block can be activated or deactivated with the [TOGGLE] key. Active blocks are highlighted by a colored background.

The instrument comprises a comprehensive info and help system. You can access the context-sensitive help with the [HELP] ([F1]) key at any time. The help system indicates the currently selected parameter and offers additional services such as cross references, index and contents. The content of the help system corresponds to the operating manual of the instrument.

Warning and conflict messages caused by incorrect operation as well as further information are displayed in the "Info" line. A complete list of existing conflicts is displayed when the [INFO] ([CTRL+I]) key is pressed. Additional information on entries can be requested from the help system. The history function permits display of all messages.

Assistants simplify the completion of tables. After data entry in the assistant, the table is modified only after the "Accept" button has been pressed. Pressing the "Accept" button also stores the assistant data.

See Chapter 3.5, "Instrument Control", on page 66 for an overview on how to work with the instrument.

For an in-depth description of the dialog boxes and the instrument functions, refer to section Chapter 4.1, "Overview of Instrument Functions", on page 94.

3.4.3 Application Field of the Instrument

The main field of application of the R&S SMB is the generation of sine wave signals with very high spectral purity. These signals are needed e.g. for adjacent channel or phase noise measurements. In addition, the RF signal can be modulated with the internal modulations waveforms sine waves and rectangular signals.

3.4.4 Description of Individual Diagram Blocks

The signal path of the instrument is configured by installing a frequency option that comprises all required modules.

One of the following options must be installed.

- R&S SMB-B101 (up to 1.1 GHz)
- R&S SMB-B102 (up to 2.2 GHz)
- R&S SMB-B103 (up to 3.2 GHz)
- R&S SMB-B106 (up to 6 GHz)
- R&S SMB-B112 (up to 12,75 GHz)
- R&S SMB-B112L (up to 12,75 GHz without attenuator)
- R&S SMB-B120 (up to 20 GHz)
- R&S SMB-B120L (up to 20 GHz without attenuator)
- R&S SMB-B131 (up to 31,8 GHz)
- R&S SMB-B140/-B140N (up to 40 GHz)
- R&S SMB-B140L (up to 40 GHz without attenuator)

Instruments without step attenuator provide a restricted level range at the RF output. Refer to the data sheet for detailed information.

You can additionally get the following options for microwave instruments:

- up to 20 GHz (R&S SMB-B120/-B120L)
  - high output power option R&S SMB-B31
  - low harmonic filter option R&S SMB-B25
- up to 40 GHz (R&S SMB-B140/-B140L/-B140N)
  - high output power option R&S SMB-B32
  - low harmonic filter option R&S SMB-B26

See data sheet for detailed information.

Up-to-date information is available at R&S SMB homepage on the internet http://www.rohde-schwarz.com/product/smb100a.html.

Mod Gen block
The internal modulation sources are configured in this block. Also, the "LF frequency sweep" can be activated here.

An internal LF generator is available as the internal source for the analog modulations AM, FM and PHiM. Available modulation shapes are sine and rectangle.

The internal modulation signals are provided at the LF output at the front of the instrument. The LF output signal and the modulations sources for the analog modulations AM, FM and PhiM can be selected independently from each other.

A pulse generator provides single and double pulse modulation with selectable pulse widths and periods. Additionally, an option is available to generate pulse train signals.

The R&S SMB offers three different sweep types (frequency sweep, level sweep and LF sweep) to be activated alternatively. Each type has 6 modes which differ with respect to the sweep cycle mode (continuous, individual and step-by-step) and triggering mode (automatic, internal and external). In the "Mod Gen" block, the LF sweep is configured. Frequency and level sweep settings are accessed via the "RF" block.

The status display in the block shows whether LF generator and/or a sweep are active. The selected internal LF generator and/or noise source are switched on or off with the [TOGGLE ON/OFF] key.

Modulation block

The internal and external analog modulations are configured and activated in this block. The [MOD ON/OFF] key switches the active modulation(s) on/off.

The internal modulation sources are configured in the "Mod Gen" block. External amplitude, frequency or phase modulation signals can be fed in at the input connector [MOD EXT] at the front of the instrument. An external pulse signal is fed in via the BNC connector [PULSE EXT] at the rear of the instrument. AC or DC coupling for external feed is possible.

Modulation signals of up to two sources (internal and external source) can be combined for AM/FM and PhiM modulation.

Available internal and external analog modulation modes are:

- Amplitude modulation (AM)
- Frequency modulation (FM)
- Phase modulation (PhiM)
- Pulse modulation (Pulse)
- Stereo modulation (Stereo)

Note: For modulation modes that can be simultaneously used, refer to the R&S SMB data sheet.

The status display in the block shows the active modulation(s). Use the [TOGGLE ON/OFF] key to switch the active modulation of the block on or off.

RF block

In this block, the RF parameters and frequency/level sweep settings are set.

The active sweep is displayed in the block. The [RF ON/OFF] key switches the RF signal on and off. When the signal is switched off, the switch before the RF output symbol is open.

RF settings include:

- Frequency and reference frequency
- Level settings; if required.
- NRP Power Viewer using power sensors
- Frequency and level sweep
- List Mode settings. In this mode, extremely fast frequency and level settings can be made.

The [RF 50 Ohm] output connector at the front of the instrument provides the RF signal. An external trigger/gate signal for sweeps is input via the [INST TRIG] connector at the rear of the instrument

Note: Frequency and level are set fast with the aid of the [FREQ] and [LEVEL] keys.

Use the [TOGGLE ON/OFF] key to switch the RF output on or off.