequency is shown in the status bar. All frequency statements in go2DECODE are always relative to this receive frequency.

Another important setting is whether the modem search should be done in a *frequency range* or at a fixed *nominal frequency*.

The nominal frequency sets together with the receive frequency the frequency which is also entered in the radios. The default value is 0 Hz, so the signal source (receiver) is set to the same frequency as the radios.

In *frequency range* search mode, the search range (relative to the receive frequency) for the center frequency of the signal is specified, since the transmission method and its nominal frequency are not yet known. Thus the frequency range defines which signal is to be detected. As default search range  $\pm 500$  Hz is used, so that one recognizes the signal at the receive frequency. Therefore the modem recognition in frequency range search determines the nominal frequency internally. In general, a correct manually set nominal frequency gives better results than the search in a frequency range.

In this examples the nominal frequency is 0 Hz, hence the signal search setting can be chosen to the nominal frequency 0 Hz or e.g. to the frequency range  $\pm 500$  Hz.

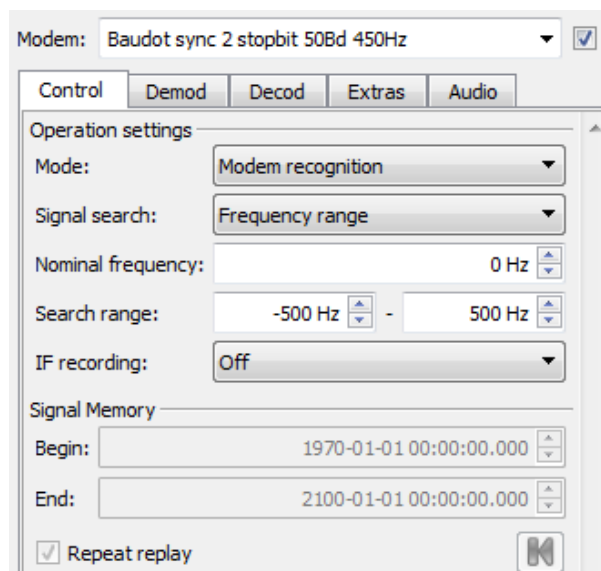


Figure 3: Basic modem settings

## Loading Signals in DANA

The next step is to choose the signal to be detected. Recorded signals are usually saved in wav-files. go2DECODE can operate on signals from many different sources. To choose files as source, DANA (Digital Analog Audio Interface) has to be selected in the upper dropdown menu as shown in Figure 1. DANA is an independent program and passes signals from files or from the soundcard on to go2DECODE. By default, DANA starts together with go2DECODE, but can also be launched via the menu **<Extras><Launch DANA>**.

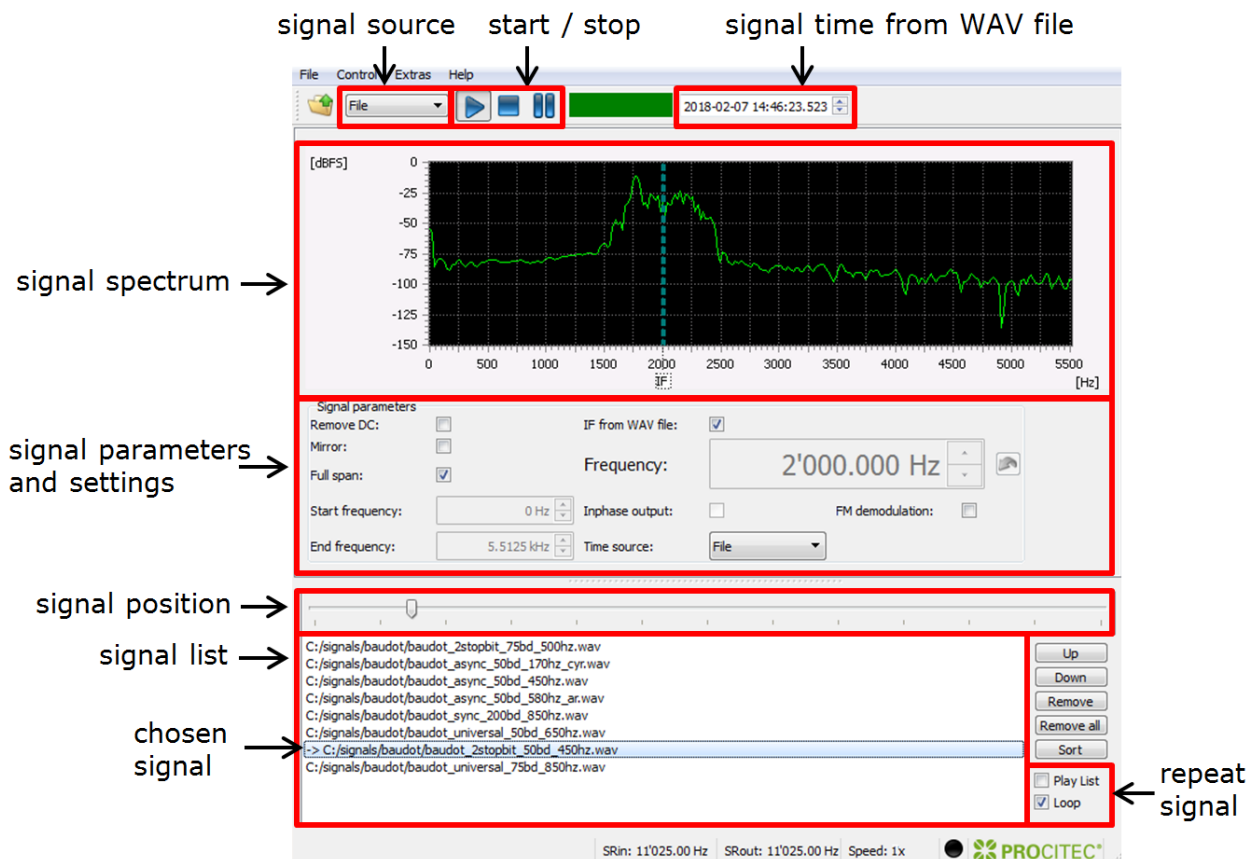


Figure 4: User interface of DANA

Load the example signal "baudot\_2stopbit\_50bd\_450hz.wav" in DANA via the file open menu entry. The signal file is located in the installation folder under /signals/HF/baudot. The matching modem for this signal is also contained in the already loaded modem list, so that it can be found. Additionally the correct center frequency must be set in DANA, since go2DECODE has to search at the correct position in the frequency band. The frequency can manually be chosen via the parameter field **<Frequency>** or easier via the checkbox **<IF from WAV file>**. In the delivered example signals the center frequency is always stored as meta information in the WAV-files, but this is not valid in general.

It is possible to add more than one signal to DANA. The wanted signal is selected via a double click on the corresponding list entry and marked with an arrow in the signal list as shown in Figure 4.

For illustrative purposes, the check box **<Loop>** should be activated to replay the example signal at its end.



## Imprint

PROCITEC GmbH  
CEO: Dipl.-Ing. (FH) Dipl.-Inf. (FH) Jens Heyen  
Rastatter Strasse 41  
D-75179 Pforzheim  
Germany

Phone: +49 7231 15561 0  
[www.go2signals.de](http://www.go2signals.de)  
[go2signals@procitec.de](mailto:go2signals@procitec.de)

Register: Mannheim HRB 504702  
Tax ID: DE 203 881 534

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